ECONOMIC RESTRUCTURING IN LONG BEACH

Opportunities and Challenges in a Post-Aerospace Economy

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Prepared for the
CITY OF LONG BEACH
by the Economic Roundtable

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PURPOSE

This report has been prepared to assist the City of Long Beach in planning and implementing economic development strategies. The Economic Roundtable has carried out an extensive analysis of Long Beach's industrial structure and growth trends to:

1. Identify a core group of anchor industries for Long Beach based on:
   a. Industries that have a significant presence in the city and are attracted by local business opportunities.
   b. Industries that have a significant presence and need to be retained to protect the city's employment and revenue base.

2. Identify industries in the supplier networks linked to the anchor industries.

This report concludes with recommended targets for the marketing campaign, including both anchor and supplier industries. Long Beach's locational strengths provide important opportunities to strengthen the industry base and make the city a more attractive and efficient location for both anchor and supplier industries.

ECONOMIC RESTRUCTURING OF LOS ANGELES-LONG BEACH REGION

The City of Long Beach and other centers of aerospace production that reaped the rewards of the 1980s defense-spending boom must now confront the realities of restructuring. Since World War II, the Douglas Aircraft plant made Long Beach an important center of the US aerospace industry and dominated the local economy. In 1992, the Long Beach aerospace industry employed 36,100 workers, which was 22 percent of the city's total employment. Almost all of these workers were employed by McDonnell Douglas. Long Beach aerospace workers earned a total payroll of over $1.5 billion, which was 30 percent of the city's total payroll. These figures understate the total impact of aerospace on the Long Beach economy, through linkages with firms in other industries that provide inputs to the aerospace industry, and purchases of goods and services by aerospace workers.

As a result of defense cutbacks, aerospace companies have restructured their operations through mergers, divestitures, plant closings, and layoffs. Since 1991, McDonnell Douglas has laid off close to 26,000 workers in Long Beach and shifted a significant part of its military production to St. Louis. The acquisition of McDonnell Douglas by Boeing has created uncertainty regarding continued production at Douglas Aircraft, although a plausible scenario has Boeing shifting excess commercial airliner production from its Seattle area plants to Long Beach.

Unlike other centers dominated by aerospace, Long Beach has developed specializations in international trade and health services that provide a strong basis for a diverse local economy. The Port of Long Beach situates the city as a gateway in the Pacific Rim economy, creating jobs in water transportation and transportation services. In 1992, Long Beach employed 3,000 workers in these industries. The continued growth of East Asian economies will sustain and increase the international trade business in Long Beach. The city is in the enviable position of benefiting from increased production overseas, unlike communities in the US absorbing the impact of layoffs and plant closings resulting from increased competition between lower-wage producers in Latin America and Asia, and producers in the US. As American companies increase exports to growing Asian markets, Long Beach benefits from the movement of goods through its port.

The City of Long Beach is a regional center for health services. The health services industries employed over 21,100 workers in 1992, 13 percent of total city employment. The city also has a specialization in medical services and health insurance. This is a strong non-defense sector of the local economy.

The restructuring of the Long Beach economy is closely related to industrial restructuring throughout the Los Angeles region, which has undergone dramatic economic changes in the last twenty years. In the 1970s and 1980s the restructuring of heavy manufacturing industries, including motor vehicles, tires, and steel, cost the region tens of thousands of well-paying jobs. This restructuring was initiated by rising oil prices and increased foreign competition as the global economy entered a new era of increased international production and trade.

The decline of traditional manufacturing was offset be the expansion of production in the aerospace industries in the 1980s, due to the increased defense expenditures of the Reagan Administration. However, with the end of the Cold War and changing budget priorities in Washington, the aerospace industry has experienced significant restructuring as firms position themselves to compete in a shrinking defense market, increase commercial operations, or both. As a result, aerospace employment in Los Angeles County has plummeted from a peak of 225,000 in 1986, to 101,000 in 1996.

The decline of aerospace employment has exposed a regional manufacturing sector dominated by low-wage employment in industries such as apparel, food products, and furniture. Each of these industries depends upon immigrant workers. The apparel industry now employs approximately one in every six manufacturing workers in the county.

Since the 1980s, employment has contracted in the finance, insurance, and real estate industries, which lost 61,000 jobs between 1990 and 1996. Much of this loss can be explained by the recent wave of mergers in the banking industry.

On the other hand, employment has grown greatly in the service industries since the 1970s. Today the service industries employ one in every three workers in Los Angeles County. Two industries have dominated recent job growth: motion pictures and business services. The motion pictures industry has grown dramatically in recent years, fueled by the growth of multimedia products. The business services industries -- including such diverse industries as advertising, computer services and data processing, and janitorial and cleaning services -- has also experienced strong growth since the 1980s.

These county-wide trends in economic restructuring have had varying impacts across the county's communities and subregions, due to the particular geographies of different industries and local labor markets. For example, the inner city communities of Southeast Los Angeles (such as South Gate, Huntington Park, Lynwood) were devastated by layoffs and plant closings in heavy manufacturing industries that were concentrated in this area. They are now experiencing the growth of apparel, food products, furniture, and metals industries, although firms in these industries typically pay lower wages than did firms in the heavy manufacturing industries. Burbank, Glendale, Culver City and the westside have benefited from the growth in employment in motion pictures and other multimedia-related industries.

Global trends have affected the development of the Los Angeles-Long Beach economy. The Second World War and the Cold War infused billions of dollars of federal defense spending into the economy through contracts to Douglas Aircraft. Today, just as the end of the Cold War contributed to declining defense spending, the new global economy has created new opportunities in economic activities related to international trade. Challenges and opportunities for Long Beach's economic development include working with Boeing to retain production at the Douglas Aircraft facility, and leveraging the city's specializations in international trade and health services to attract business to the city.

UNEMPLOYED LONG BEACH RESIDENTS: A LABOR MARKET ANALYSIS

There are significant differences between unemployed and employed Long Beach workers. Unemployed workers are concentrated in relatively low-wage occupations found primarily in the retail and service industries. Blacks and Latinos are more highly concentrated in the ranks of the unemployed than they are among employed Long Beach workers. Close to 60 percent of unemployed Long Beach workers were previously employed in occupations that are expected to experience below average rates of growth between 1990 and 1999. Only nine percent were employed in occupations expected to have above average growth between 1990 and 1999.

A few Long Beach industries emerge as significant employers of unemployed Long Beach residents. Eating and Drinking Places are major employers of janitors and cleaners and cashiers. Temporary Help and Employment agencies are major employers of general office clerks and helpers and laborers. Hospitals, colleges, and universities are also important employers of general office clerks.

A strategy that would offer more stable employment prospects for unemployed workers is to develop and strengthen training programs that are geared to employment in more secure jobs in major Long Beach industries, including Health Services and Transportation. Otherwise, many unemployed workers may re-enter the labor force in the same insecure, low-end jobs that they held previously.

LONG BEACH INDUSTRY ANALYSIS

Total employment in the City was 164,000 in the third quarter of 1992. The major industry divisions in Long Beach were manufacturing (47,600 workers, 29 percent of City employment), services (41,000 workers, 25 percent of City employment), and retail trade (21,500 workers, 13 percent of City employment.

Employment and Payroll

The industries with the highest employment were:

- Aerospace (36,100 workers, 22% of total employment)
- Health Services (21,100, 13%)
- Eating and Drinking Places (9,200, 6%)
- Business Services (7,000, 4%)
- Miscellaneous Retail (4,300, 3%)

The industries with the highest employment concentration in Long Beach were:

- Water Transportation (5.5 times the employment share of this industry in Los Angeles County)
- Aerospace (5.1)
- Motor Vehicles and Equipment (1.8)
- Hotels (1.7)
- Health Services (1.6)

The industries with the highest payroll per worker were:

- Water Transportation ($44,000)
- Aerospace ($43,000)
- Trucking and Warehousing ($36,800)
- Motor Vehicles and Equipment ($35,800)
- Insurance ($35,300)

The industries with the highest percent of total Long Beach payroll were:

- Aerospace (31%)
- Health Services (13%)
- Business Services (3%)
- Wholesale -- Durable Goods (2%)
- Eating and Drinking Places (2%)

Business Conditions

Long Beach has completed four annual cycles of surveying firms in the City to assess business conditions and needs. A total of 1,532 firms have responded to surveys over the four years, providing information about business trends in each firm as well as perceptions of overall business conditions in Long Beach. The large survey data base that has been created makes it possible to identify long-term trends in Long Beach's business environment as well as make detailed assessments of conditions in a number of specific industries.

Some industries find strong locational advantages in Long Beach's restructuring economy, while other industries are struggling to remain viable. Industries giving Long Beach the most positive ratings on business environment indicators are good candidates for business recruitment initiatives. Composite scores for twenty-one industry sectors were produced by calculating the ratio of responses by each industry to overall responses from all Long Beach firms to the same indicators. Since some of the business indicators are positive and others negative, it was possible for an industry to receive a score that was either positive or negative, depending on how firms perceived the business environment.

The business indicators used to produce the composite score and the weighting given to each indicator are as follows:

Positive Indicators	*Weighting Factor*
plan to expand employment	1
plan to expand sales	1
plan to expand building	1
plan to expand equipment	1
plan to expand products or services	1
sales have increased over the past three years	6
Long Beach is a positive location for business	8
firm would still choose Long Beach as a business location	8

Negative Indicators	*Weighting Factor*
sales have decreased over the past three years	-6
industry is in recession or general downturn	-3
major customers or suppliers have closed or relocated	-3
firm may relocate outside Long Beach	-4
firm may not renew lease	-2
there are physical barriers to expansion at current site	-2
security problems have increased over the past three years	-2
firm has difficulty recruiting qualified employees	-2
firm has laid-off employees in the past year	-2

The weighting factor for each indicator was multiplied by the ratio of each industry's responses to responses from all Long Beach firms. Thus, if an industry had above-average positive responses the composite score would be positive, and if it had above-average negative responses the score would be negative.

Based on their composite scores some industries have exceptionally strong perceptions of Long Beach's business environment, some strong, some borderline, and some negative. Industries in the two strongest categories are listed below.

Industry	*Composite Score*
Exceptionally Strong	
Water Transportation	27.38
Finance, Insurance, Real Estate	14.55
Wholesale, Nondurable Goods	12.21
Strong	
Transportation Services	9.60
Business Services	6.05
Trucking	3.13
Food Stores, Retail	2.69

Conclusions Based on Survey Assessments of Business Conditions

Survey responses identify a group of transportation and business linked industries that have strongly positive perceptions of Long Beach's Business environment and find it advantageous to be located in the city. These include Water Transportation, Transportation Services, Nondurable Wholesale, Finance, Insurance, Real Estate, and Business Services.

Input-Output Analysis

The payroll data presented earlier indicates job quality in different industries. It is also useful to look at the number of jobs created in industries through their production linkages with firms throughout the economy. Through input-output modeling of the county economy it is possible to estimate how many jobs are generated for each $1 million of output in each sector of the Long Beach economy. This value, called the "direct effect", is the inverse of labor productivity and reveals how labor intensive an industry is. The direct employment figure ranges from a low of 0.92 in the petroleum industry to a high of 39.62 in the military sector of the government. The average number of jobs created by $1 million of output in each sector is 14.34. Along with the military sector, the personal services industries employ significantly more people per unit of output than average. Along with the petroleum industry, the metal mining, food, chemicals, motor vehicles, pipelines (excluding natural gas), water transportation, utilities, and real estate sectors employ fewer than 5 people for each $1 million of output.

An average of 31 jobs are created throughout the economy as a consequence of meeting a $1 million increase in final demand in each sector of the economy. Total employment creation is greatest in the credit agencies and the personal services sector. Total employment creation is lowest in the petroleum products industry.

The average industry employment multiplier (total jobs/direct jobs) is 2.12. This means that on average, for every job generated in a specific industry an additional 1.12 jobs are created in the region's economy. Employment multipliers are highest in the insurance carriers, water transportation, petroleum products, motor vehicles, food, utilities and banking sectors. These are sectors where the direct employment effect is relatively small. Employment multipliers are relatively low in the agricultural and government sectors along with other industries where the direct employment effect tends to be relatively large.

Target Industries: Recommendations

Five industry indicators were combined to provide an overall "score" of Long Beach industries and identify sectors for targeting by the City of Long Beach in its external marketing program. Three indicators have been described above: employment concentration (based on location quotients), payroll per worker, and employment change in Los Angeles County (1992-1996). The other indicators used were (1) the Economic Roundtable assessment of Long Beach business conditions in different industries, based on our analysis of the 1994-1997 Long Beach Business Surveys, and (2) employment multipliers. The employment multiplier indicates the number of jobs generated throughout the economy by each additional $1 million output per industry. Together these variables capture key strengths of target industries.

We recommend that the City of Long Beach reinforce and improve existing specializations in international trade and health services, while working to retain a presence in the restructured aerospace industry. Firms in the electronic equipment industry should be attracted to Long Beach to help diversify the local high technology sector. The city should capitalize on the locational and logistical advantages created by the port and the Alameda Corridor project to target firms in other durables manufacturing industries such as motor vehicles and equipment, due to their relatively good wages and high employment multipliers. Finally, the City should attract firms in professional and high technology services industries that pay average to above average wages and are experiencing considerable growth.

The ten industries recommended for business retention and recruitment initiatives are described below.

HIGH TECHNOLOGY MANUFACTURING

Aerospace (SIC 372, 376, 381)

Despite recent layoffs, and uncertainties regarding Douglas Aircraft production following the acquisition of McDonnell Douglas by Boeing, the aerospace industry is very important to the Long Beach economy, providing over 14,000 jobs that pay above average wages and salaries. With a high employment multiplier (2.61), aerospace supports at least 22,500 jobs throughout the regional economy. The City should work with Boeing to encourage increased commercial aircraft production, and work to attract, and encourage growth in, firms producing search and navigation equipment. This segment of the aerospace industry includes firms making search, navigation, and guidance systems for both defense and commercial markets, and has experienced recent growth in Los Angeles County. Employment in the search and navigation industry in Los Angeles County increased by 4 percent between 1995 and 1996.

Electronic Equipment (SIC 36)

The Electronic Equipment industry group includes manufacturers of communications equipment (SIC 366) and electronic components (SIC 367). SIC 366 includes firms that manufacture space satellites and satellite communications equipment, which is a growing high technology industry.

Long Beach has few firms in this industry group, employing just over 300 workers in 1992. These industries pay average to above average wages, and are a major supplier of inputs to aerospace firms and business services. The City should attract electronic equipment firms to diversify its high technology manufacturing sector.

Motor Vehicles and Equipment (SIC 371)

This industry has a high employment concentration in Long Beach and a high multiplier. The major Long Beach firms in this industry specialize in the manufacture of truck bodies. Strengthening the motor vehicles and equipment industry in Long Beach will help diversify the city's manufacturing base. Manufacturers can take advantage of their proximity to the Port of Long Beach to develop export markets in the Pacific Rim.

INTERNATIONAL TRADE

Water Transportation (SIC 44)

The water transportation industry ranked highly in each of the industry indicators. This industry will continue to grow in importance given Long Beach's position as a gateway for international trade between the booming Pacific Rim economies. As the economies of East Asia continue to grow, expanding markets for US products will increase trade flows through the Port of Long Beach. Likewise, East Asian producers will ship increasing amounts of goods through the port, destined for regional and continental markets.

Transportation Services (SIC 47)

The water transportation industry is complemented by transportation services, which include freight forwarding. Though not a major employer in Long Beach (930 workers in 1992), transportation services will also grow in importance as international trade expands. Long Beach appears to have excellent locational advantages for attracting growth in this industry.

Wholesale Trade (SIC 50 - 51)

The Wholesale Trade industries pay average to above average wages and salaries. Wholesale Trade employment concentration in Long Beach is relatively low. Wholesale trade in Los Angeles County is highly concentrated in the Carson and Commerce industrial parks, while Long Beach specializes in water transportation and transportation services connected to port activity.

The Wholesale Trade industries are strongly linked to firms in aerospace, health services, and tourism.

HEALTH

Health Services (SIC 80)

Following mass layoffs in the Long Beach aircraft industry, health services has emerged as the city's major industry group in terms of employment and total payroll. Despite ongoing restructuring in this industry, employment levels in Los Angeles County have remained stable. The health services provide numerous job opportunities for Long Beach residents in skilled occupations.

With the recent decline in aerospace employment, this is the major industry group in terms of employment in Long Beach. Approximately one in eight persons working in Long Beach are employed in the Health Services industries. Employment is highly concentrated in hospitals, nursing and personal care facilities, and offices of health practitioners other than medical doctors and dentists. The health services provide good jobs in numerous technical and scientific occupations.

Medical Services and Health Insurance (SIC 632)

As a group the finance, insurance, and real estate industries are not highly concentrated in Long Beach, and have experienced significant employment decline in Los Angeles County since 1992. However, Long Beach has developed a niche in the medical services and health insurance industry, which has a high employment concentration in the city and pays high wages and salaries. The status of Long Beach as a regional center for health services is reinforced by its specialization in medical services and health insurance. In 1992, this industry employed over 1,300 people in Long Beach who earned an average annual income of $37,000. Based on its concentration in Long Beach and linkages to the City's hospitals, there may be an opportunity for growth in this sector of the insurance industry.

PROFESSIONAL AND HIGH TECHNOLOGY SERVICES

Business Services (SIC 73)

The business services industries are, together with motion pictures, the fastest growing industries in the Los Angeles economy. Firms in diverse industries, from aerospace to transportation to tourism, contract with business services firms for a variety of needs. These include "high-end" professional services such as advertising, commercial art and graphic design, commercial photography, and computer programming and data processing services; "low-end" services such as mailing and reproduction, cleaning and janitorial services, and security guards; as well as employment agencies and temporary help supply agencies. Demand for each of these services is growing in the contemporary economy.

The business services industry employed 7,000 people in Long Beach in 1992, with a relatively low employment concentration compared to the county. Business services firms are highly concentrated along the Wilshire Corridor from Santa Monica to downtown Los Angeles. Despite this, the City of Long Beach should work to attract "high-end" business services to the city, due to the good wages and salaries paid in these industries, and the strong demand for these services throughout the economy.

Engineering and Management Services (SIC 87)

This industry includes Engineering and Architectural Services (SIC 871), Accounting and Bookkeeping Services (SIC 872), Research, Development, and Testing Services (SIC 873), and Management and Public Relations Services (SIC 874).

These industries pay above average wages and salaries, and are not well represented in the Long Beach economy. The City should develop a strategy that attracts firms in this industry together with "high-end" business services firms, due to their strong inter-industry connections and above average job quality.

ECONOMIC RESTRUCTURING IN LONG BEACH

Opportunities and Challenges in a Post-Aerospace Economy

Overview

This report has been prepared to assist the City of Long Beach in planning and implementing economic development initiatives. The Economic Roundtable has carried out an extensive analysis of Long Beach's industrial structure and growth trends to:

1. Identify a core group of anchor industries for Long Beach based on:

    a. Industries that have a significant presence in the city and are attracted by local business opportunities.

    b. Industries that have a significant presence and need to be retained to protect the city's employment and revenue base.

2. Identify industries in the supplier networks linked to the anchor industries.

This report concludes with recommended targets for the marketing campaign, including both anchor and supplier industries. Long Beach's locational strengths provide important opportunities to strengthen the industry base and make the city a more attractive and efficient location for both anchor and supplier industries.

This report is divided in to four parts. Part One presents an overview of economic restructuring in Long Beach and Los Angeles County. This describes the major trends in the regional economy: employment decline in aerospace and other durables manufacturing industries, and growth in transportation, business services, and motion pictures.

Part Two describes business conditions in Long Beach as reported by firms in the Long Beach Business Surveys.

Part Three provides a labor market analysis of unemployed workers in Long Beach, and discusses the potential of Long Beach industries to hire these workers.

Part Four is a detailed look at Long Beach industries. Information is presented regarding employment, payroll, business conditions, and employment and output multipliers in Long Beach industries. This information is used to recommend target industries for City economic development initiatives.

PART ONE
ECONOMIC RESTRUCTURING AND THE LOS ANGELES-LONG BEACH REGION

1. INTRODUCTION

The Los Angeles-Long Beach region has undergone dramatic economic changes in the last twenty years. In the 1970s and 1980s the restructuring of heavy manufacturing industries, including motor vehicles, tires, and steel, cost the region tens of thousands of well-paying jobs. This restructuring was initiated by rising oil prices and increased foreign competition as the global economy entered a new era of increased international production and trade.

The decline of traditional manufacturing was offset be the expansion of production in the aerospace industries in the 1980s, due to the increased defense expenditures of the Reagan Administration. However, with the end of the Cold War and changing budget priorities in Washington, the aerospace industry has experienced a significant restructuring as firms position themselves to compete in a shrinking defense market, increase commercial operations, or both. As a result, aerospace employment in Los Angeles County has plummeted from a peak of 225,000 in 1986, to 101,000 in 1996.

The decline of aerospace employment has exposed a regional manufacturing sector dominated by low-wage employment in industries such as apparel, food products, and furniture. Each of these industries depends upon immigrant workers. The apparel industry now employs approximately one in every six manufacturing workers in the county.

Since the 1980s, employment has contracted in the finance, insurance, and real estate industries, which lost 61,000 jobs between 1990 and 1996. Much of this loss can be explained by the recent wave of mergers in the banking industry.

On the other hand, employment has grown greatly in the service industries since the 1970s. Today the service industries employ one in every three workers in Los Angeles County. Two industries have dominated recent job growth: motion pictures and business services. The motion pictures industry has grown dramatically in recent years, fueled by the growth of multimedia products. The business services industries -- including such diverse industries as advertising, computer services and data processing, and janitorial and cleaning services -- has also experienced strong growth since the 1980s.

These county-wide trends in economic restructuring have had varying impacts across the county's communities and subregions, due to the particular geographies of different industries and local labor markets. For example, the inner city communities of Southeast Los Angeles (such as South Gate, Huntington Park, Lynwood) were devastated by layoffs and plant closings in heavy manufacturing industries that were concentrated in this area. They are now experiencing the growth of apparel, food products, furniture, and metals industries, although firms in these industries typically pay lower wages than did firms in the heavy manufacturing industries.

Burbank, Glendale, Culver City and the westside have benefited from the growth in employment in motion pictures and other multimedia-related industries. The City of Long Beach and other centers of aerospace production reaped the rewards of the 1980s defense boom, and now confront the realities of restructuring. Unlike other aerospace cities, Long Beach has specializations in international trade and health services that are strong basis for a diverse local economy.

2. *RESTRUCTURING OF THE LONG BEACH ECONOMY*

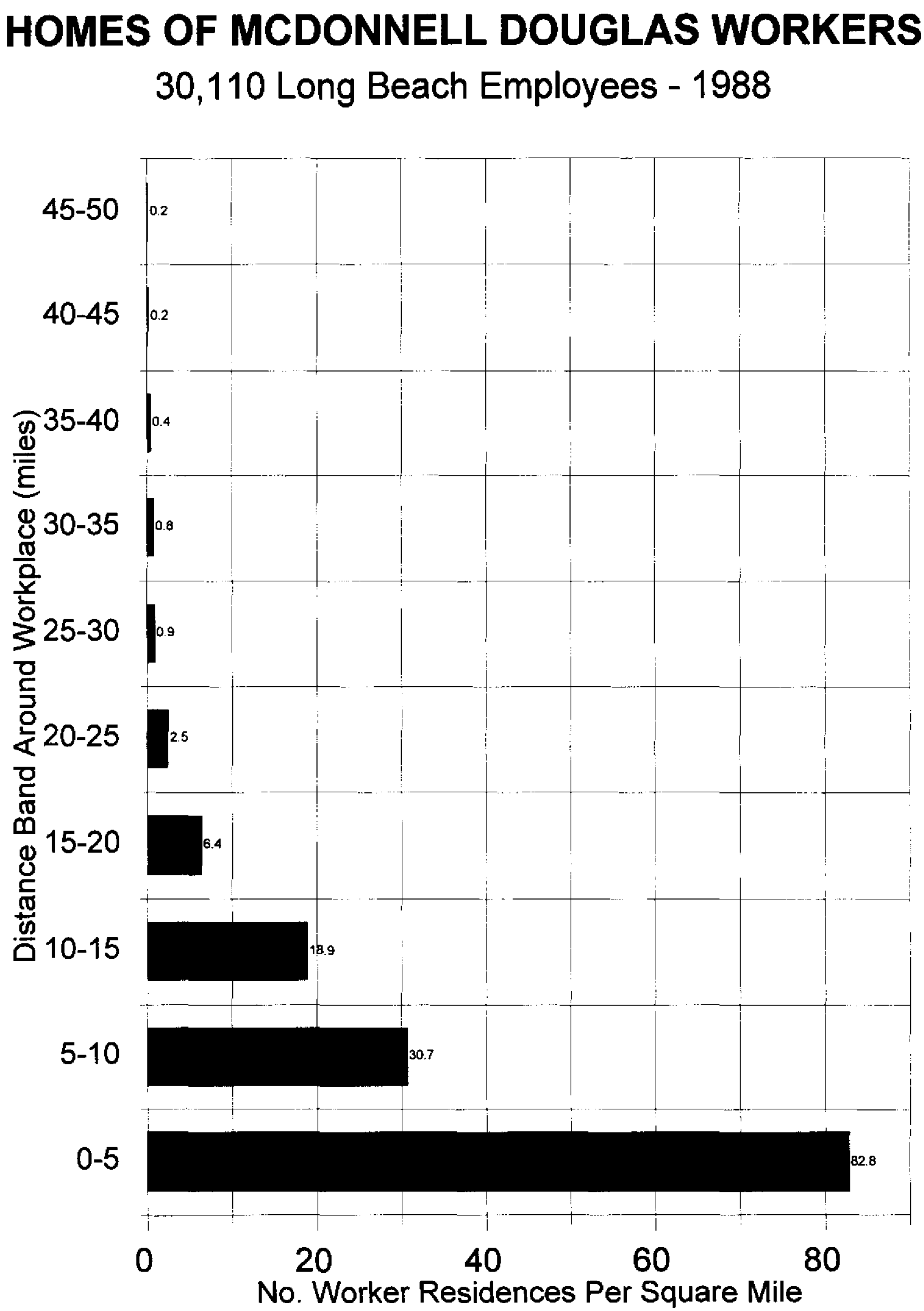
Dominated in recent decades by the aerospace industry, Long Beach has gained importance as a gateway for Pacific Rim trade in the evolving global economy. In both cases, global trends have affected the development of the Long Beach economy. Challenges and opportunities for Long Beach's economic development include retaining production at the Douglas Aircraft facility (now being acquired by Boeing), and leveraging the city's specializations in international trade and health services to attract firms.

Since World War II, the Douglas Aircraft plant made Long Beach an important center of the US aerospace industry and dominated the local economy. In 1992, the Long Beach aerospace industry employed 36,100 workers, which was 22 percent of the city's total employment. Almost all of these workers were employed by McDonnell Douglas. Long Beach aerospace workers earned a total payroll of over $1.5 billion, which was 30 percent of the city's total payroll. These figures understate the total impact of aerospace on the Long Beach economy, through linkages with firms in other industries that provide inputs to the aerospace industry, and purchases of goods and services by aerospace workers.

The growth and subsequent restructuring of the aerospace industry in the since the 1980s was the result of national and global political developments. In the US, the Reagan Administration increased the defense budget by 50 percent (in real dollars) between 1980 and 1985. The lag between budgetary allocation and procurement ensured that defense expenditures increased through 1989 (Markusen and Hill, 1992, p. 7). Since the late 1980s, domestic and international politics contributed to the decline in defense spending. First, balancing the budget became a top priority in Washington. And second, the collapse of the Soviet Union erased overnight the Cold War-era justifications used by the Reagan Administration to increase the defense budget.

Aerospace companies have restructured their operations through mergers, divestitures, plant closings, and layoffs. Since 1991, McDonnell Douglas has laid off close to 26,000 workers in Long Beach and shifted a significant part of its military production to St. Louis. As Figure 1 shows, most Douglas Aircraft workers reside in Long Beach and the immediate vicinity. As these workers lost their jobs, the entire local economy suffered due to reduced consumer expenditures. The recent acquisition of McDonnell Douglas by Boeing has created uncertainty regarding continued production at Douglas Aircraft, although a plausible scenario has Boeing shifting excess commercial airliner production from its Seattle area plants to Long Beach.

FIGURE 1


HOMES OF MCDONNELL DOUGLAS WORKERS
30,110 Long Beach Employees - 1988
45-50
0.2
40-45
0.2
35-40
0.4
30-35
0.8
25-30
0.9
20-25
2.5
15-20
6.4
10-15
18.9
5-10
30.7
0-5
82.8
Distance Band Around Workplace (miles)
0
20
40
60
80
No. Worker Residences Per Square Mile

Unlike other cities dominated by aerospace employment, Long Beach is specialized in activities related to international trade. The Port of Long Beach situates the city as a gateway in the Pacific Rim economy, creating jobs in water transportation and transportation services. In 1992, Long Beach employed 3,000 workers in these industries. The continued growth of East Asian economies will sustain and increase the international trade business in Long Beach. The city is in the enviable position of benefiting from increased production overseas, unlike communities in the US absorbing the impact of layoffs and plant closings resulting from increased competition between lower-wage producers in Latin America and Asia, and producers in the US. Also, as American companies increase exports to growing Asian markets, Long Beach benefits from the movement of goods through its port.

The City of Long Beach is a regional center for health services. The health services industries employed over 21,100 workers in 1992, 13 percent of total city employment. The city also has a specialization in medical services and health insurance. This is a strong non-defense sector of the local economy.

Global trends have affected the development of the Long Beach economy. The Second World War and the Cold War infused billions of dollars of federal defense spending into the economy through contracts to Douglas Aircraft. Today, just as the end of the Cold War contributed to declining defense spending, the new global economy has created new opportunities in economic activities related to international trade. Challenges and opportunities for Long Beach's economic development include retaining production at the Douglas Aircraft facility (now being acquired by Boeing), and leveraging the city's specializations in international trade and health services to attract business to the city.

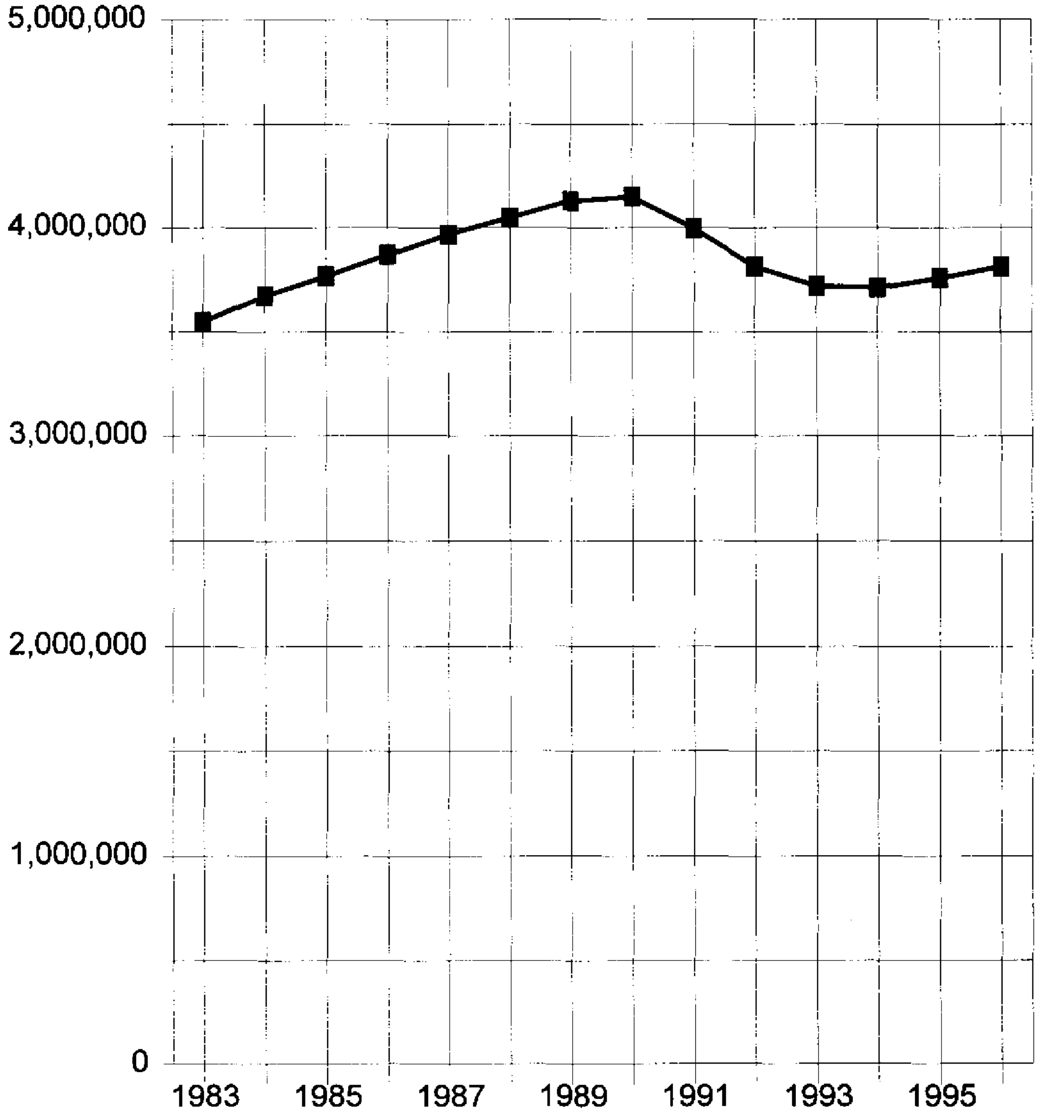
3. EMPLOYMENT TRENDS IN LOS ANGELES COUNTY, 1983-1996

Total employment change in Los Angeles County between 1983 and 1996 can be divided into three phases (Figure 2). Between 1983 and 1990, employment grew from 3,549,400 to 4,147,100, a 16.8 percent increase. Over the next four years, employment fell by 436,660 jobs (10.5 percent). Between 1994 and 1996, employment increased by 99,160 jobs, a 2.7 percent increase. This is still 337,500 jobs below the 1990 peak of 4,147,100.

The dominant industrial employment trends underlying the overall county employment pattern include (a) the Reagan-era defense boom and subsequent massive layoffs in the aerospace industry after the collapse of the Soviet Union, (b) the rise and decline of employment in the finance, insurance and real estate industries, (c) the steady growth of services employment, especially in the business services and motion picture industries.

FIGURE 2

TOTAL EMPLOYMENT
Los Angeles County, 1983-1996



Source: California EDD, Labor Market Information Division

3.1 EMPLOYMENT CHANGE BY INDUSTRY, 1983-1996

Manufacturing

Trends in total manufacturing employment have followed changing employment in the durables manufacturing industries, dominated by aerospace (Figures 3 and 4). Employment grew from 1983 to 1987, declined significantly through 1995, and has grown slightly since then. Employment in non-durables manufacturing has remained relatively steady since 1983, with growth in the apparel and textiles industries offsetting declines in other industries. With most of its manufacturing employment concentrated at the McDonnell-Douglas plant, Long Beach has been strongly affected by the recent restructuring of McDonnell-Douglas along with other aerospace firms.

Aerospace and Durables Manufacturing

The Reagan-era defense spending boom resulted in tremendous growth in the Los Angeles aerospace industries in the early to mid 1980s. The aircraft industry was responsible for most of the 25,000 aerospace jobs added between 1983 and 1986. By 1986 the aerospace industry employed 225,000 workers in Los Angeles County.

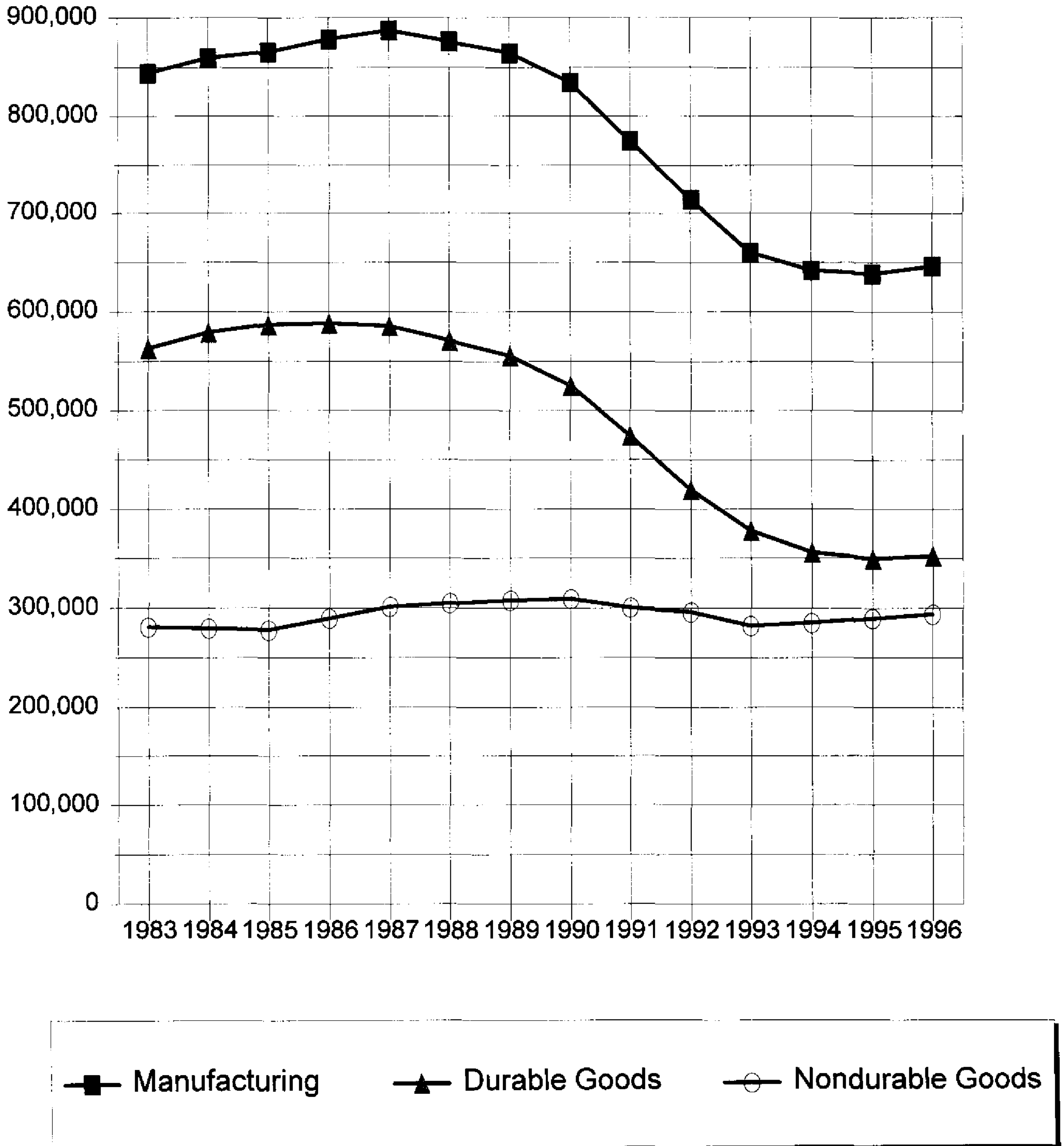
The high wages paid to aerospace workers created significant benefits throughout the economy. Few other communities in the county received greater benefit to the expansion of aircraft industry employment than Long Beach, given the importance of McDonnell-Douglas to the city's employment base. In 1992, despite two years of employment decline, the aircraft industry provided
34,800 jobs (21 percent of Long Beach employment) and paid $1.5 billion to its workers (29 percent of Long Beach payroll).

Signs of employment decline in the aerospace industries were apparent before the end of the Cold War in 1989, which led to substantial reductions in defense spending. Employment in the search and navigation industry peaked at 84,000 jobs in 1985, while jobs were lost in the guided missiles and space vehicles industry throughout the 1983-1996 period. Due to declining employment in these two industries, aerospace employment peaked at 224,600 in 1986 and declined for the next nine years.

The loss of jobs accelerated in 1990 with the first major layoffs in the aircraft industry, which had maintained close to 125,000 jobs in the county between 1986 and 1990. Between 1986 and 1995, 123,700 jobs were lost in the aerospace industry, a 55.1 percent decline. In 1996, the aircraft industry employed 62,700 workers (down 50.2 percent from its 1987 peak of 124,900), followed by the search and navigation equipment industry (34,400 jobs, a 59.0 percent decline from its 1985 peak of 84,000), and the seriously eroded guided missiles and space vehicles industry (4,300 jobs, a 77.8 percent decline from a peak of 19,400 jobs in 1983).

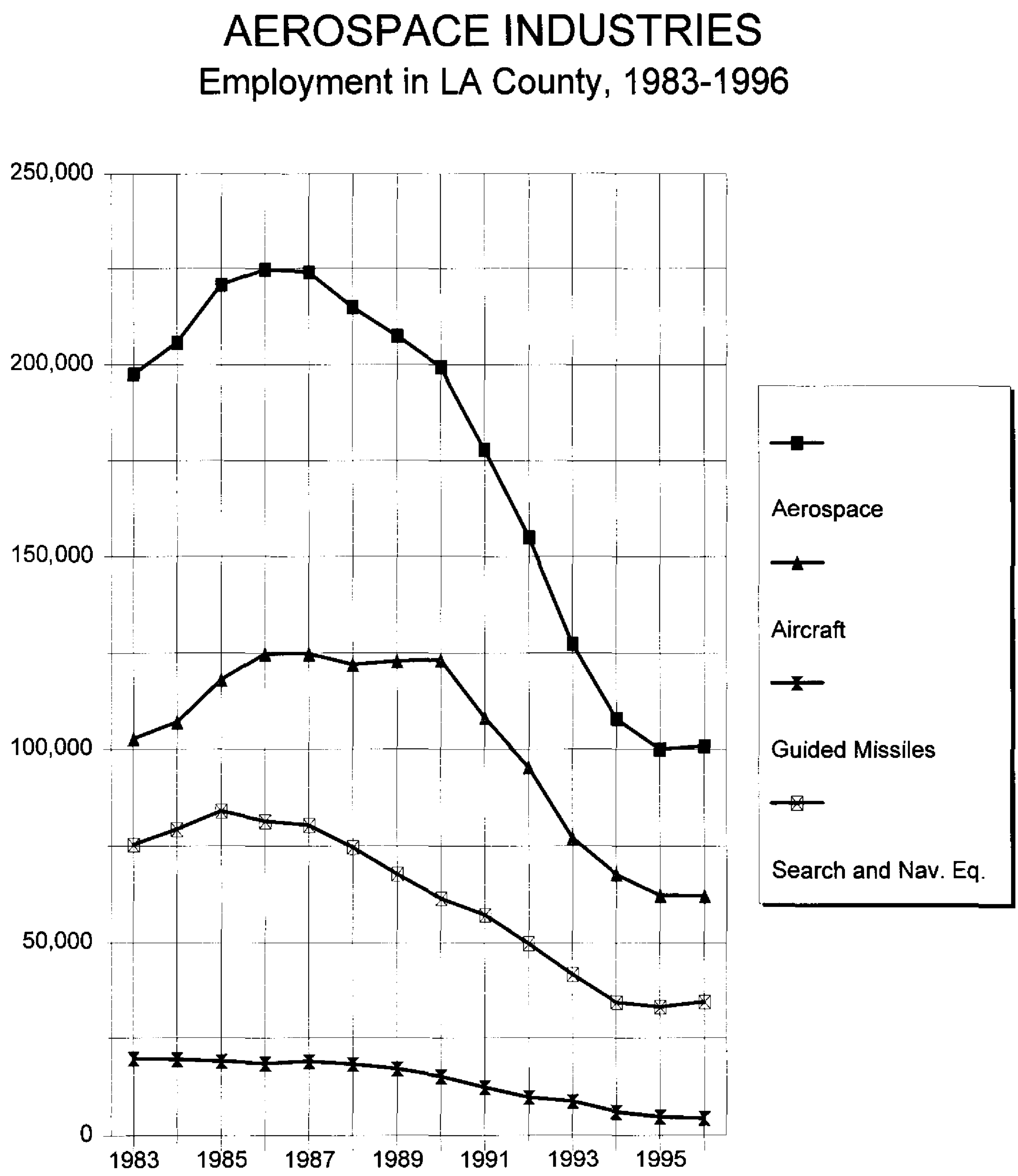
FIGURE 3

MANUFACTURING INDUSTRIES
Employment in LA County, 1983-1996



Source: California EDD, Labor Market Information Division

FIGURE 4



Source: California EDD, Labor Market Information Division

As a result, the durables manufacturing sector lost 236,100 jobs between 1987 and 1996, a 40.1 percent decline. The precipitous decline in aerospace and durables manufacturing jobs bottomed out in 1995. Through 1996, 800 jobs were added in the aerospace industry, while 3,400 jobs were added in durables manufacturing. The aerospace industries remain the major durables manufacturing employers, accounting for 28.6 percent of the sector's jobs in 1996.

Non-Durables Manufacturing

Employment in the non-durables manufacturing sector increased by 12,500 jobs between 1983 and 1996, a 4.4 percent increase (Figure 3). The major non-durables manufacturing employer is the fast-growing apparel industry, which employed 112,700 workers in 1996. This represented a 55 percent increase since 1983. One of the most important factors driving the growth of the Los Angeles apparel industry has been migration from Mexico, Central America, and East Asia, providing apparel firms with a low-wage labor force in close proximity to the downtown Los Angeles apparel district and nearby apparel manufacturers.

Transportation

Employment in the transportation industries grew significantly between 1983 and 1996 to 142,800, a 29.6 percent increase (Figure 5). This is related to the growing importance of international trade and the strategic position of Los Angeles in the Pacific Rim. The Ports of Long Beach and Los Angeles support a variety of goods-transportation industries, such as water transportation, freight forwarding, and trucking.

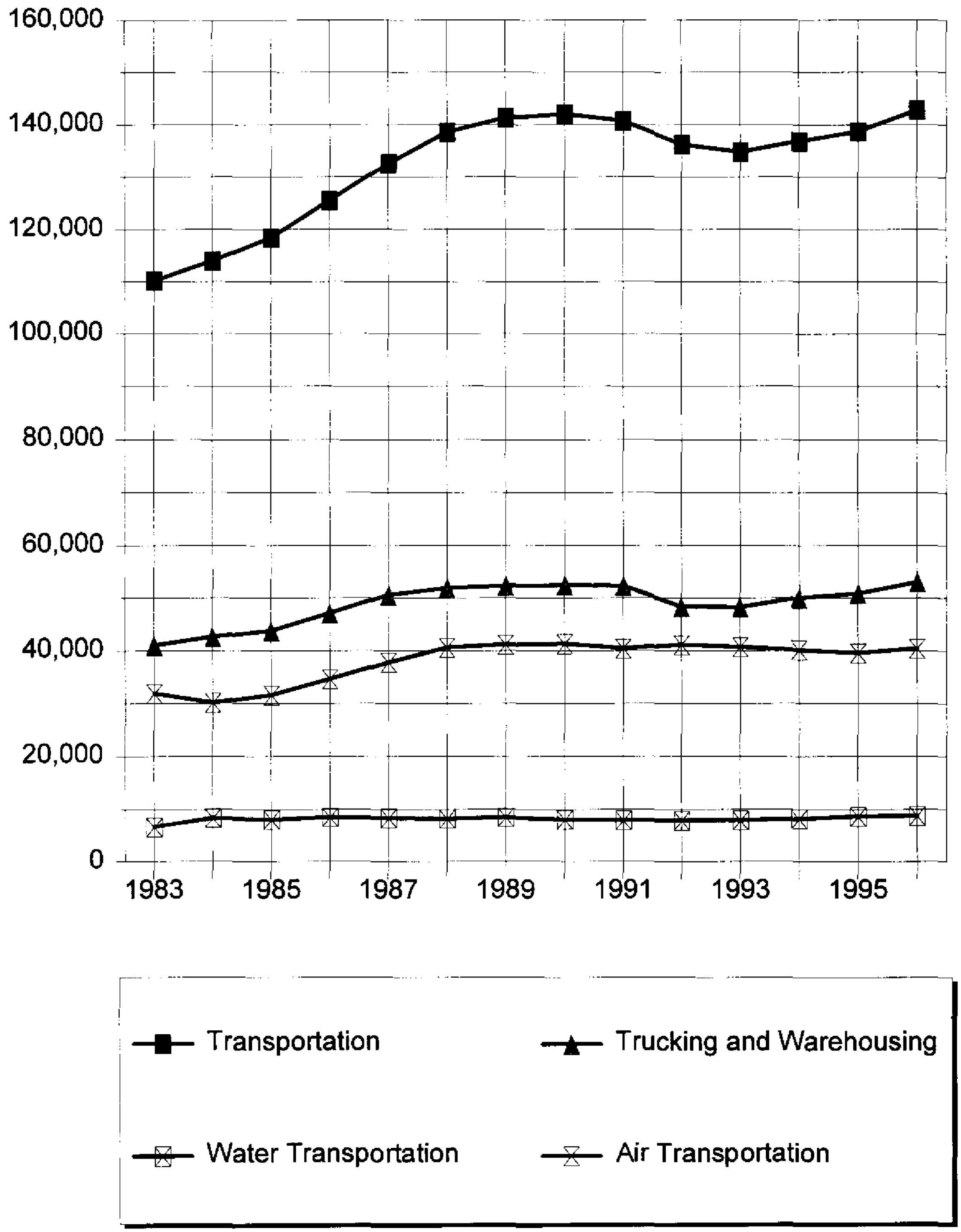
The trucking and warehousing industries added 12,000 jobs between 1983 and 1996, increasing employment by 29.3 percent to 53,000. Employment in the water transportation industries increased from 6,700 to 8,900 during the same period, a 32.8 percent increase.

Wholesale and Retail Trade

Employment in both wholesale and retail trade has declined overall since 1989, with a rapid decrease in employment between 1990 and 1993 followed by three years of slow employment growth (Figures 6 and 7). The wholesale trade industries lost 51,000 jobs between 1989 and 1996, a 16.5 percent decline. This was due to the loss of 76,100 jobs in wholesale trade of durable goods, a consequence of decline in the durables manufacturing sector. On the other hand, employment in non-durables wholesale trade grew by 16,600 jobs between 1983 and 1996, a 17.1 percent increase. In large measure, this growth was related to the expansion of apparel manufacturing in Los Angeles County.

FIGURE 5

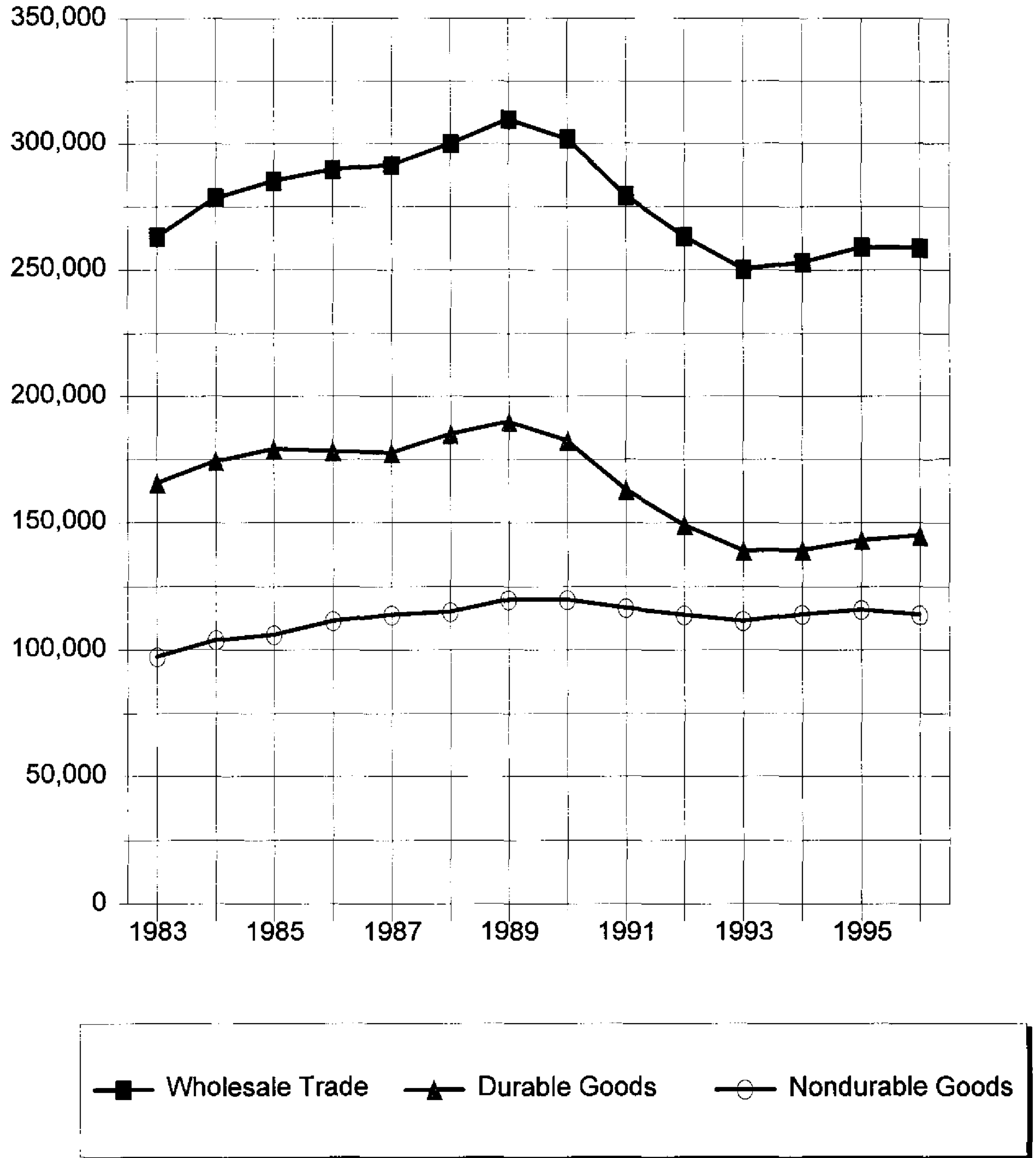
TRANSPORTATION INDUSTRIES
Employment in LA County, 1983-1996



Source: California EDD, Labor Market Information Division

FIGURE 6

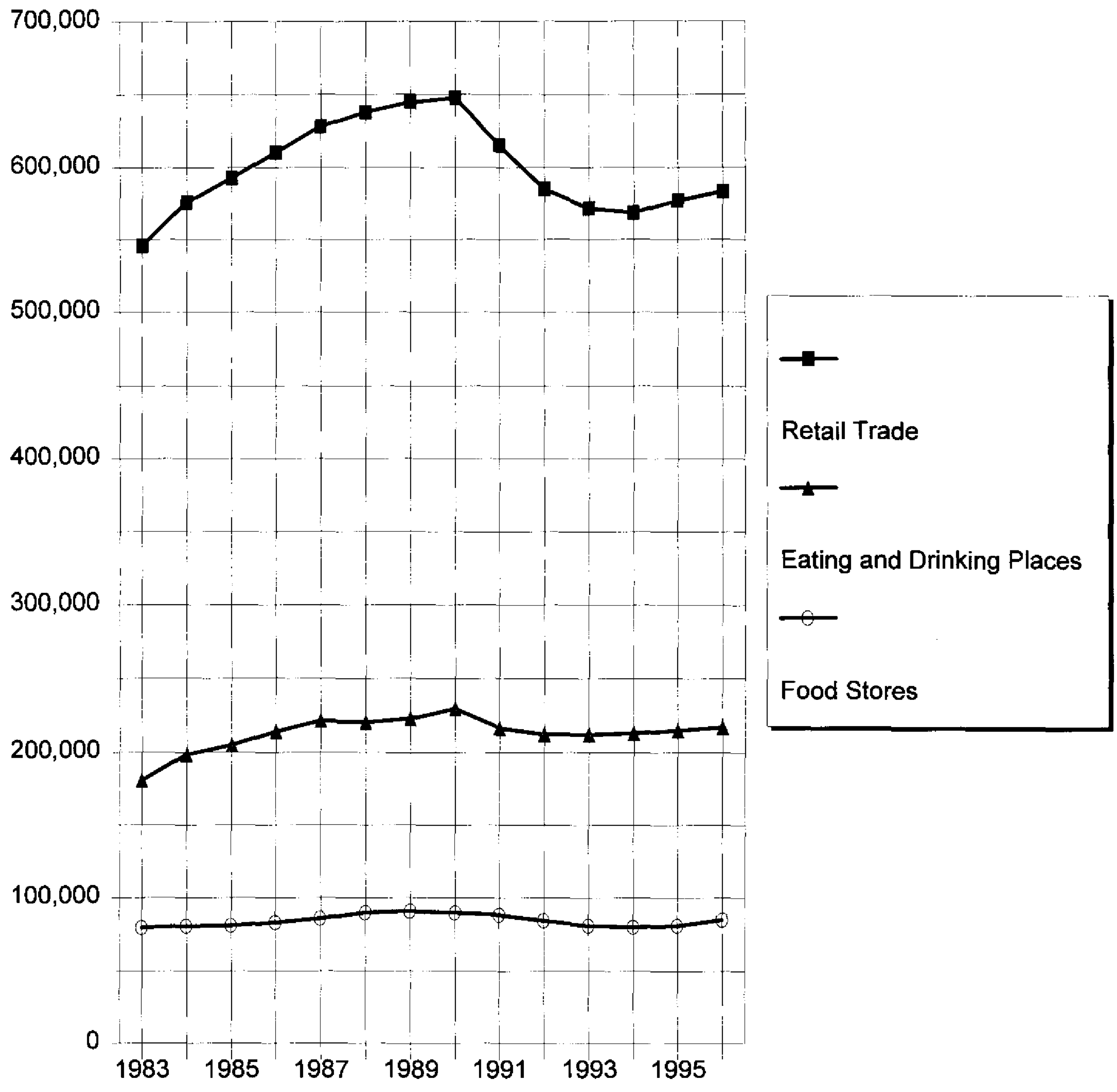
WHOLESALE TRADE
Employment in LA County, 1983-1996



Source: California EDD, Labor Market Information Division

FIGURE 7

RETAIL TRADE
Employment in LA County, 1983-1996



Source: California EDD, Labor Market Information Division

Total employment in retail trade fell by 64,500 jobs between 1990 and 1996, a 10.0 percent decline. Most of these jobs were lost in apparel stores (-17,000 jobs, a 32.9 percent decline), eating and drinking places (-12,800 jobs, a 5.6 percent decline), and general merchandise stores (-11,400 jobs, a 15.9 percent decline).

Finance, Insurance, Real Estate

There have been two equally stark employment trends in the finance, insurance, and real estate industries: steady growth from 1983 to 1990, followed by steady decline through 1996 (Figure 8). From a peak of 277,600 workers in 1990, this sector lost 60,900 jobs between 1990 and 1996, a 21.9 percent decline. Job loss was significant throughout the sector, including finance (-32,000 jobs, a 21.8 percent decline), insurance (-20,900 jobs, a 26.7 percent decline), and real estate (-9,700 jobs, a 16.0 percent decline).

Employment growth during the 1980s resulted from the real estate boom and growing demands for financial services from corporations and consumers in an expanding economy. Factors contributing to the rapid decline of employment in the 1990s include a stagnant housing market and mergers and consolidation in the finance industry, especially banking.

Services

The diverse service industries have been responsible for most employment growth since 1983. Between 1983 and 1996, the service sector added 362,200 jobs as employment grew from 883,100 in 1983 to 1,245,300 in 1996 (Figure 9).

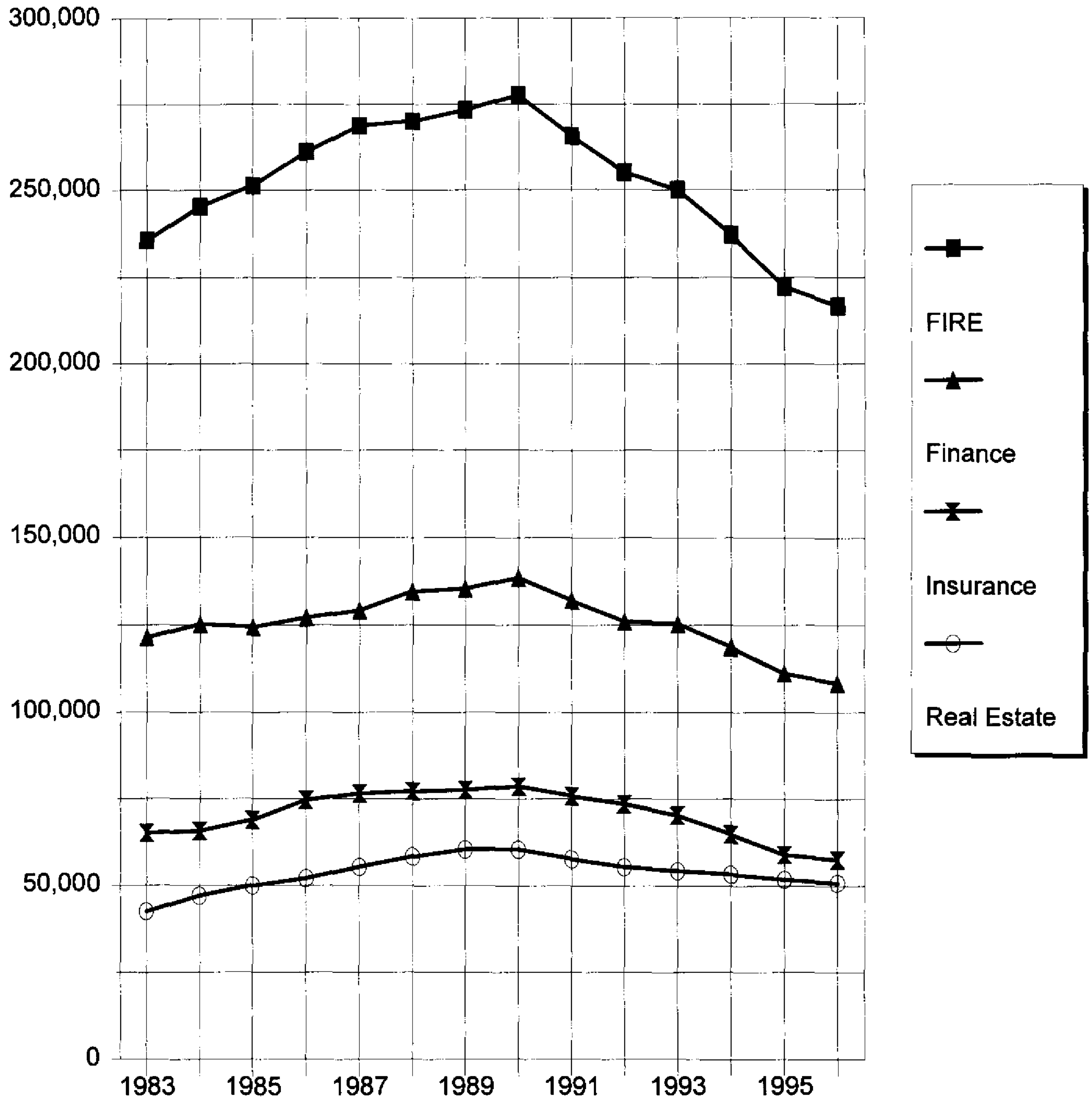
Two industries dominated service employment growth: motion pictures and business services. The motion pictures industry added 71,000 jobs between 1983 and 1996, a 107.7 percent increase. The business services, ranging from temporary help agencies to advertisers and data processing services, increased employment by 84,900 jobs, a 40.8 percent growth rate. Other service industries that grew significantly included health services (adding 39,800 jobs, an 18.0 percent increase), engineering and management services (31,100 jobs, a 35.5 percent increase), and amusement and recreation services (15,000 jobs, a 41.2 percent increase).

The Changing Employment Structure of Los Angeles County, 1983-1996

These trends have altered Los Angeles County's employment structure significantly. The service industries employed one in every three workers in the county in 1996, compared to 25 percent in 1983. The manufacturing industries employed 17 percent of the county workforce in 1996, down from 24 percent in 1983. The employment share of the finance, insurance, and real estate industries is in decline, while that of the transportation industries is growing. The employment share of the wholesale and retail trade industries remained relatively steady between 1983 and 1996.

FIGURE 8

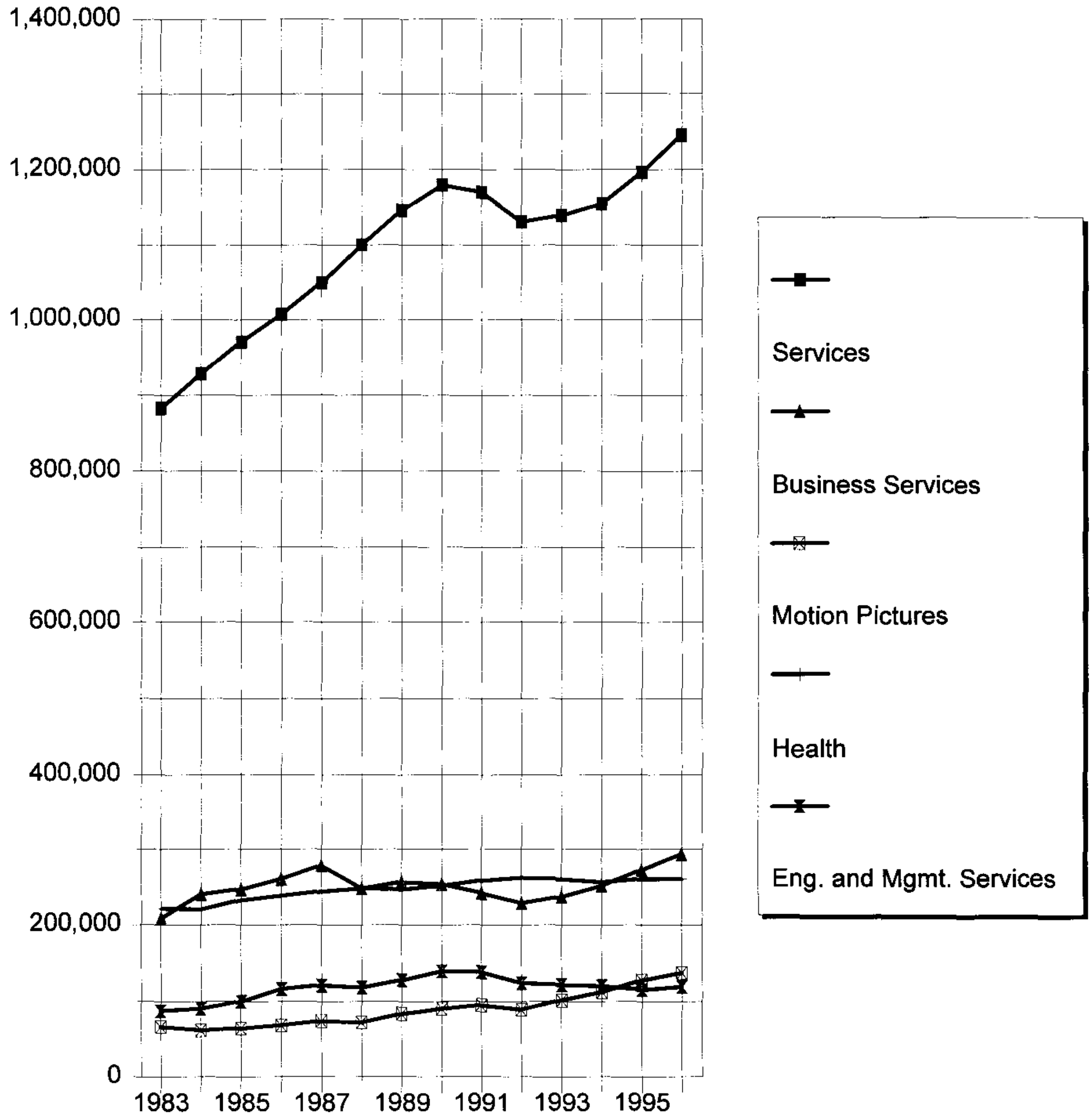
FINANCE, INSURANCE, REAL ESTATE
Employment in LA County, 1983-1996



Source: California EDD, Labor Market Information Division

FIGURE 9

SERVICE INDUSTRIES
Employment in LA County, 1983-1996



Source: California EDD, Labor Market Information Division

3.2 EMPLOYMENT CHANGE BY INDUSTRY, 1992-1996

Most recent employment growth in Los Angeles County has occurred in two industry groups: business services and motion pictures. These industry groups added 112,000 jobs between 1992 and 1996. Employment change by industry between 1992 and 1996 is shown in Figures 11 and 12. Three groups of industries can be distinguished, based on their rate of employment change. These are:

(1) Industries with increasing employment

INDUSTRY	JOB CHANGE	PERCENT CHANGE
Motion Pictures	47,500	+53.0%
Business Services	64,500	+28.2%
Water Transportation	1,000	+12.7%
Auto Dealers and Services	2,900	+5.4%

(2) Industries with stable employment

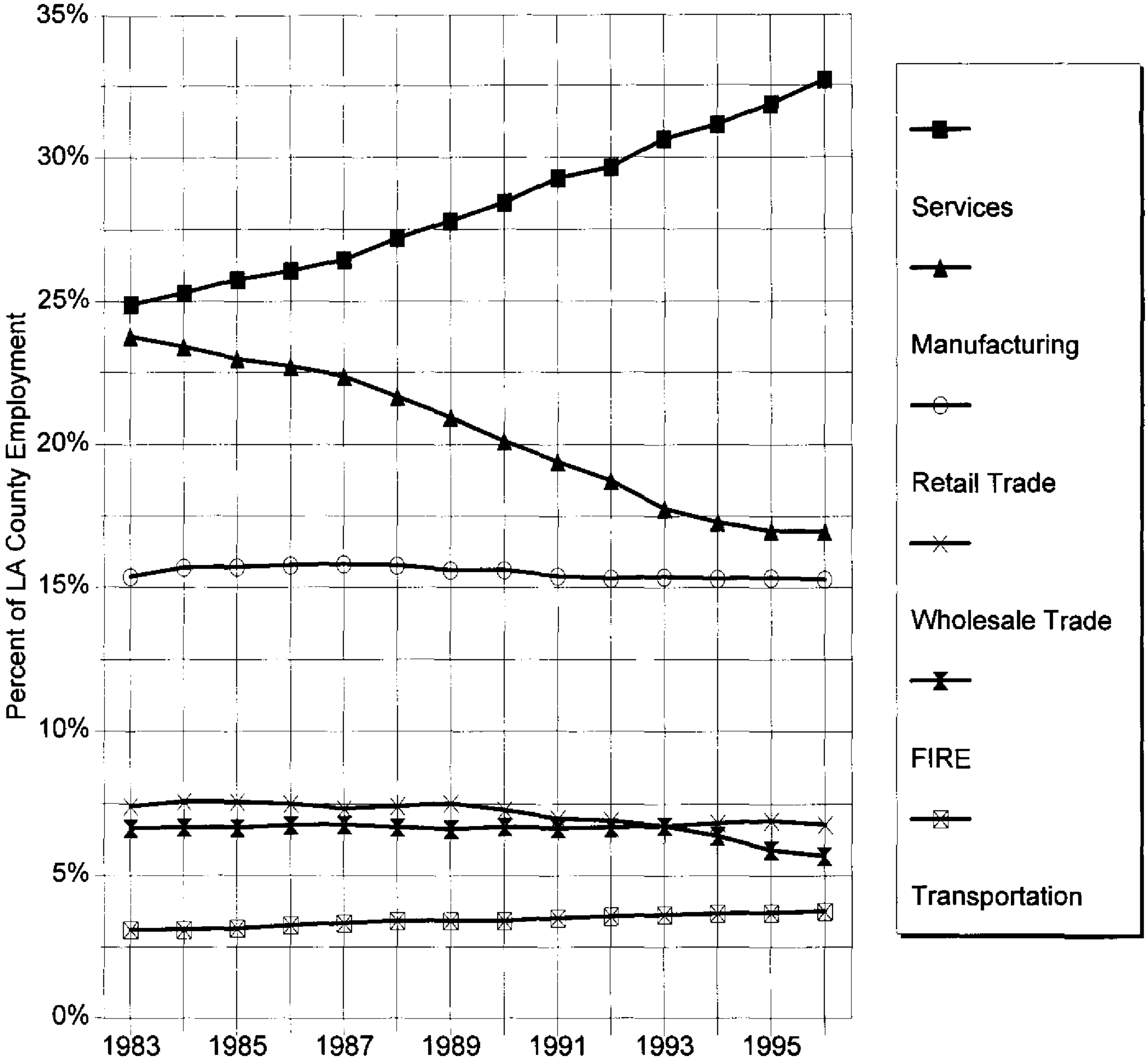
INDUSTRY	JOB CHANGE	PERCENT CHANGE
Transportation Services	1,400	+3.6%
Eating and Drinking Places	4,700	+2.2%
Personal Services	600	+1.6%
Food Stores	800	+0.9%
Miscellaneous Retail	800	+0.7%
Hotels and Other Lodging	0	0.0%
Wholesale-Nondurables	-100	-0.1%
Amusement and Recreation	-200	-0.4%
Health Services	-1,600	-0.6%
Wholesale-Durables	-4,300	-2.9%
Motor Vehicles	-600	-4.2%
Engineering and Mgmt. Ser.	-5,400	-4.4%

(3) Industries with declining employment

INDUSTRY	JOB CHANGE	PERCENT CHANGE
Real Estate	-4,500	-8.1%
Banking	-18,300	-21.4%
Insurance	-15,900	-21.7%
Aerospace	-54,000	-34.9%

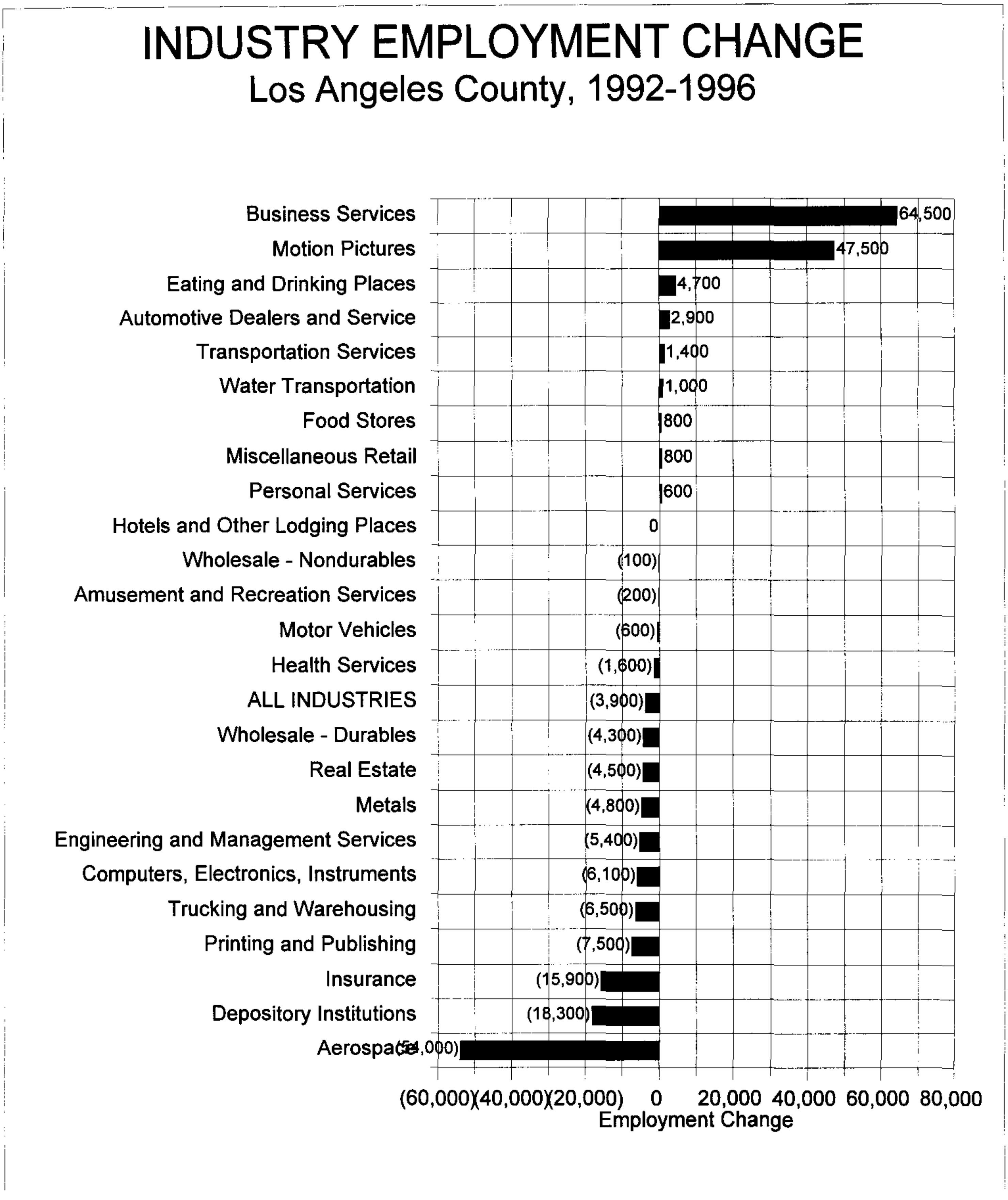
FIGURE 10

EMPLOYMENT STRUCTURE
Los Angeles County, 1983-1996



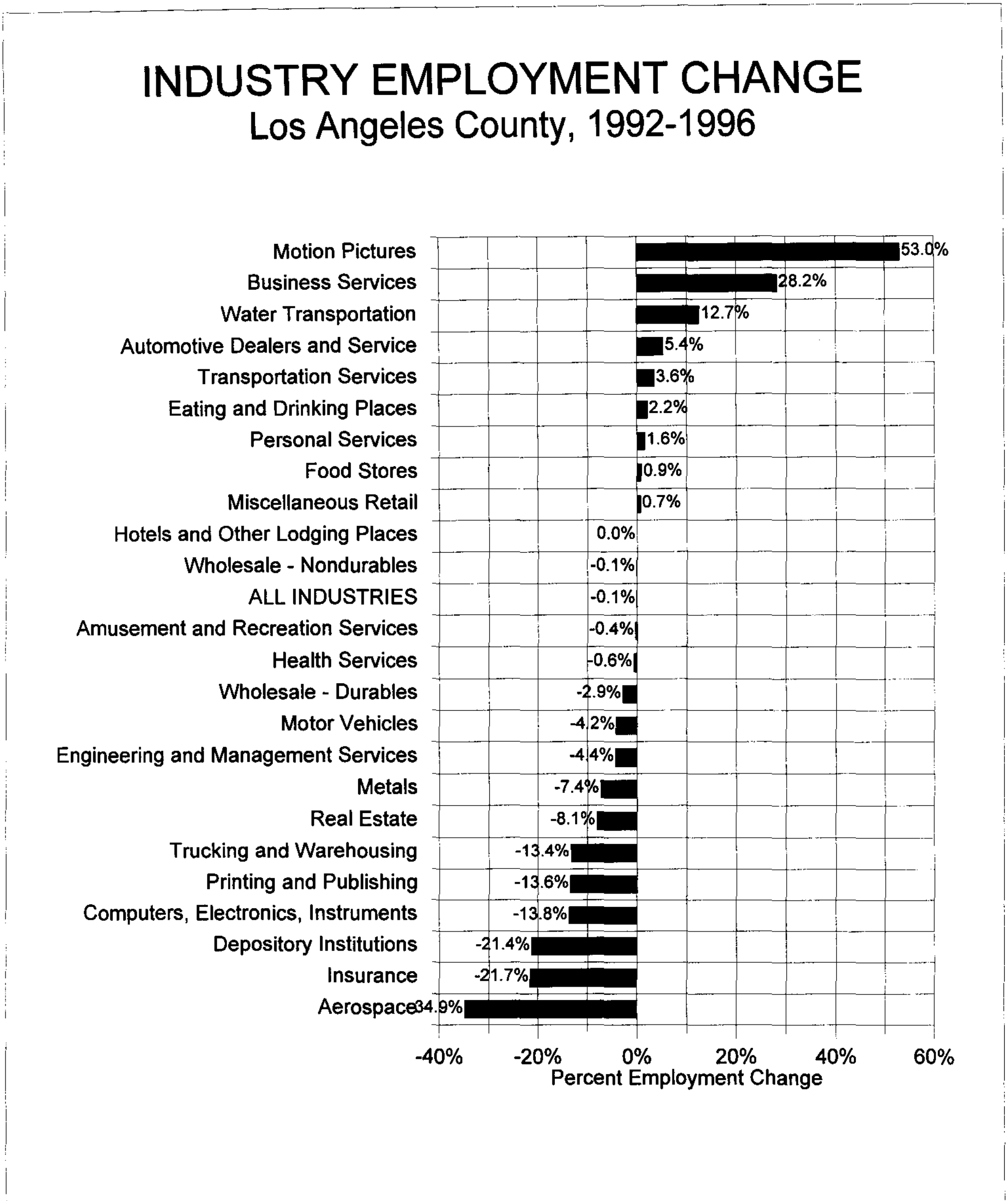
Source: California EDD, Labor Market Information Division

FIGURE 11



INDUSTRY EMPLOYMENT CHANGE
Los Angeles County, 1992-1996
Business Services
Motion Pictures
Eating and Drinking Places
Automotive Dealers and Service
Transportation Services
Water Transportation
Food Stores
Miscellaneous Retail
Personal Services
Hotels and Other Lodging Places
Wholesale - Nondurables
Amusement and Recreation Services
Motor Vehicles
Health Services
ALL INDUSTRIES
Wholesale - Durables
Real Estate
Metals
Engineering and Management Services
Computers, Electronics, Instruments
Trucking and Warehousing
Printing and Publishing
Insurance
Depository Institutions
Aerospace
64,500
47,500
4,700
2,900
1,400
1,000
800
800
600
0
(100)
(200)
(600)
(1,600)
(3,900)
(4,300)
(4,500)
(4,800)
(5,400)
(6,100)
(6,500)
(7,500)
(15,900)
(18,300)
(54,000)
(60,000) (40,000) (20,000) 0 20,000 40,000 60,000 80,000
Employment Change

FIGURE 12


INDUSTRY EMPLOYMENT CHANGE
Los Angeles County, 1992-1996
Motion Pictures
Business Services
Water Transportation
Automotive Dealers and Service
Transportation Services
Eating and Drinking Places
Personal Services
Food Stores
Miscellaneous Retail
Hotels and Other Lodging Places
Wholesale - Nondurables
ALL INDUSTRIES
Amusement and Recreation Services
Health Services
Wholesale - Durables
Motor Vehicles
Engineering and Management Services
Metals
Real Estate
Trucking and Warehousing
Printing and Publishing
Computers, Electronics, Instruments
Depository Institutions
Insurance
Aerospace
53.0%
28.2%
12.7%
5.4%
3.6%
2.2%
1.6%
0.9%
0.7%
0.0%
-0.1%
-0.1%
-0.4%
-0.6%
-2.9%
-4.2%
-4.4%
-7.4%
-8.1%
-13.4%
-13.6%
-13.8%
-21.4%
-21.7%
-34.9%
-40%
-20%
0%
20%
40%
60%
Percent Employment Change

PART TWO

LONG BEACH BUSINESS CONDITIONS
Analysis of Long Beach Business Survey Data from 1994 through 1997

1. INTRODUCTION

Long Beach has completed four annual cycles of surveying firms in the City to assess business conditions and needs. A total of 1,532 firms have responded to surveys over the four years, providing information about business trends in each firm as well as perceptions of overall business conditions in Long Beach. The large survey data base that has been created makes it possible to identify long-term trends in Long Beach's business environment as well as make detailed assessments of conditions in a number of specific industries.

Long Beach Industry Structure

Employment Development Department's Industrial-Commercial Employer (I.C.E.) data base created in 1992 was used to map Long Beach's industry structure. This map of Long Beach's economic "universe" was an important tool for understanding the proportion of industries that are in different sectors, some of which have highly divergent trends, as well as for understanding how to sample businesses for the Business Outreach Survey.

I.C.E. is the most comprehensive and accurate information available for describing industry employment and payroll at the level of cities and communities within Los Angeles County. It describes the jobs that are present in the city, rather than the jobs of city residents, many of whom work outside Long Beach.

I.C.E. data includes all businesses paying payroll taxes to the State of California, that is, businesses that have employees and pay legally required employee benefits (Social Security, Medicare, Unemployment Insurance). It does not include businesses that do not have "payrolls", for example the following kinds of businesses are not included:

- self-employed professionals such as accountants, lawyers, physicians, or consultants who do not have employees
- employers who use only contract workers
- individuals who own and manage rental property
- individuals who operate a one-person business such as selling merchandise at conventions and public events
- businesses operating in the "underground" economy

Reliability of Long Beach Survey Data

There are at least four reasons for believing that the Business Outreach Surveys provide reliable information. First, the number of firms responding to the survey from 1994 through 1997 is equivalent to over one-quarter of the businesses with payrolls in Long Beach. As shown by the Figure 13, the large survey sample (1,532 responses) reduces the margin of error for total survey responses to less than +/- 3% (the margin of error for industry sub-groups or different survey years varies). A second source of validation, in addition to the large size of the survey sample, is the presence of clear, continuing trends across all four survey cycles in most business indicators, with each cycle reinforcing findings from previous cycles. A third source of validation is that industry sub-groups show similar trends regarding most key business indicators, providing additional internal validation within the survey data. And, fourth, while the survey data captures a good sampling of small businesses, it is tilted toward large employers, so the share of Long Beach's economy represented by the survey data is larger than the share of businesses. Firms responding to the survey account for 55% of Long Beach's private sector payroll.

Firms Surveyed and Industry Structure

Figures 14 and 15 show that the 1,532 firms responding over four survey cycles closely mirror Long Beach's overall industry base. Industry sectors with smaller numbers of firms, including manufacturing, transportation and wholesale have been over-sampled to obtain a reliable number of responses. The retail and service sectors, which have the largest numbers of firms, have been somewhat under-sampled, but with response numbers that yield high reliability.

Summary of Survey Responses

A roll-up of answers from all 1,532 firms responding to the mail survey from 1994 through 1997 is shown in Figure 16. Plans to expand sales and employment, as well as the assessment that Long Beach is a positive location for business rank high in the overall profile of responses. Problematic business conditions are reflected by a significant minority of firms reporting that sales have decreased and that their industry is in recession.

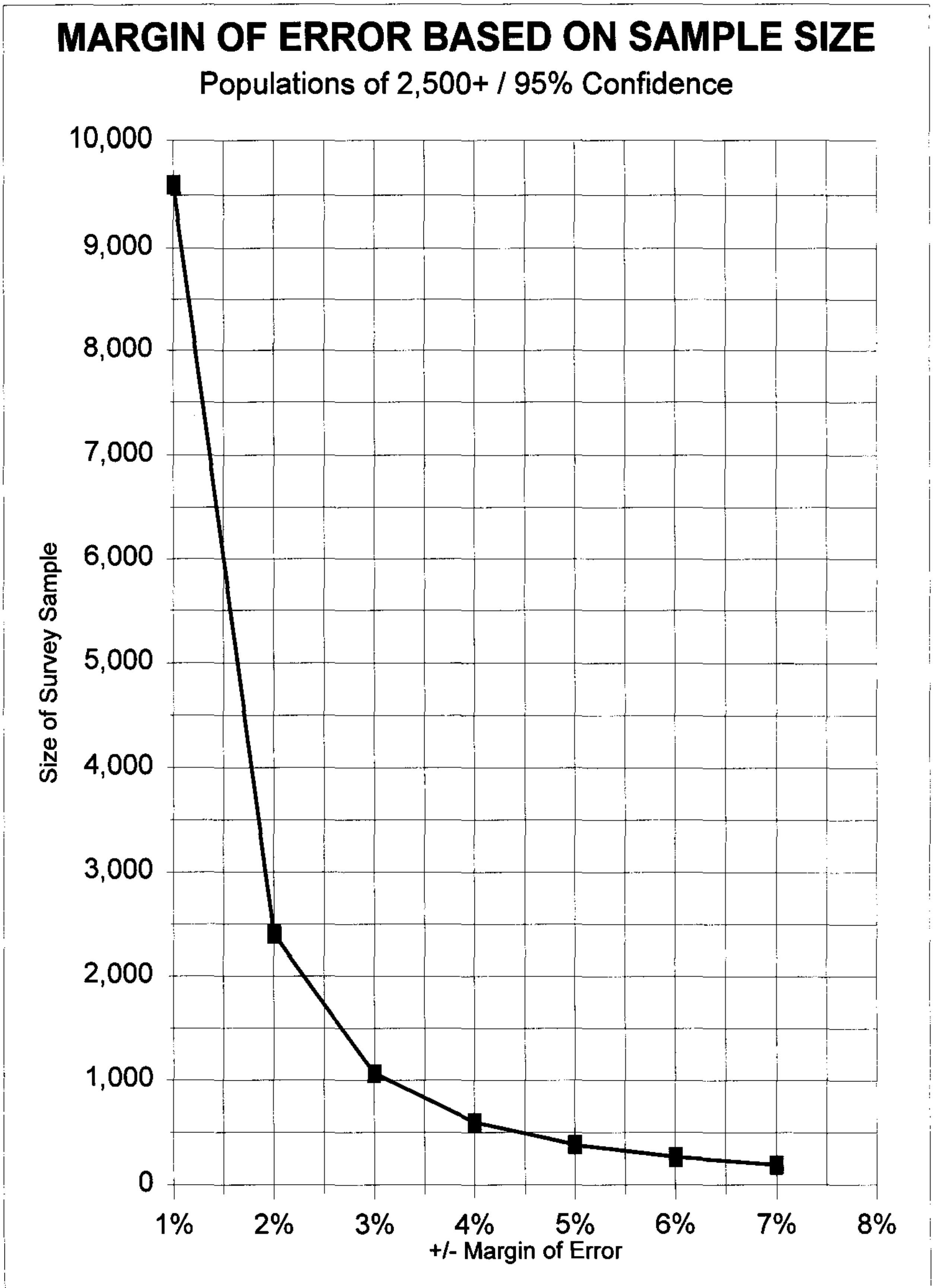
2. *ANALYSIS OF KEY BUSINESS INDICATORS*

For each of the past four years Long Beach firms have been asked eight bottom-line questions about business trends and perceptions of the City's business environment.

1. Company perceives Long Beach to be a positive location for business

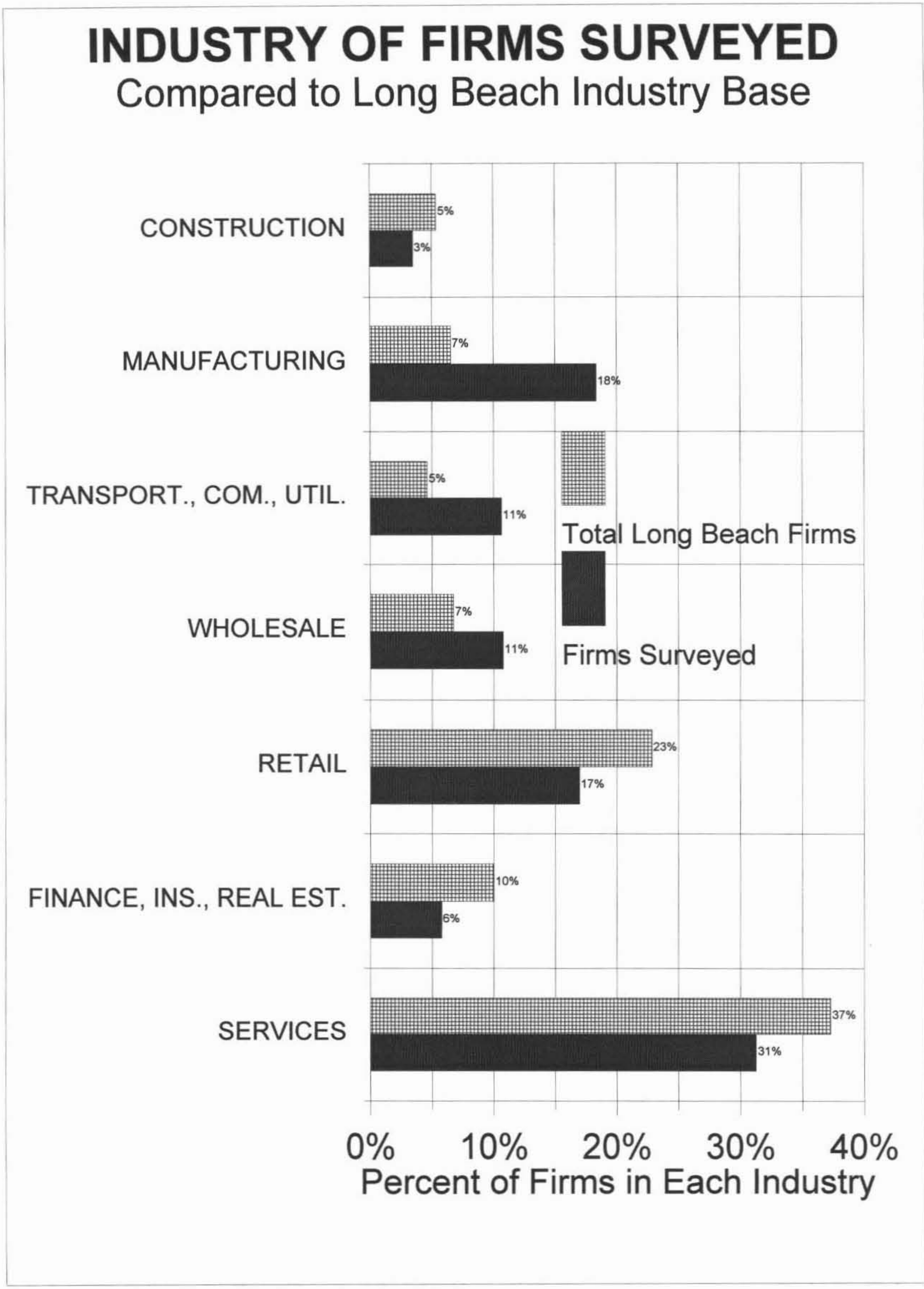
In 1994, 54% of firms responding to the business survey said Long Beach was a positive location for business. By 1997 the favorable response rate had increased to 57%, an improvement of three percentage points. More than three-quarters of transportation-linked firms

FIGURE 13



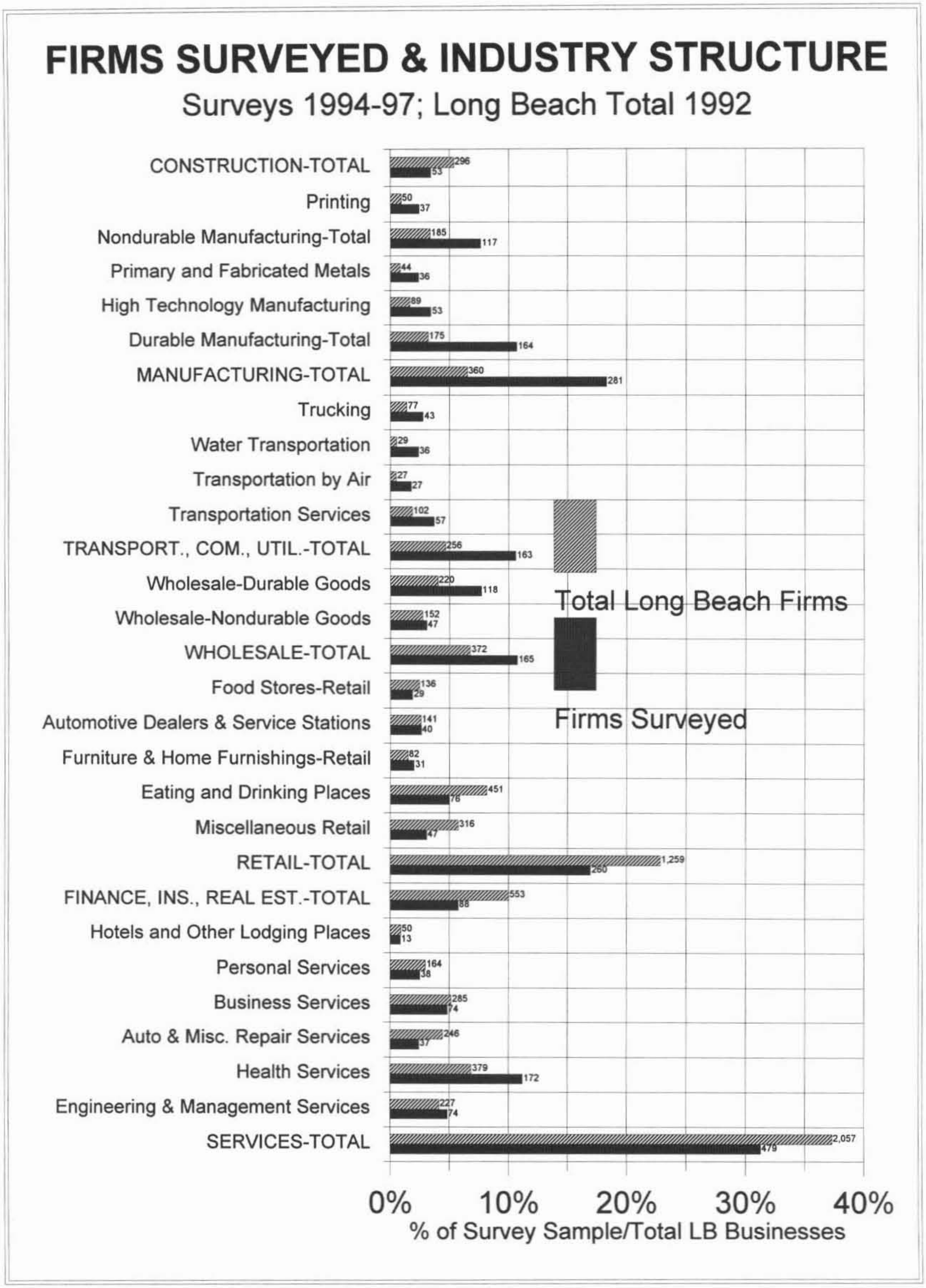
MARGIN OF ERROR BASED ON SAMPLE SIZE
Populations of 2,500+ / 95% Confidence
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Size of Survey Sample
1%
2%
3%
4%
5%
6%
7%
8%
+/- Margin of Error

FIGURE 14



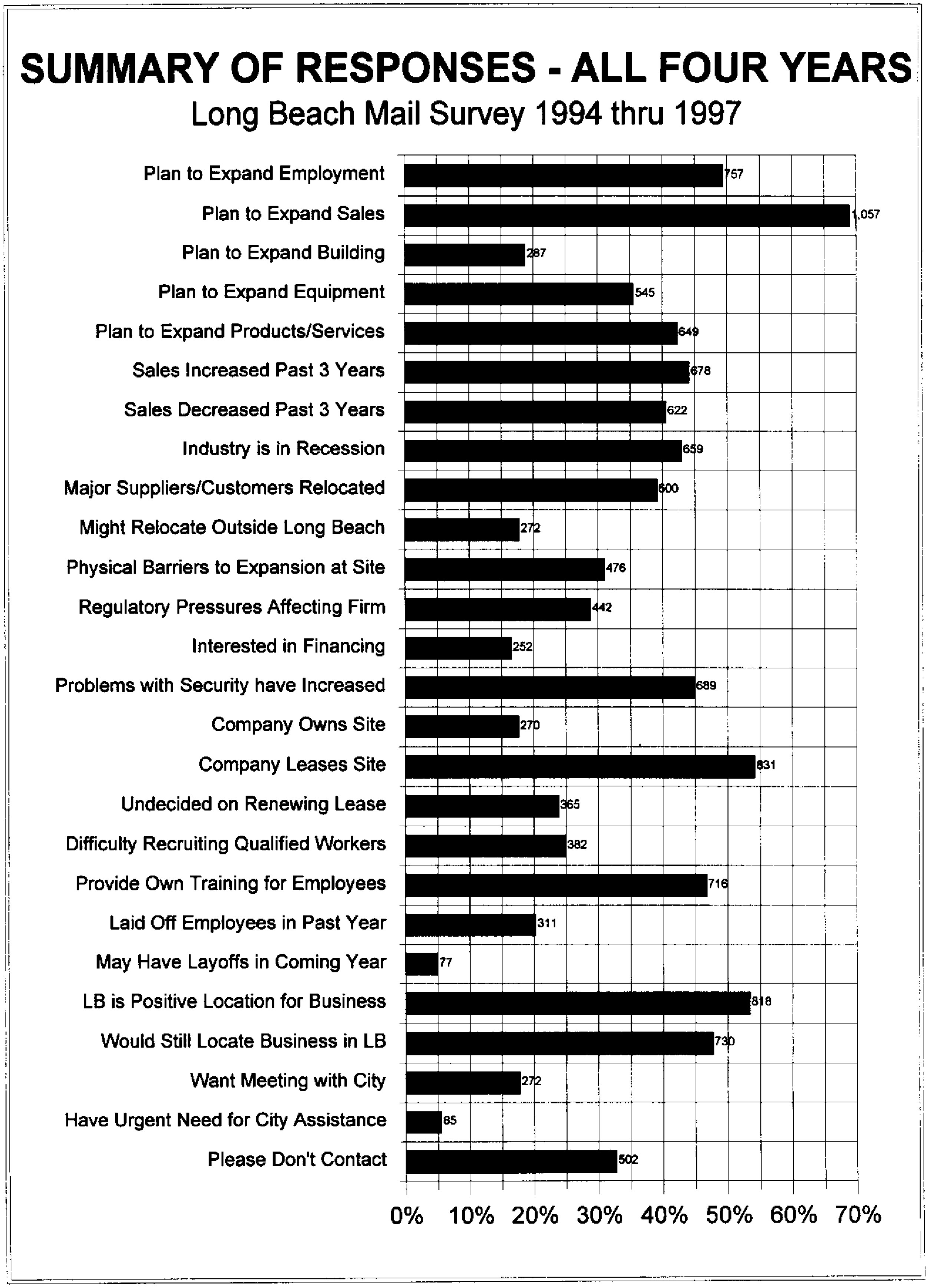
Data sources: Long Beach firms surveyed 1994-97; EDD 1992 I.C.E. data for Long Beach.

FIGURE 15



Data sources: Long Beach firms surveyed 1994-97; EDD 1992 I.C.E. data for Long Beach.

FIGURE 16



Data sources: Long Beach firms surveyed 1994-97; EDD 1992 I.C.E. data for Long Beach.

offered this positive assessment in 1997, followed by more than two-thirds of wholesale firms (Figures 17). Combining 1,532 responses from all four years, the five industries that are most positive, as well as the five that are least positive, about Long Beach are:

Most Positive

- water transportation
- furniture and home furnishings-retail
- finance, insurance and real estate
- wholesale-nondurable goods
- primary and fabricated metals

Least Positive

- miscellaneous retail
- transportation by air
- eating and drinking places
- printing
- automotive dealers and service stations

2. Would choose Long Beach if selecting a business location today

In 1994, 45% of all firms responding to the survey said they would still choose Long Beach if they were selecting a business location today. By 1997 the favorable response rate for all firms had increased to 51%, an improvement of six percentage points. Responses to this question can also be calculated based on just those firms answering the question. In 1994, 52% of those answering said they would still select Long Beach and in 1997, 62% gave this response, an increase of ten percentage points. Improvement was greatest in transportation-linked industries (Figure 18).

Combining responses from all four years, the industries that are have the strongest, as well as weakest, inclinations to locate in Long Beach are:

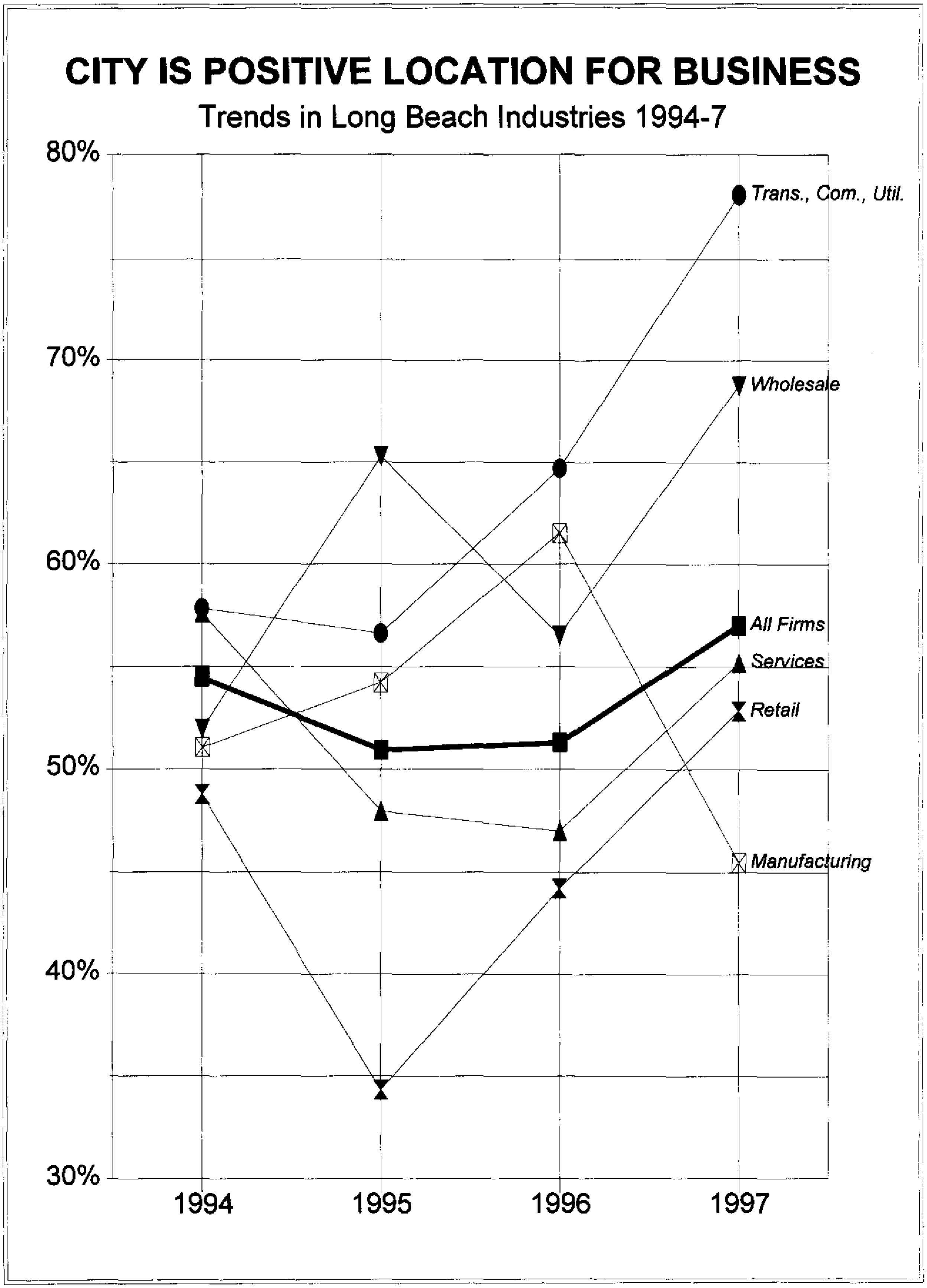
Most Likely to Locate

- water transportation
- hotels
- finance, insurance and real estate
- food stores-retail
- business services

Least Likely to Locate

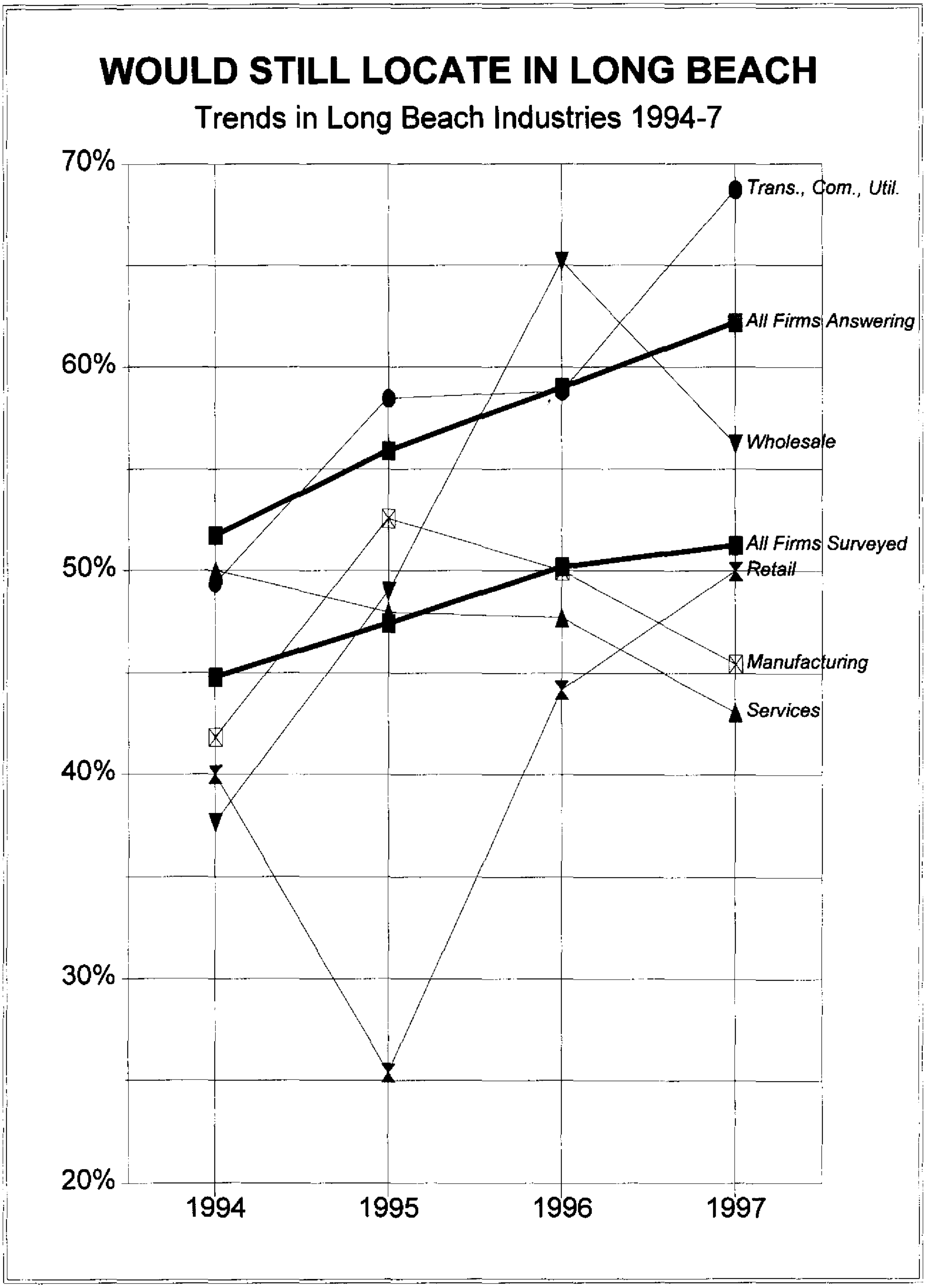
- automotive dealers and service stations
- transportation by air
- automotive and miscellaneous repair services
- high technology manufacturing
- miscellaneous retail

FIGURE 17



CITY IS POSITIVE LOCATION FOR BUSINESS
Trends in Long Beach Industries 1994-7
80%
70%
60%
50%
40%
30%
1994
1995
1996
1997
Trans., Com., Util.
Wholesale
All Firms
Services
Retail
Manufacturing

FIGURE 18


WOULD STILL LOCATE IN LONG BEACH
Trends in Long Beach Industries 1994-7
70%
60%
50%
40%
30%
20%
1994
1995
1996
1997
Trans., Com., Util.
All Firms Answering
Wholesale
All Firms Surveyed
Retail
Manufacturing
Services

3. Company has experienced increasing sales during the past 3 years

In 1994, 43.5% of firms said sales had increased over the past three years. In 1997 this percentage was 44.4%, an improvement of nine-tenths of a percentage point. While overall improvement in this indicator was small, the retail and wholesale sectors showed much more dramatic improvement (Figure 19).

Combining responses from all four years, the industries that had the strongest, as well as the weakest, improvement in sales are:

Sales Most Improved

- water transportation
- transportation services
- wholesale-nondurable goods
- finance, insurance, real estate
- business services

Sales Least Improved

- food stores-retail
- miscellaneous retail
- automotive dealers and service stations
- automotive and miscellaneous repair services
- hotels

4. Company has experienced decreasing sales during the past 3 years

In 1994, 47% of firms said sales had decreased over the past three years. In 1997 this percentage was 29%, a drop of eighteen percentage points in the number of firms offering this bleak news. This improvement is reported across the board by all major industry groups in Long Beach (Figure 20).

Combining responses from all four years, industries that had the lowest incidence, as well as those with the highest incidence, of decreasing sales are:

Least Decrease in Sales

- water transportation
- transportation services
- finance, insurance, real estate
- wholesale-nondurable goods
- business services

Most Decrease in Sales

- hotels
- miscellaneous retail
- automotive dealers and service stations
- automotive and miscellaneous repair services
- engineering and management services

FIGURE 19

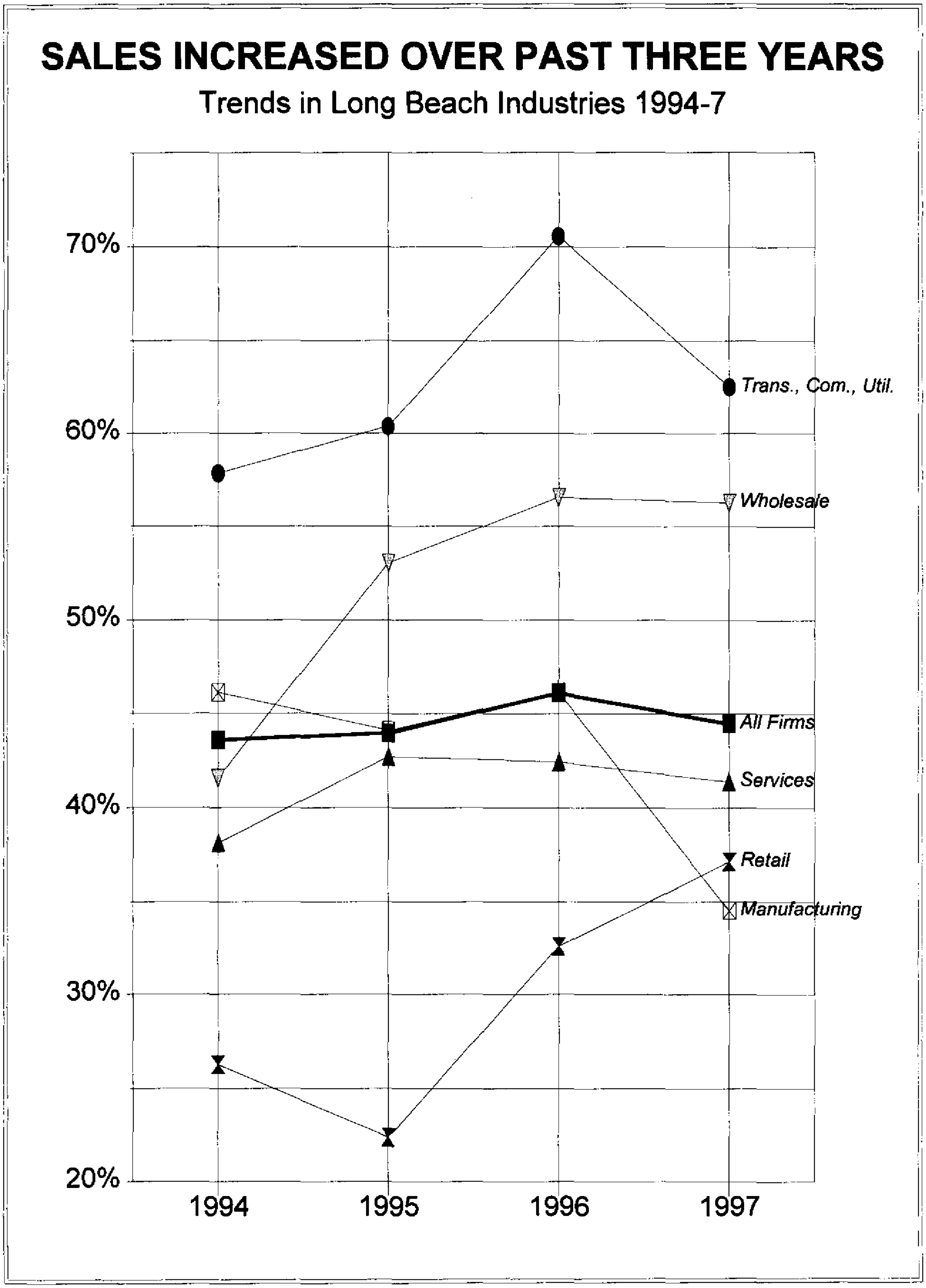
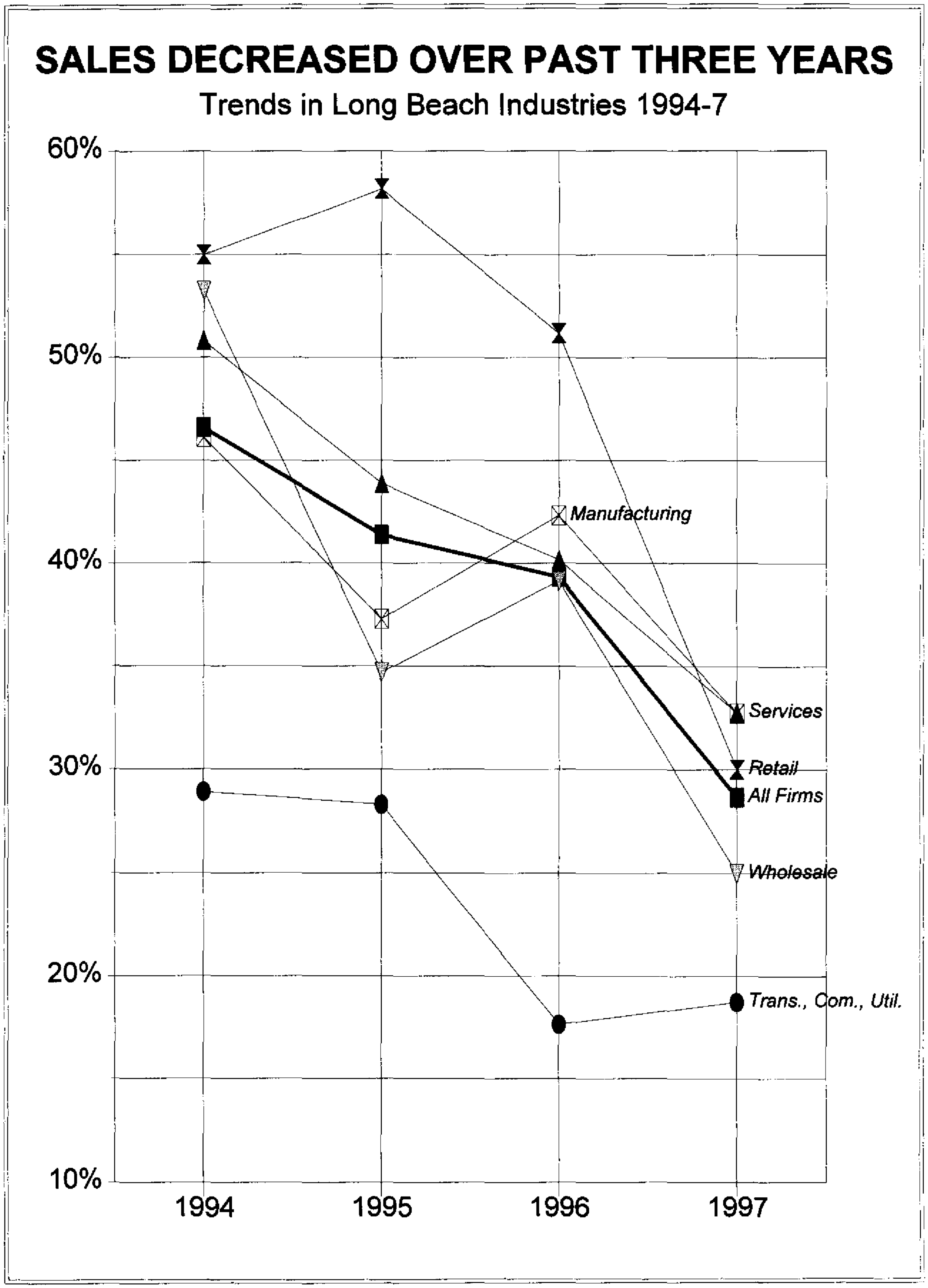

SALES INCREASED OVER PAST THREE YEARS
Trends in Long Beach Industries 1994-7
70%
60%
50%
40%
30%
20%
1994
1995
1996
1997
Trans., Com., Util.
Wholesale
All Firms
Services
Retail
Manufacturing

FIGURE 20



SALES DECREASED OVER PAST THREE YEARS
Trends in Long Beach Industries 1994-7
60%
50%
40%
30%
20%
10%
1994
1995
1996
1997
Manufacturing
Services
Retail
All Firms
Wholesale
Trans., Com., Util.

5. Company perceives its industry to be in recession or general downturn

In 1994, 51% of firms said was in a recession or general downturn. In 1997 this percentage was 30%, a drop of twenty-one percentage points in the number of firms who felt the economy constricting around them. This improvement is reported across the board by all major industry groups (Figures 21).

Combining responses from all four years, industries that had the lowest incidence, as well as those with the highest incidence, of perceiving their industry to be in recession are:

Most Perception of Recession

- eating and drinking places
- primary and fabricated metals
- health services
- automotive and miscellaneous repair services
- wholesale-durable goods

Least Perception of Recession

- water transportation
- furniture and home furnishings-retail
- trucking
- wholesale-nondurable goods
- printing

6. Major customers or suppliers have closed or relocated during the past three years

In 1994, 49% of firms said major customers or suppliers had left the area over the past three years. In 1997 this percentage was 27%, a drop of twenty-three percentage points in the number of firms losing suppliers and customers. This improvement is reported across the board by all major industry groups (Figure 22).

Combining responses from all four years, industries that had the lowest incidence, as well as those with the highest incidence, of losing major customers and suppliers are:

Least Loss of Customers/Suppliers

- water transportation
- transportation services
- personal services
- finance, insurance, real estate
- health services

Most Loss of Customers/Suppliers

- transportation by air
- wholesale-durable goods
- hotels
- primary and fabricated metals
- miscellaneous retail

FIGURE 21

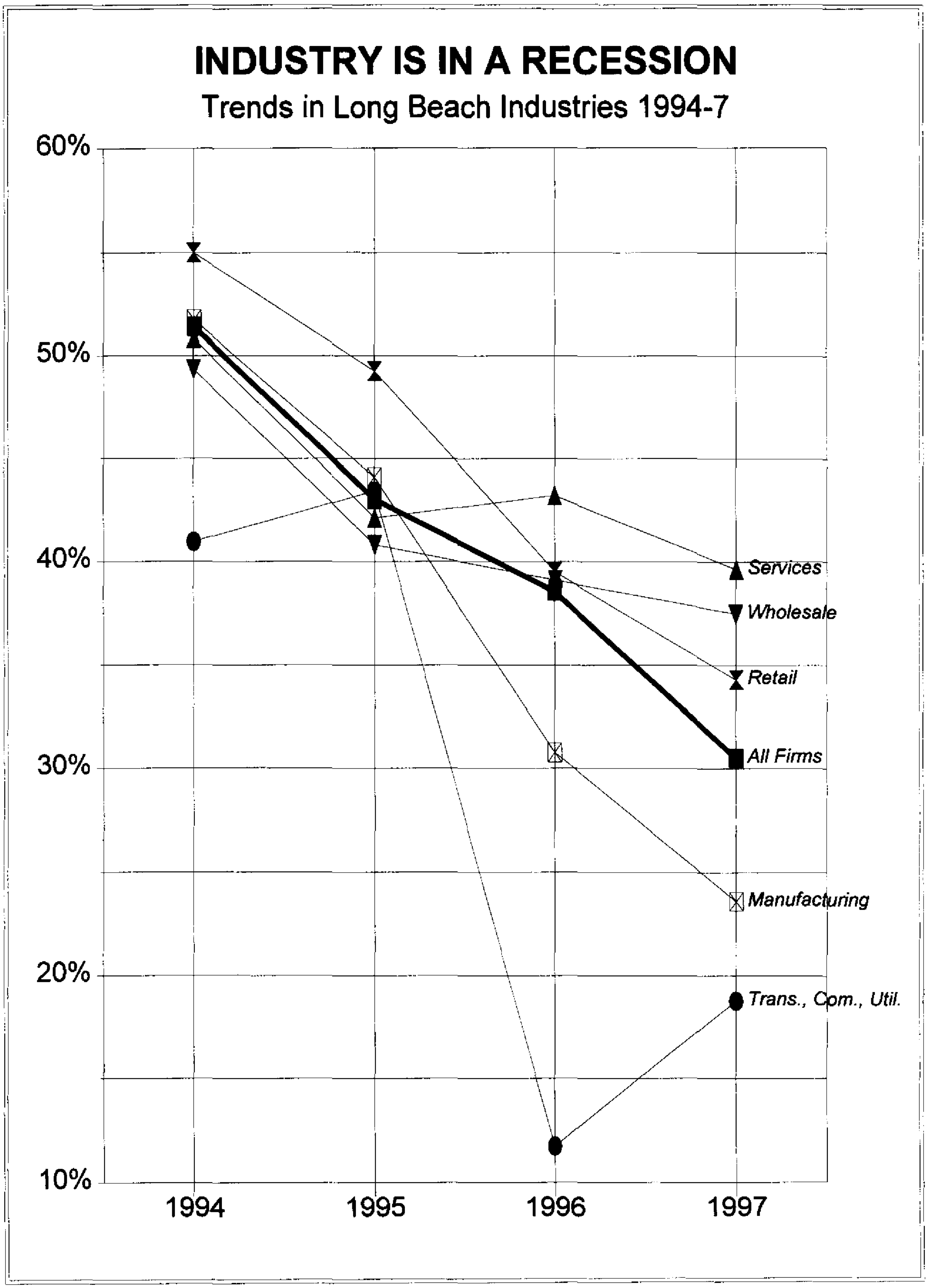
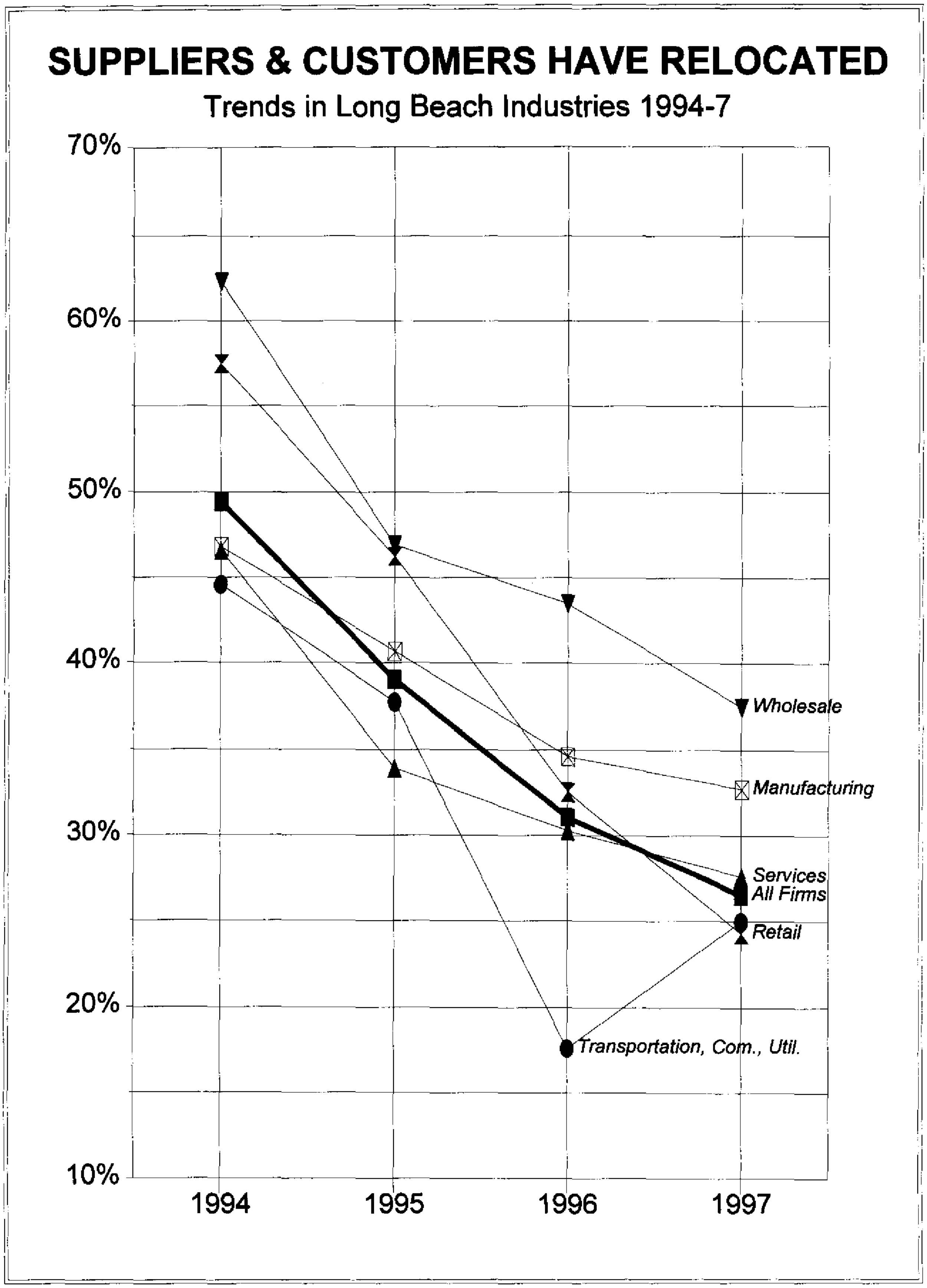

INDUSTRY IS IN A RECESSION
Trends in Long Beach Industries 1994-7
60%
50%
40%
30%
20%
10%
1994
1995
1996
1997
Services
Wholesale
Retail
All Firms
Manufacturing
Trans., Com., Util.

FIGURE 22


SUPPLIERS & CUSTOMERS HAVE RELOCATED
Trends in Long Beach Industries 1994-7
70%
60%
50%
40%
30%
20%
10%
1994
1995
1996
1997
Wholesale
Manufacturing
Services
All Firms
Retail
Transportation, Com., Util.

7. Company has laid off employees in the past year

In 1994, 24% of firms said they laid off workers during the past year. In 1997 this percentage was 15%, a drop of nine percentage points in the number of firms cutting jobs. All major industry groups report this improvement (Figure 23).

Combining responses from all four years, industries that had the lowest incidence, as well as those with the highest incidence, of worker lay offs are:

Least Layoffs

- personal services
- furniture and home furnishings-retail
- transportation services
- eating and drinking places
- finance, insurance, real estate

Most Layoffs

- primary and fabricated metals
- automotive dealers and service stations
- printing
- engineering and management services
- durable manufacturing

8. Problems with security and safety have increased in the last three years

In 1994, 50% of firms said that problems with crime and safety were getting worse. In 1997 this percentage was 35%, a drop of fifteen percentage points in the number of firms reporting worsening security problems. This is a dramatic improvement, with roughly a one-third reduction of the number of firms in all major industry groups reporting increasing security problems (Figure 24).

Combining responses from all four years, industries that had the lowest incidence, as well as those with the highest incidence, of worsening security problems are:

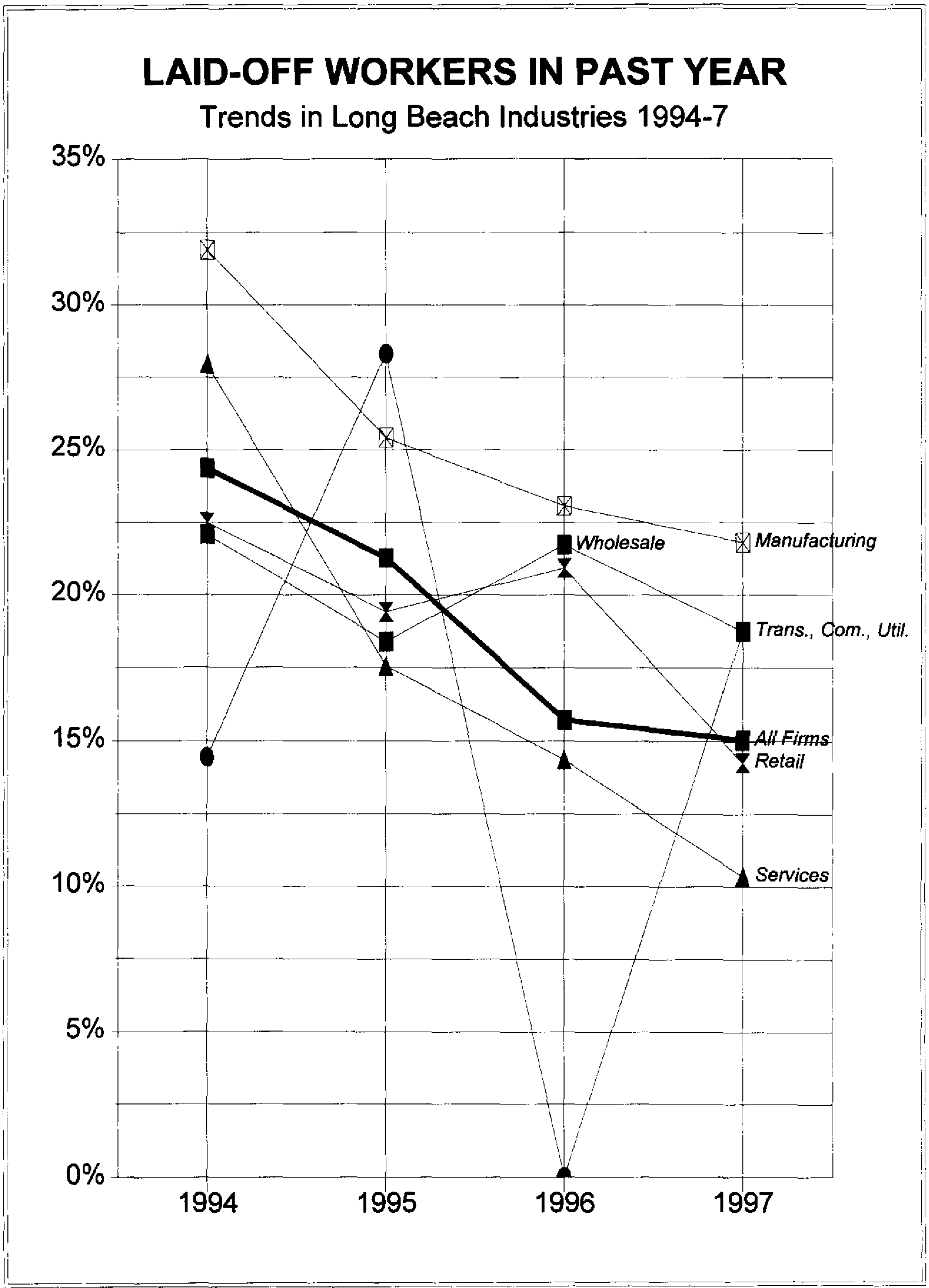
Least Security Problems

- water transportation
- transportation by air
- transportation services
- wholesale-nondurable goods
- finance, insurance, real estate

Most Security Problems

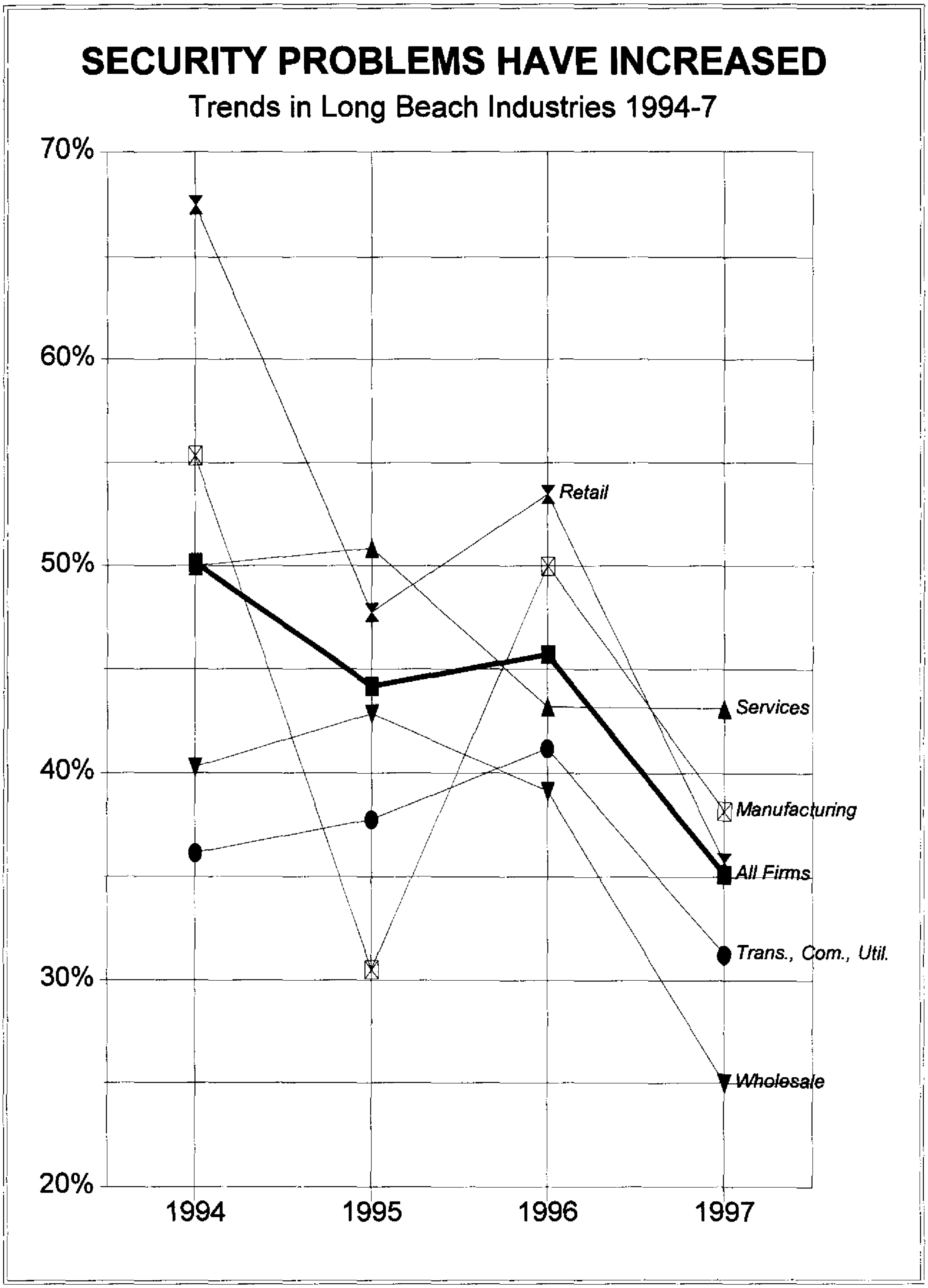
- automotive dealers and service stations
- trucking
- food stores-retail
- personal services
- primary and fabricated metals

FIGURE 23



LAID-OFF WORKERS IN PAST YEAR
Trends in Long Beach Industries 1994-7
35%
30%
25%
20%
15%
10%
5%
0%
1994
1995
1996
1997
Wholesale
Manufacturing
Trans., Com., Util.
All Firms
Retail
Services

FIGURE 24


SECURITY PROBLEMS HAVE INCREASED
Trends in Long Beach Industries 1994-7
70%
60%
50%
40%
30%
20%
1994
1995
1996
1997
Retail
Services
Manufacturing
All Firms
Trans., Com., Util.
Wholesale

PART THREE

UNEMPLOYED LONG BEACH RESIDENTS: A LABOR MARKET ANALYSIS

1. INTRODUCTION

This part of the report discusses different characteristics of unemployed Long Beach residents, and the potential for Long Beach industries to employ these individuals. We will also discuss employment change in the major occupation groups of unemployed residents. This information was obtained from a data base provided by the Employment Development Department that contains 19,780 records of unemployed individuals living in Long Beach who visited EDD offices from July 1994 to June 1996.

The main questions addressed are: what are the major occupations of unemployed residents? how does the occupational distribution of unemployed residents compare with that of employed Long Beach workers? what are the job change trends in the major occupations of unemployed Long Beach residents?

2. LABOR MARKET ANALYSIS OF UNEMPLOYED RESIDENTS

Profile of Unemployed Workers

Characteristics of unemployed workers are shown in Figure 25. Most unemployed persons were male (58 percent). One-third of unemployed residents were between the ages of 20 and 29, with successively fewer people in each of the older age groups. A high percentage of unemployed workers were African-American (37 percent) or Latino (26 percent), followed by Non-Latino Whites (23 percent) and Asians and Pacific Islanders (9 percent). Compared to their presence in the employed Long Beach population, African-Americans and Latinos are over-represented in the ranks of the unemployed. Most of the unemployed had obtained at least a high school degree (72 percent). One in eight (13 percent) had obtained a college degree.

Occupations of Unemployed Long Beach Residents

The greatest number of unemployed residents were employed as general office clerks, with 2,763 persons accounting for 14.0 percent of all unemployed Long Beach residents (Figure 26). Other common occupations were Helpers and Laborers (1,681 persons, 8.5 percent), Janitors and Cleaners (828 persons, 4.2 percent), Cashiers (633 persons, 3.2 percent), and Retail Salespersons (502 persons, 2.5 percent). These five occupations accounted for one in three (32.4 percent) of unemployed Long Beach residents reporting to EDD offices between July 1994 and June 1996.

FIGURE 25

PROFILE OF UNEMPLOYED WORKERS

Long Beach Residents 7/94 - 6/96

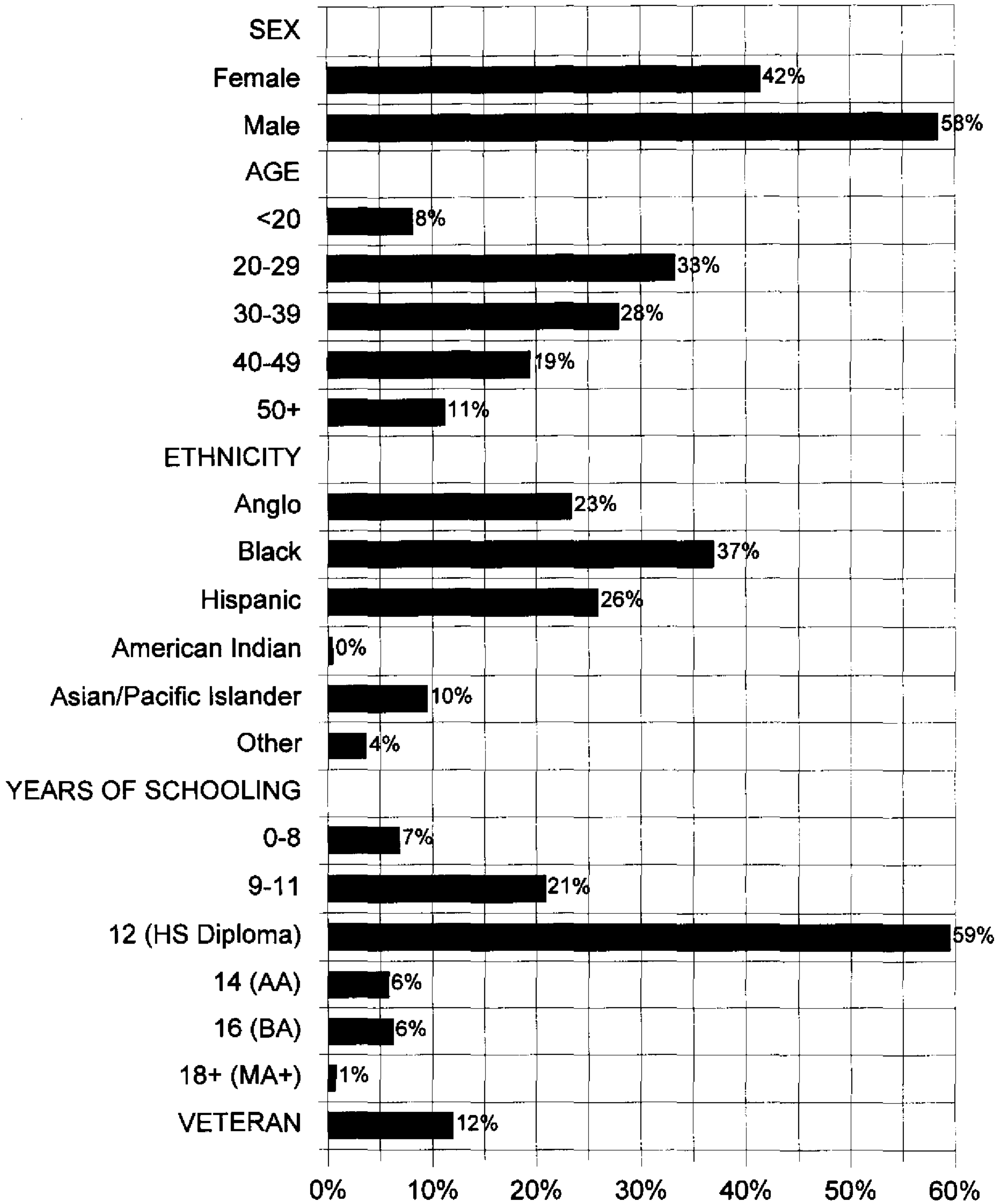
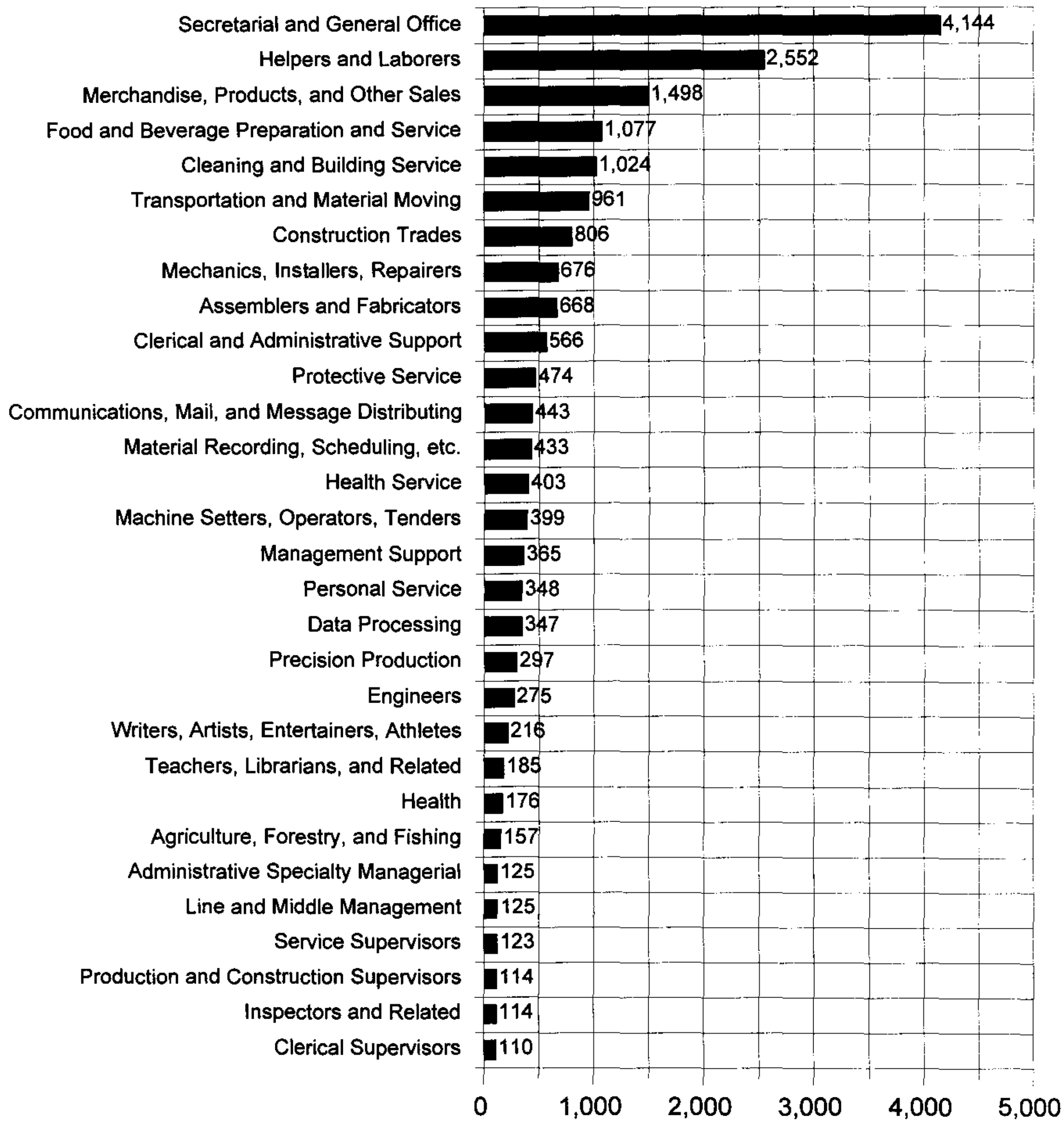


FIGURE 26

UNEMPLOYED LONG BEACH RESIDENTS

Occupation Groups, 7/94-6/96



Specific occupations are combined into broader occupation groups. The five leading occupation groups of unemployed Long Beach residents were Secretarial and General Office Occupations (4,144 persons, 21.0 percent), Helpers and Laborers (2,552, 12.9 percent), Merchandise, Products, and Other Sales Occupations (1,498 persons, 7.6 percent), Food and Beverage Preparation and Service Occupations (1,077 persons, 5.4 percent), and Cleaning and Building Service Occupations (1,024 persons, 5.2 percent). A total of 10,295 persons were employed in these occupations, 52.0 percent of unemployed Long Beach residents.

Unemployed Workers: Ethnic Distribution by Occupation

Most unemployed production and construction workers were Latino or African-American (67.9 percent) (Figure 27). Most unemployed residents in service, clerical and administrative support, and sales occupations were African-American (39.7 percent, 40.4 percent, and 42.3 percent respectively). Close to one-half (44.9 percent) of unemployed professional and technical workers were Non-Latino White.

Compared with their overall presence among the unemployed, Latinos were over-represented in production and construction occupations and under-represented in clerical, sales, and professional and technical occupations. African-American workers were slightly over-represented in sales, clerical, and service occupations, and under-represented in production and construction and professional and technical occupations. Non-Latino Whites were over-represented in professional and technical occupations and under-represented in clerical occupations.

The ethnic composition of occupation divisions for employed workers in Long Beach, based on the 1990 Census, was compared to the distribution of unemployed Long Beach residents. This comparison shows which ethnic groups are over- or underrepresented in the unemployment ranks in a given occupation. The following points emerge from this comparison:

- Blacks are very highly concentrated in the unemployed Long Beach population relative to their presence in the employed workforce. For example, blacks comprise 12 percent of employed production and construction workers, but 33.2 percent of unemployed workers in these occupations. They make up only 9 percent of the city's employed sales workers, but 42 percent of unemployed sales workers.

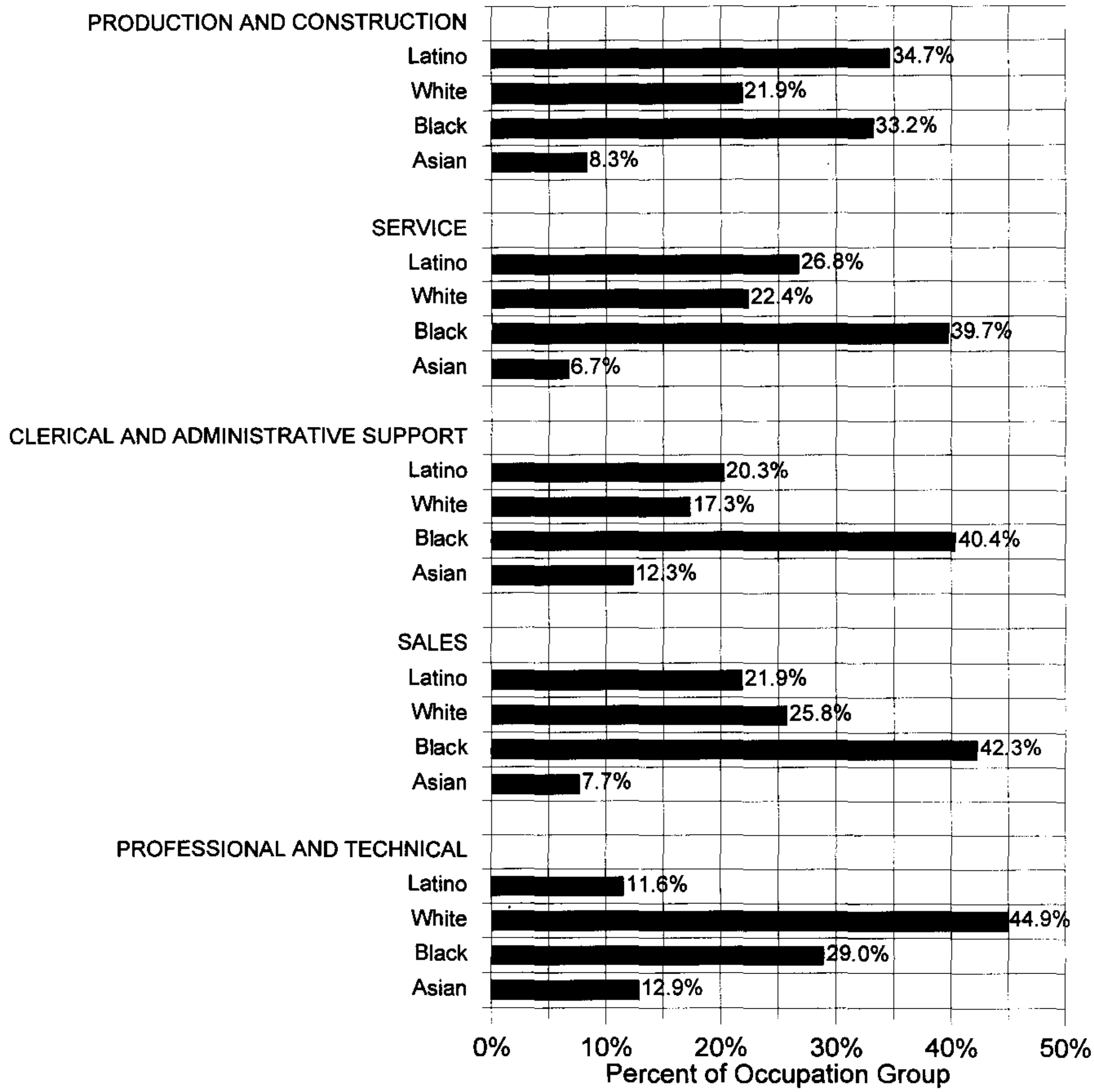
- Non-Latino white workers, on the other hand, are underrepresented among unemployed workers in each of the five occupation divisions.

- Latinos are overrepresented among unemployed production and construction, clerical, sales, and professional and technical workers. They are underrepresented among unemployed service workers.

FIGURE 27

UNEMPLOYED LONG BEACH RESIDENTS

Ethnic Distribution by Occupation



Unemployed Workers: Age Distribution by Occupation

A high number of unemployed clerical and sales workers were young: 53.6 percent of clerical workers, and 49.2 percent of sales workers were 29 years or younger (Figure 28). Unemployed professional and technical workers were a relatively older group, with only 17.5 percent 29 years of age or younger, and 43.9 percent 40 years of age or older. The unemployed production, construction, and service workers were distributed more evenly between the under-30, 30-39, and 40 and over age groups.

Occupational Distributions of Unemployed and Employed Long Beach Workers

As a general rule, workers in low-wage, relatively insecure occupations are more likely to face unemployment than workers in occupations requiring significant training, education, and experience. (Exceptions include the tens of thousands of engineers and middle managers who have lost their jobs in the ongoing restructuring of Southern California industries). Therefore, it is to be expected that the occupational composition of unemployed workers will be rather different from the occupational composition of employed workers.

The occupational distribution of employed Long Beach workers was obtained from the 1990 Census. Comparing this to the occupational distribution of unemployed workers (Figure 29), we can distinguish the following groups of occupations:

(1) Occupations with the least job security (those that comprise a higher proportion of unemployed workers than employed workers):

- Secretarial and General Office
- Helpers and Laborers
- Cleaning and Building Service
- Transportation and Material Moving
- Assemblers, Fabricators, Inspectors
- Protective Service
- Communications, Mail, Message Distributing
- Data Processing

(2) Occupations with average job security (those that comprise similar proportions of unemployed and employed workers):

- Food and Beverage Preparation and Service
- Construction Trades
- Mechanics, Installers, Repairers
- Agriculture, Forestry, Fishing

FIGURE 28

UNEMPLOYED LONG BEACH RESIDENTS

Age Distribution by Occupation

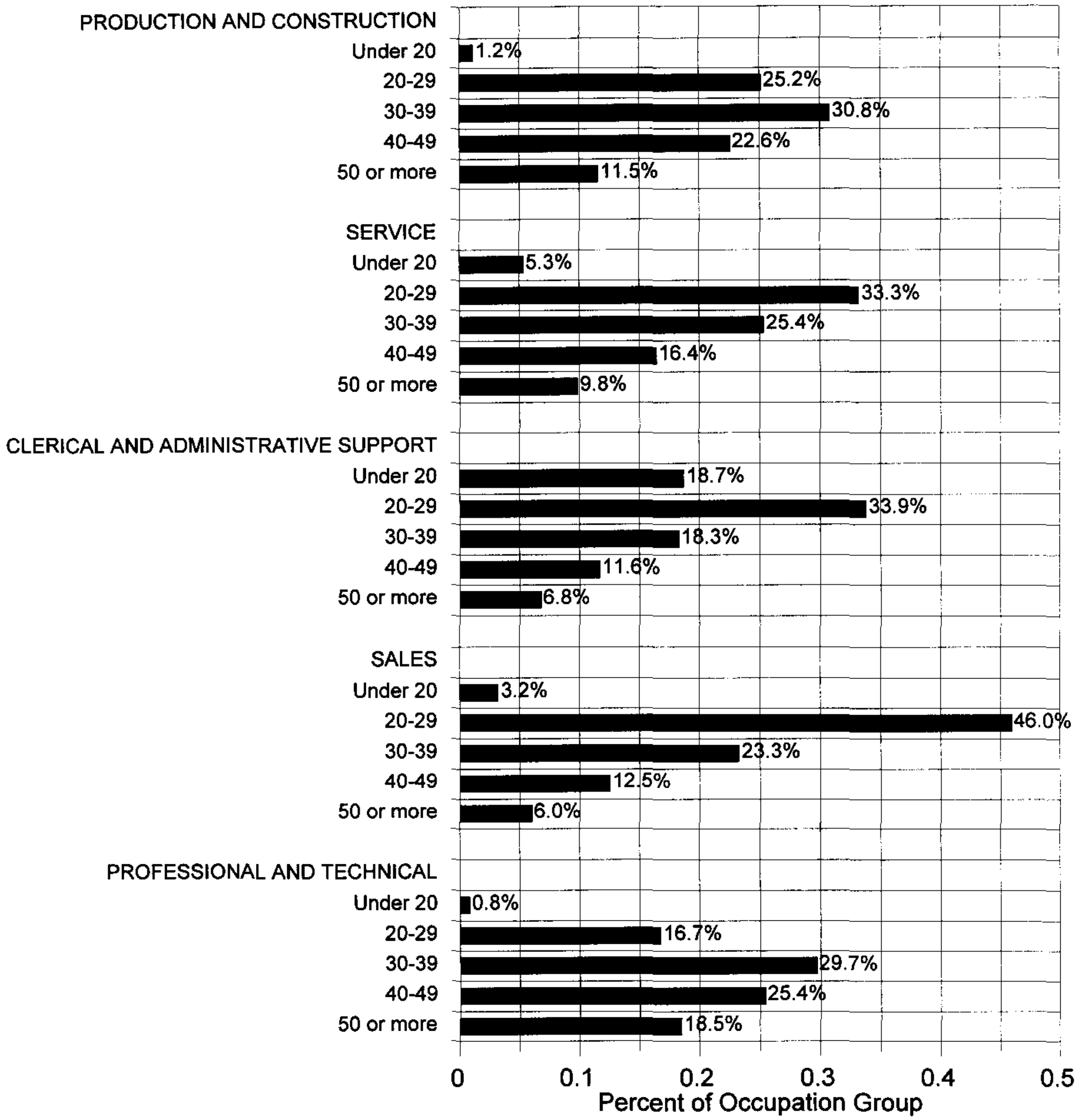
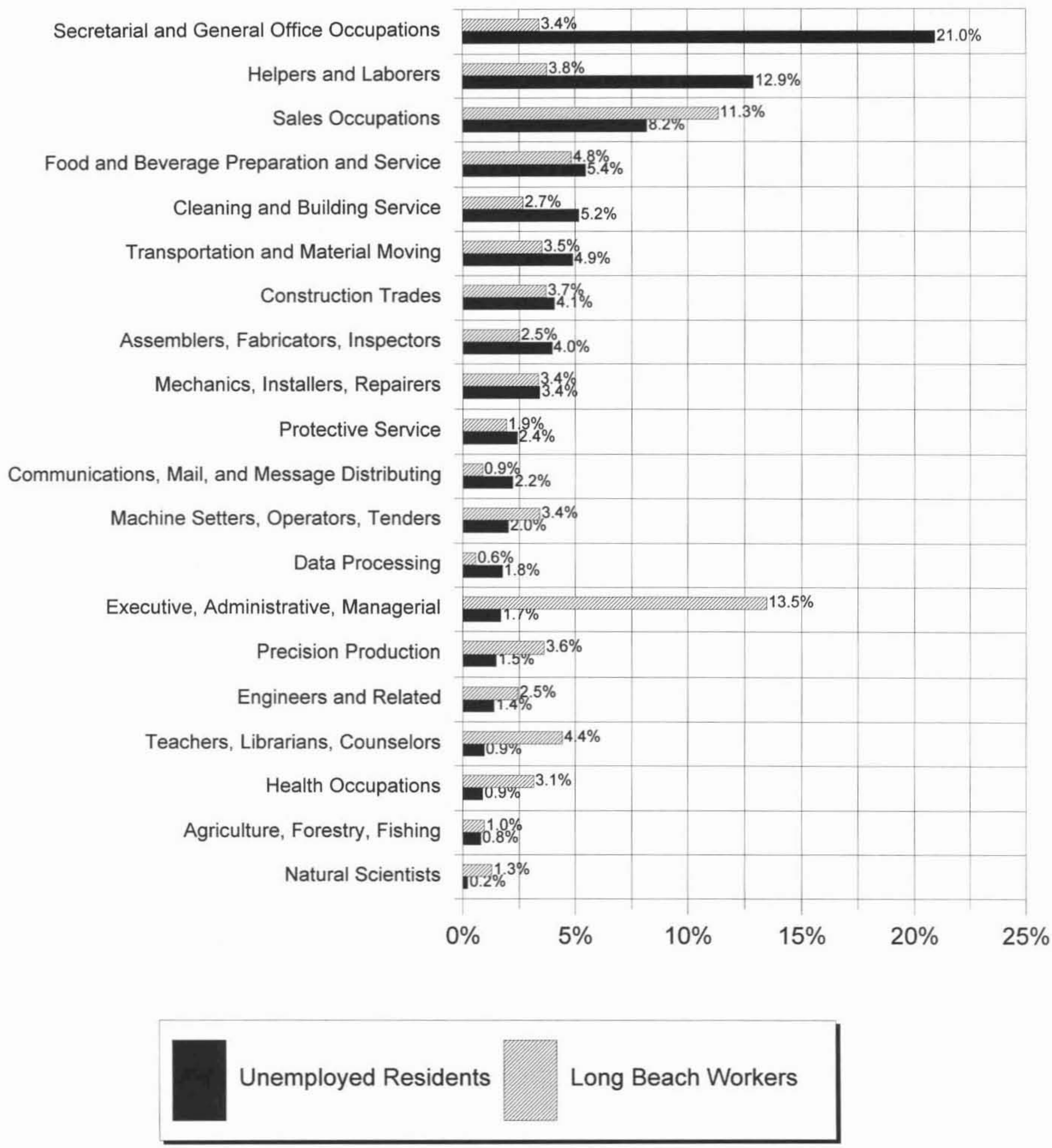


FIGURE 29

WORKERS AND UNEMPLOYED RESIDENTS
Occupational Distribution



(3) Occupations with the greatest job security (those that comprise a higher proportion of employed than unemployed workers):

- Sales
- Machine Setters, Operators, Tenders
- Executive, Administrative, Managerial
- Precision Production
- Engineers
- Teachers, Librarians, Counselors
- Health
- Natural Scientists

Employment Trends in Major Occupations of Unemployed Long Beach Workers

Table 1 shows employment change is shown for Los Angeles County in the major occupation groups of unemployed Long Beach residents. Included for each occupation is the projected employment change between 1994 and 1999, as well as between 1990 and 1999 (based on the difference between projected 1999 employment and actual 1990 employment) (see also Figures 30 and 31). This provides indicators of the capacity of each occupation to hire unemployed workers.

Since 1994 marked a low point in Los Angeles County employment, most occupations were expected to grow between 1994 and 1999. Employment in all occupations is expected to grow by 10.6 percent.

Occupations groups projected to experience *above-average rates of growth* in Los Angeles County are:

- Personal Service (19.3 percent growth)
- Health Service (18.8 percent)
- Protective Service (16.5 percent)
- Management Support (14.7 percent)

Occupations groups expected to experience *average rates of growth* are:

- Industry-Specific Clerical and Administrative Support (13.0 percent)
- Merchandise, Products, and Other Sales (12.6 percent)
- Transportation and Material Moving Machine Operators (12.3 percent)
- Recording, Scheduling, Dispatching, Scheduling (11.8 percent)
- Food and Beverage Preparation and Service (10.8 percent)
- Mechanics, Installers, Repairers (10.3 percent)
- Precision Production (10.2 percent)

TABLE 1

MAJOR OCCUPATIONS OF UNEMPLOYED LONG BEACH RESIDENTS

Employment Change in Los Angeles County, 1990-1999

	LONG BEACH		LOS ANGELES COUNTY				
Occupation Group	Number of Unemployed	Percent of Unemployed	Employment 1994	Projected Employment Change 1994-99	Percent Change 1994-99	Projected Employment Change 1990-99	Percent Change 1990-99
Secretarial and General Office	4,144	21.0%	438,740	21,070	4.8%	(13,420)	-2.8%
Helpers and Laborers	2,552	12.9%	134,290	10,730	8.0%	(2,420)	-1.6%
Merchandise, Products, and Other Sales	1,498	7.6%	298,470	37,620	12.6%	(17,340)	-4.9%
Food and Beverage Preparation and Service	1,077	5.4%	241,920	26,120	10.8%	8,590	3.3%
Cleaning and Building Service	1,024	5.2%	73,480	2,350	3.2%	(3,510)	-4.4%
Transportation and Material Moving Machine Operators	961	4.9%	137,820	16,930	12.3%	2,630	1.7%
Construction Trades	806	4.1%	66,080	5,040	7.6%	(12,760)	-15.2%
Mechanics, Installers, Repairers	676	3.4%	121,480	12,560	10.3%	(9,840)	-6.8%
Assemblers and Fabricators	668	3.4%	99,740	7,750	7.8%	(22,740)	-17.5%
Industry Specific Clerical and Administrative Support	566	2.9%	93,100	12,120	13.0%	(2,330)	-2.2%
Protective Service	474	2.4%	77,500	12,750	16.5%	13,170	17.1%
Communications, Mail, and Message Distributing	443	2.2%	24,630	1,040	4.2%	(110)	-0.4%
Material Recording, Scheduling, Dispatching, Distributing	433	2.2%	103,120	12,120	11.8%	(3,760)	-3.2%
Health Service and Related Occupations	403	2.0%	52,410	9,830	18.8%	12,080	24.1%
Machine Setters, Operators, Tenders	399	2.0%	171,380	10,080	5.9%	(12,270)	-6.3%
Management Support	365	1.8%	128,150	18,900	14.7%	(1,680)	-1.1%
Personal Service	348	1.8%	35,590	6,870	19.3%	5,320	14.3%
Data Processing	347	1.8%	38,180	(1,270)	-3.3%	(5,740)	-13.5%
Precision Production	297	1.5%	60,510	6,200	10.2%	(8,950)	-11.8%

Source: California Employment Development Department

FIGURE 30

MAIN OCCUPATIONS OF LB UNEMPLOYED

% Empl Change in LA County 1990-99

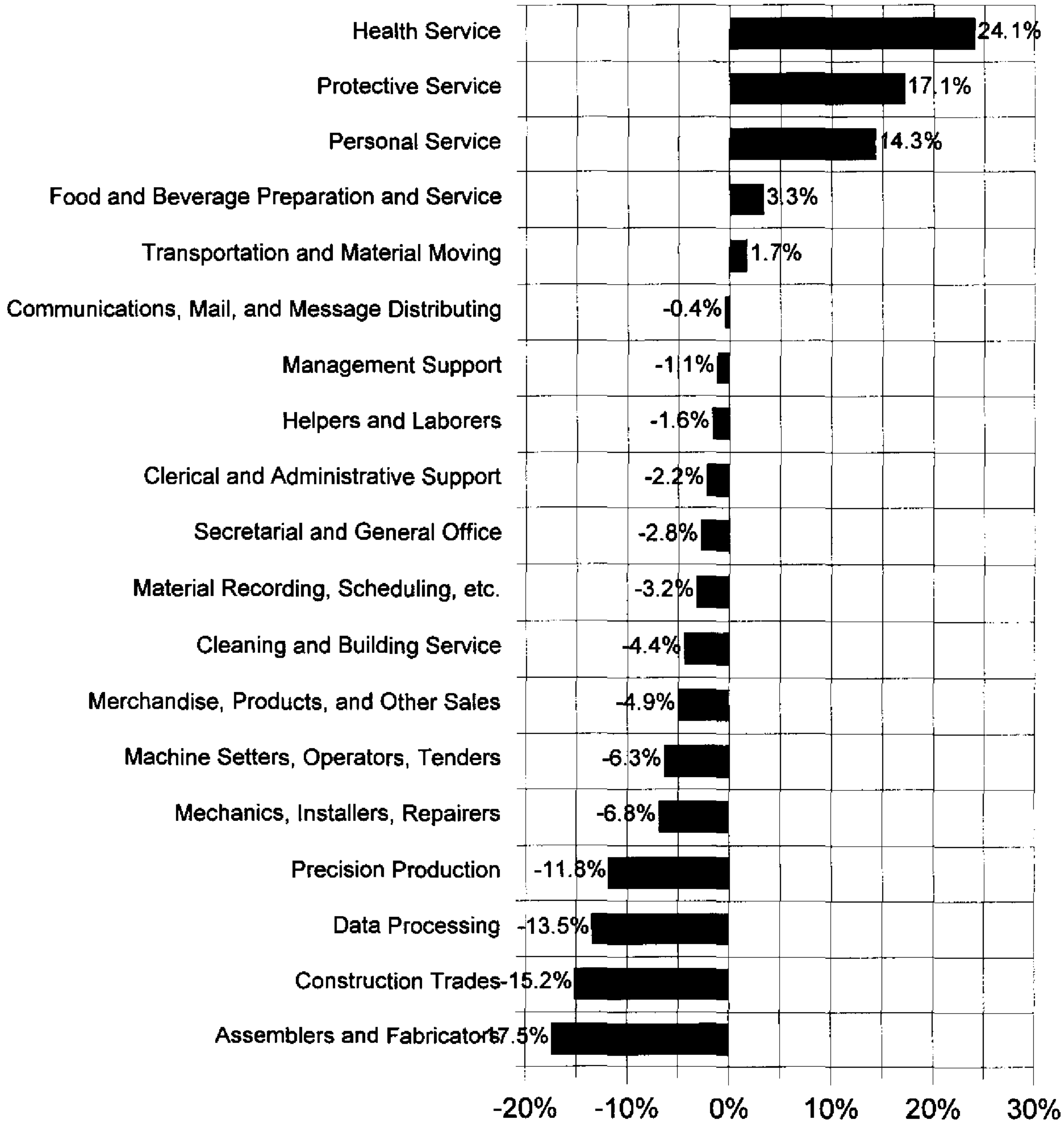
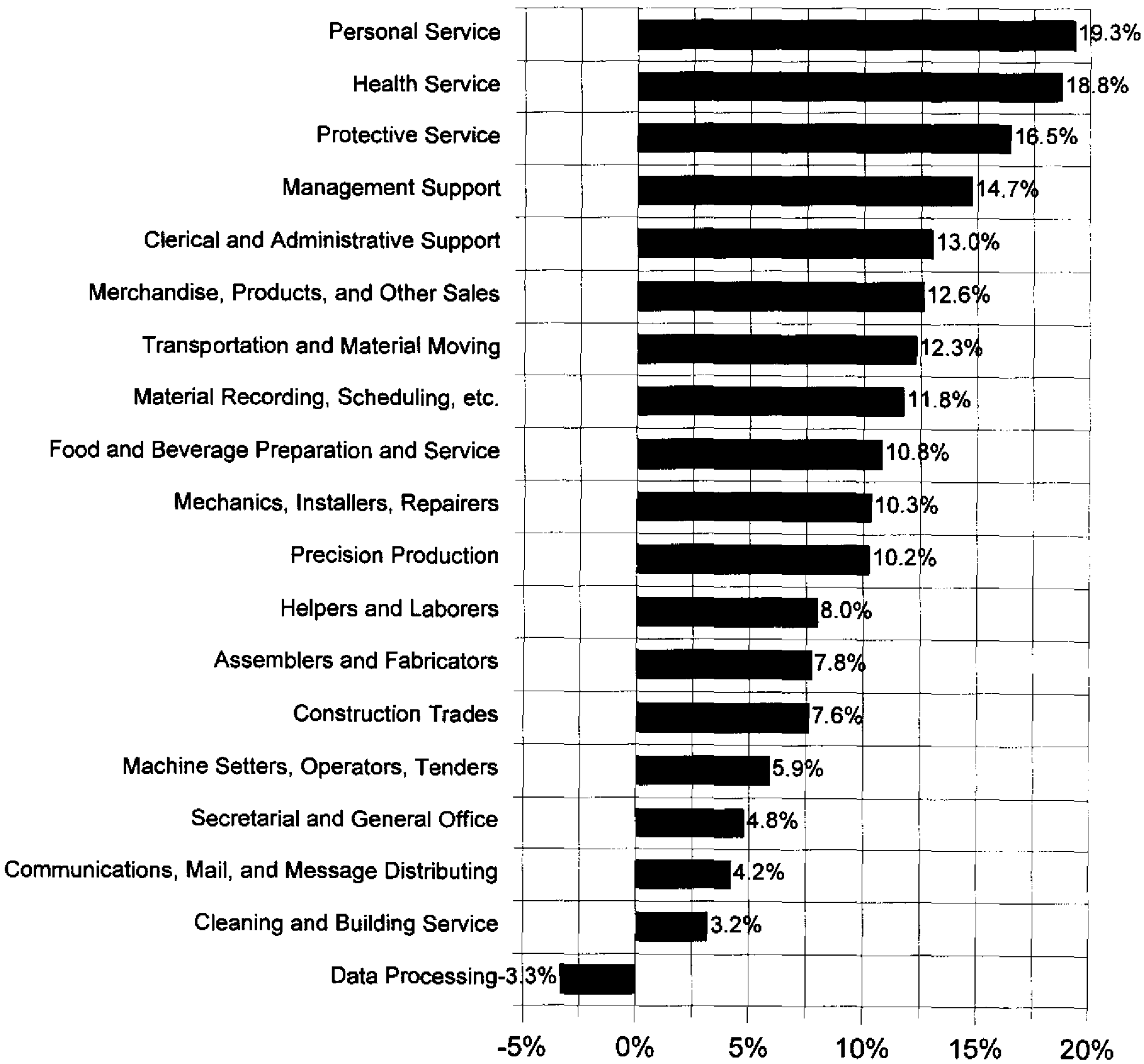


FIGURE 31

MAIN OCCUPATIONS OF LB UNEMPLOYED

% Empl Change in LA County 1994-99



Occupation groups expected to experience *below average rates of growth* are:

- Helpers and Laborers (8.0 percent)
- Assemblers and Fabricators (7.8 percent)
- Construction Trades (7.6 percent)
- Machine Setters, Operators, Tenders (5.9 percent)
- Secretarial and General Office (4.8 percent)
- Communications, Mail, Message Distributing (4.2 percent)
- Cleaning and Building Service (3.2 percent)
- Data Processing (-3.3 percent)

What is the concentration of unemployed Long Beach residents in these occupation groups, based on 1994-1999 growth rates? Only 9.1 percent of unemployed residents had been employed in occupations with above average growth rates, while 59.4 percent were employed in occupations with below average growth rates projected for 1994-1999. This includes the two occupation groups with the greatest number of unemployed residents: Secretarial and General Office Occupations and Helpers and Laborers.

Although employment is expected to grow in most occupations between 1994 and 1999, in most cases the projected 1999 employment is still below 1990 employment. Only the fast-growing Health Service, Protective Service, and Personal Service occupations are expected to show significant growth between 1990 and 1999. Several occupations are expected to experience a significant net loss in jobs over the decade, including Assemblers and Fabricators (-17.5 percent), Construction Trade (-15.2 percent), Data Processing (-13.5 percent), and Precision Production (-11.8 percent).

Hiring Potential of Long Beach Industries

What is the hiring potential of key Long Beach industries identified above for hiring unemployed Long Beach workers? The tables below show the major industries employing workers in the major occupations of unemployed Long Beach workers. This information is based on EDD industry-occupation matrixes for Los Angeles County in 1994.

General Office Clerks

Number of unemployed Long Beach residents (1994-96): 2,763 (14.0 percent). Major industries of employment in Los Angeles County (1994):

SIC	*Industry Title*	*Industry % of Occupation Employment*	*1992 Long Beach employment (3-digit SIC)*
8221	Colleges and Universities	5.6%	2,731
8062	General Medical Hospitals	5.1%	12,600
7812	Motion Picture Production	4.4%	
7363	Help Supply Services	3.9%	2,797
7361	Employment Agencies	3.4%	2,797

Helpers and Laborers

Number of unemployed Long Beach residents (1994-96): 1,681 (8.5%). Major industries of employment in Los Angeles County (1994):

SIC	*Industry Title*	*Industry % of Occupation Employment*	*1992 Long Beach Employment (3-digit SIC)*
7363	Help Supply Services	21.7%	2,797
4213	Long-Distance Trucking	3.2%	851
7361	Employment Agencies	3.1%	2,797

Janitors and Cleaners

Number of unemployed Long Beach residents (1994-96): 828 (4.2%). Major industries of employment in Los Angeles County (1994):

SIC	*Industry Title*	*Industry % of Occupation Employment*	*1992 Long Beach Employment (3-digit SIC)*
7349	Building Maintenance Services	24.8%	775
5812	Eating Places	4.7%	9,195

Cashiers

Number of unemployed Long Beach residents (1994-96): 633 (3.2%). Major industries of employment in Los Angeles County (1994):

SIC	*Industry Title*	*Industry % of Occupation Employment*	*1992 Long Beach Employment (3-digit SIC)*
5411	Grocery Stores	25.3%	2,576
5812	Eating Places	15.2%	9,195
5912	Drug and Proprietary Stores	9.2%	803
5541	Gasoline Service Stations	6.7%	586

Retail Salespersons

Number of unemployed Long Beach residents (1994-1996): 502 (2.5%). Main industries of employment in Los Angeles County (1994):

SIC	*Industry Title*	*Industry % of Occupation Employment*	*1992 Long Beach Employment*
5621	Women's Clothing Stores	6.2	715 (SIC 56)
5651	Family Clothing Stores	4.9	715 (SIC 56)
5411	Grocery Stores	4.7	2,576 (SIC 541)

Summary

There are significant differences between unemployed and employed Long Beach workers. Unemployed Long Beach workers are concentrated in relatively low-wage occupations found primarily in the retail and service industries. Blacks and Latino are more highly concentrated in the ranks of the unemployed than they are among employed Long Beach workers.

Close to 60 percent of unemployed Long Beach workers are found in occupations that are expected to experience below average rates of growth between 1990 and 1999. Only nine percent were employed in occupations that are expected to exhibit above average growth between 1990 and 1999.

A few Long Beach industries emerge as significant employers of unemployed Long Beach residents. Eating and Drinking Places are major employers of janitors and cleaners and cashiers. Temporary Help and Employment agencies are major employers of general office clerks and helper and laborers. Hospitals, colleges, and universities are also important employers of general office clerks.

One strategy for providing improved opportunities for stable employment for these unemployed workers is to develop and strengthen training programs that are geared to employment in more secure jobs in major Long Beach industries, including Health Services and Transportation. Otherwise, many unemployed workers may re-enter the labor force into the same insecure, low-end jobs that they held previously.

PART FOUR

LONG BEACH INDUSTRY ANALYSIS

1. INTRODUCTION

The purpose of the industry analysis is to evaluate employment, payroll, business conditions and linkages of Long Beach industries to target industries for the City of Long Beach's external marketing campaign. The first section describes employment, employment concentration, and payroll by industry in Long Beach. This section presents a detained picture of the city's industry structure, and indicates industries that have a strong presence in the city and pay relatively good wages and salaries. The second section presents findings from the Economic Roundtable's analysis of the Long Beach Business Survey. Business conditions are evaluated for major industries, based on four years of responses to the city's business surveys. The third section presents a detailed input-output analysis of the Long Beach economy. The purpose of this analysis is to evaluate employment and output multipliers for Long Beach industries, and to determine the major production linkages of Long Beach target industries. The fourth section evaluates Long Beach target industries, based on the indicators of employment, payroll, and business conditions presented in the preceding sections. This is followed by an analysis of industry networks, based on the input-output data for the Long Beach economy. In this section we will highlight industries that should be targeted for external marketing due to their strong linkages with major Long Beach industries. The final section of the industry analysis presents conclusions and recommendations. Here we will summarize the recommended target industries.

Data Sources

Data on employment and payroll in Long Beach were derived from the 1992 Industrial and Commercial Employer (ICE) database compiled by the EDD. This is a comprehensive source, based on employer payroll tax forms sent to the EDD for the third quarter of 1992. The data has been coded by Standard Industrial Classification (SIC), and provides a detailed record of employment and payroll by industry in Long Beach. Information on Long Beach business conditions was compiled from the 1994-1997 Long Beach Business Surveys. Employment and output multipliers were calculated by Professor David Rigby at UCLA from input-output data provided by IMPLAN (Impact Analysis for Planning) (see Appendix 1 for a discussion of this data source).

2. *EMPLOYMENT AND PAYROLL IN LONG BEACH INDUSTRIES*

2.1 THE CHANGING EMPLOYMENT STRUCTURE OF LONG BEACH COMPARED TO LOS ANGELES COUNTY

Figures 32 through 37 compare employment by industry division for Long Beach and Los Angeles County in 1973, 1984, and 1992, years for which detailed Industrial and Commercial Employer (ICE) data is provided by the California Employment Development Department.

In 1973, Long Beach and Los Angeles County showed a similar distribution of employment across the major industry divisions. In both cases, close to one in four workers were employed in manufacturing industries, followed by services and retail trade.

By 1984 the service industries employed the most workers in both Long Beach and Los Angeles County, just under 30 percent of the workforce. The manufacturing sector was the second major employer, followed by retail trade.

The 1992 employment structure for Long Beach reflects the growth of aircraft industry employment through the 1980s. Despite the commencement of layoffs in the aircraft industry, the manufacturing sector employed 29 percent of the Long Beach workforce in 1992, followed by services (25 percent) and retail trade (13 percent). On the other hand, in Los Angeles County services had grown to account for 37 percent of total employment, while the declining manufacturing sector employed 19 percent the county workforce.

Long Beach employed relatively more workers in the transportation industries than were employed in Los Angeles County. Long Beach employment was lower than the county average in the retail, wholesale, and finance/insurance/real estate industry divisions.

FIGURE 32

CITY OF LONG BEACH INDUSTRY GROUPS

Percent of Employment, 1973 - 1992

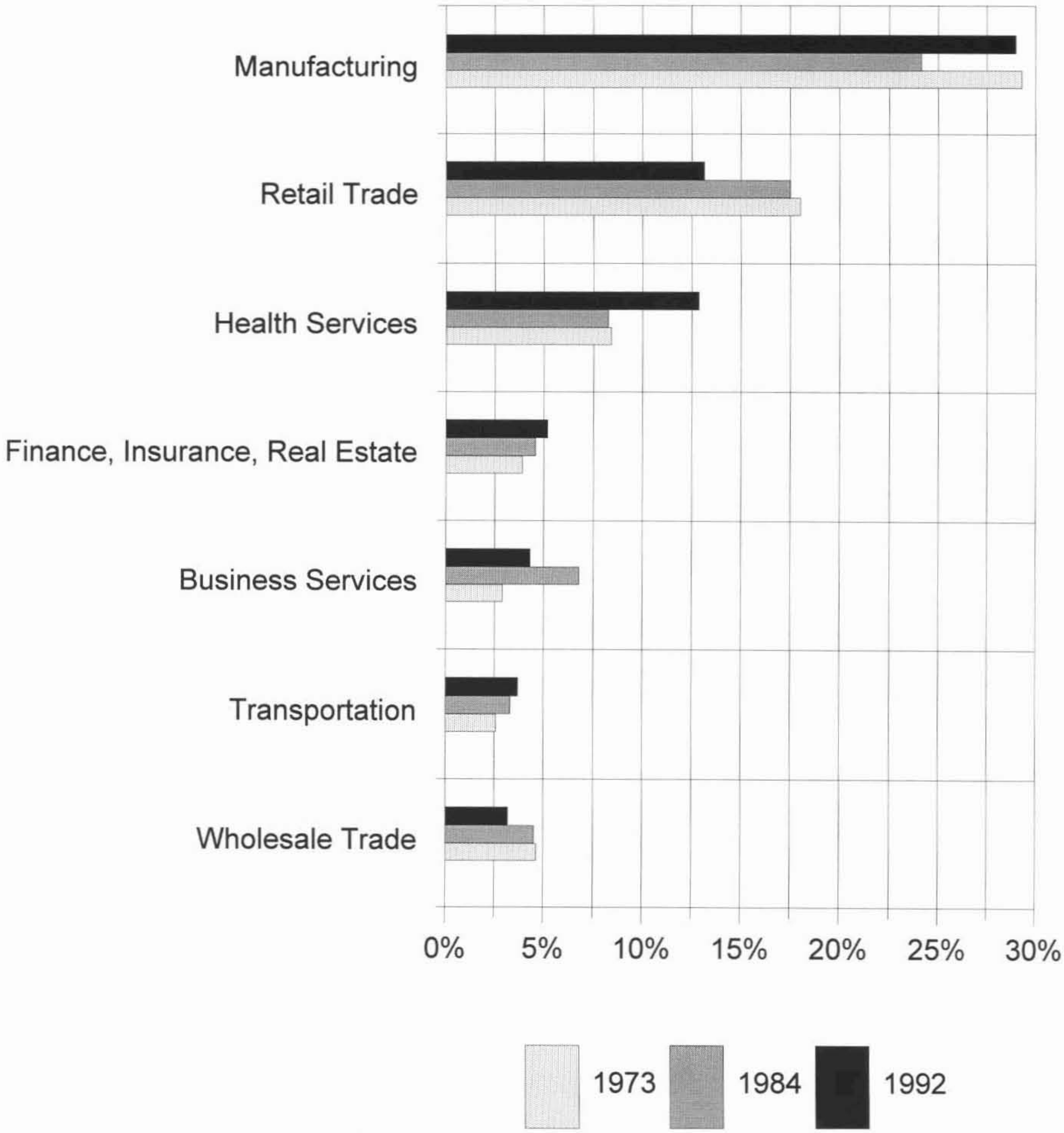


FIGURE 33

EMPLOYMENT STRUCTURE

Long Beach and LA County, 1973

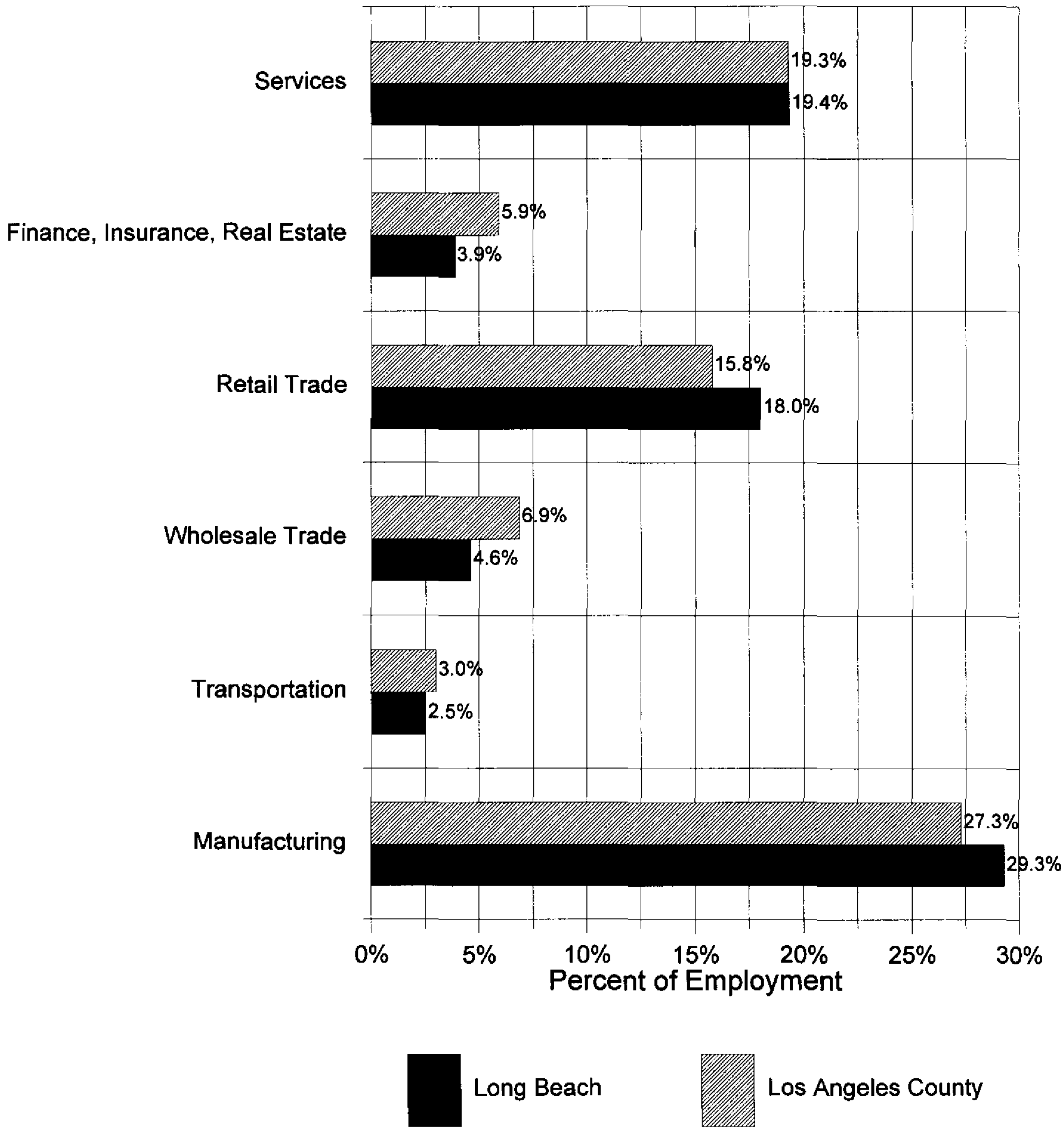


FIGURE 34

EMPLOYMENT STRUCTURE
Long Beach and LA County, 1984

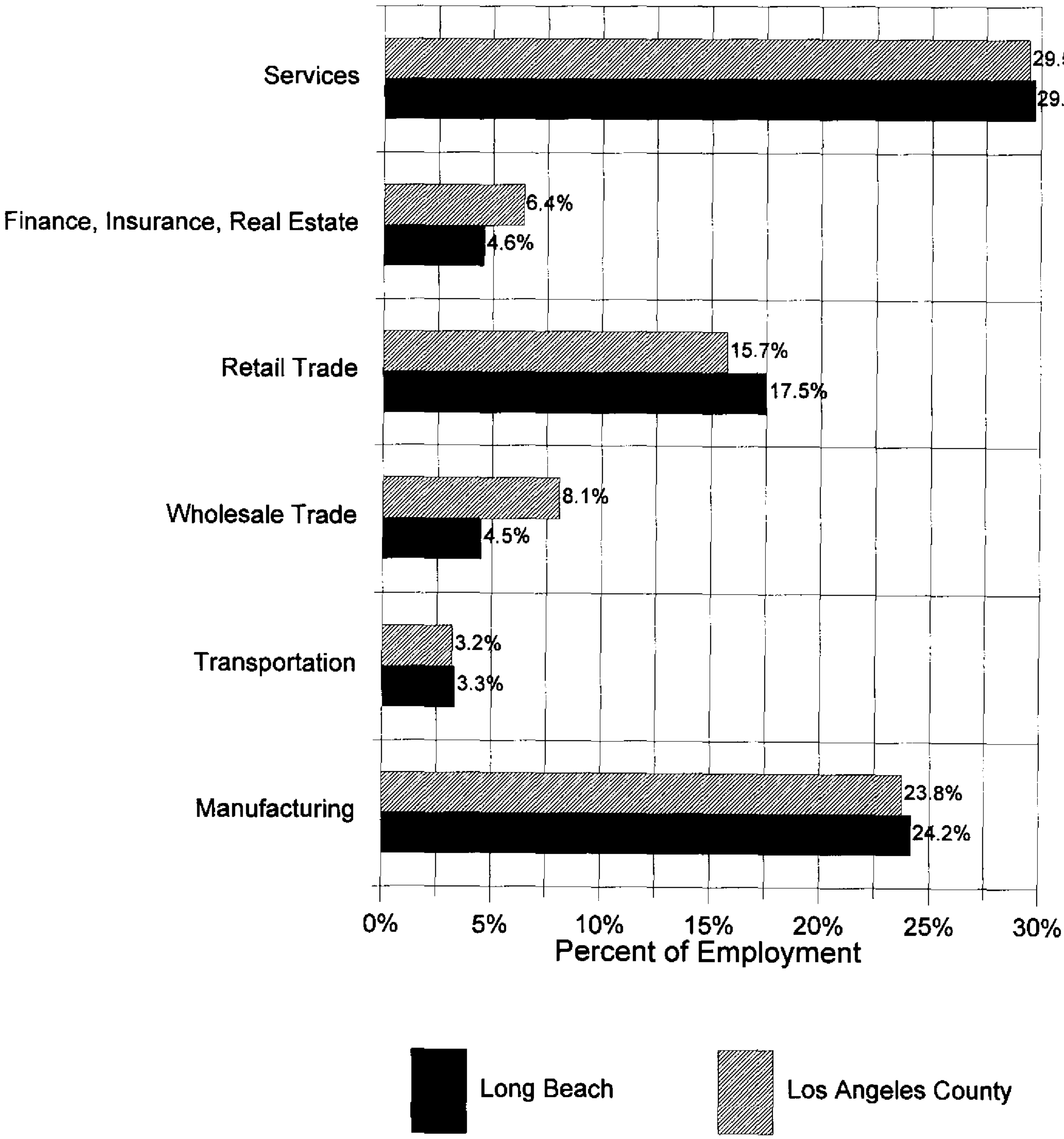


FIGURE 35

EMPLOYMENT STRUCTURE
Long Beach and LA County, 1992

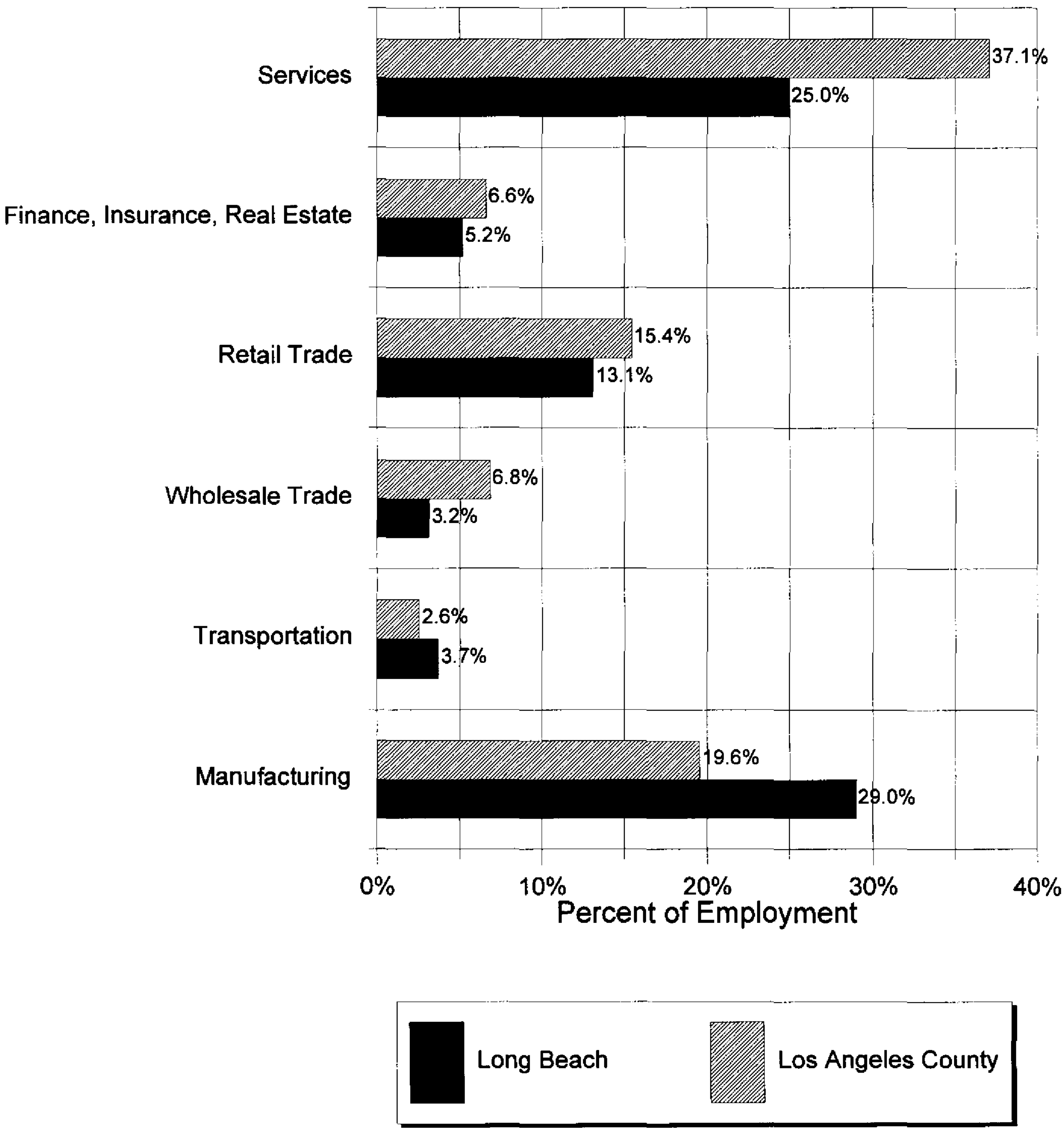


FIGURE 36

CHANGE IN INDUSTRY EMPLOYMENT SHARE

Long Beach and LA County, 1973-1992

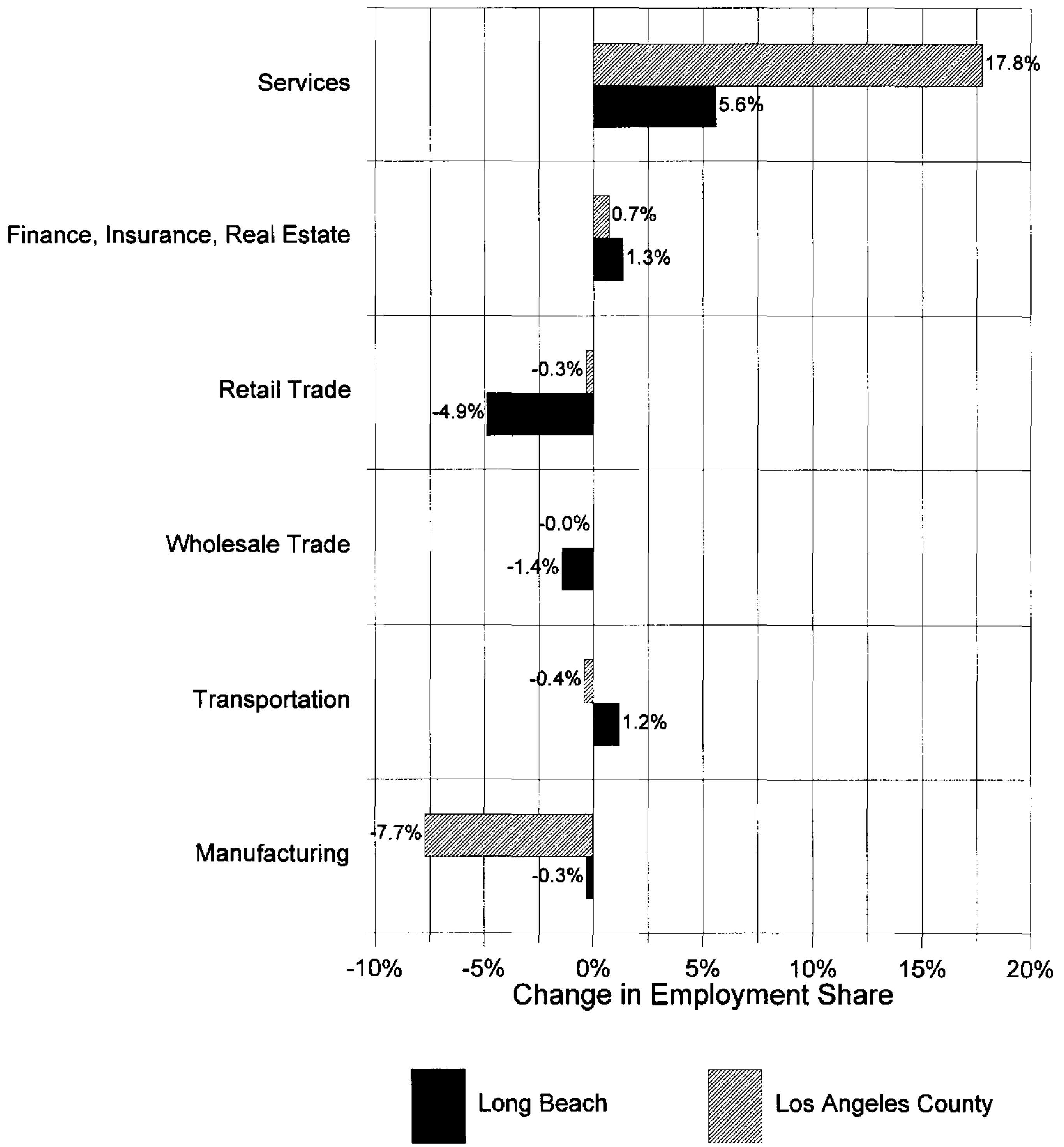
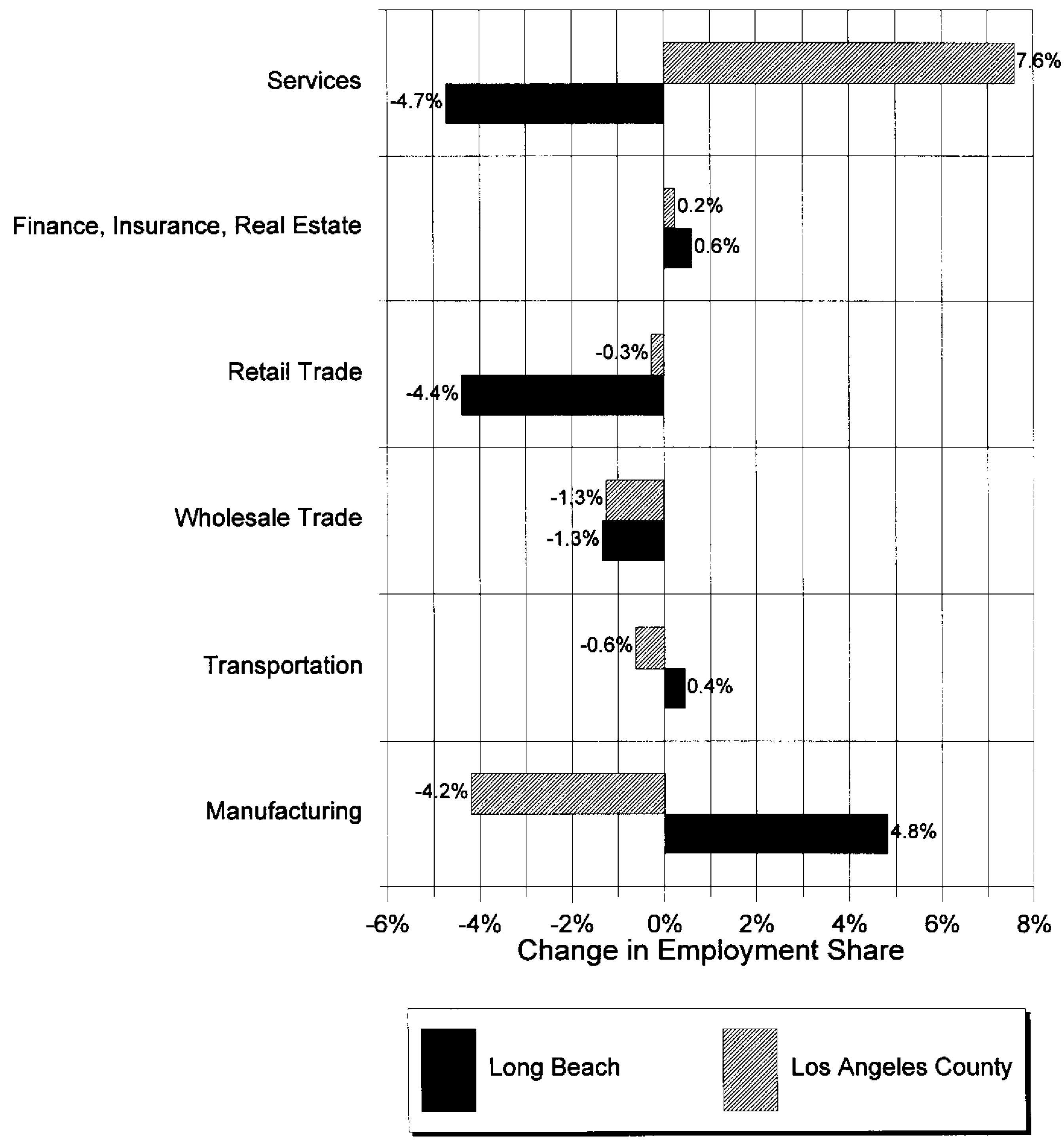


FIGURE 37

CHANGE IN INDUSTRY EMPLOYMENT SHARE
Long Beach and LA County, 1984-1992



2.2 EMPLOYMENT BY INDUSTRY IN LONG BEACH

A detailed picture of the Long Beach economy is provided by industry employment and payroll data. The following employment information is presented for Long Beach industries:

- *Employment Size*

  Description: Number of employees per industry in the third quarter of 1992.

  Source: California Employment Development Department, 1992 Industrial and Commercial Employer (ICE) database

- *Employment Concentration*

  Description: Employment concentration is derived by calculating location quotients for each Long Beach industry. The location quotient is a measure of relative employment concentration. To derive the location quotient for an industry, its share of employment in a given area (e.g. Long Beach) is divided by the industry's employment share in a larger are used for comparison (e.g. the nation). In this case, Los Angeles County is used for comparative purposes.

  Source: EDD, 1992 ICE database

For each industry, Table 2 shows employment in the third quarter of 1992, the percent of Long Beach employment captured by the industry, and the industry's location quotient (see also Table 3 and 4, and Figures 38 and 39).

Total employment in the City was 164,085 in the third quarter of 1992. The major industry divisions in Long Beach were manufacturing (47,562 workers, 29 percent of City employment), services (40,967 workers, 25 percent of City employment), and retail trade (21,518 workers, 13 percent of City employment.

The narrative below describes the Long Beach employment figures for the industry divisions and the major industry groups within each division.

Manufacturing

The concentration of manufacturing employment in Long Beach was significantly higher than in Los Angeles County, as indicated by a 1.48 location quotient. Of the 47,562 manufacturing workers in Long Beach, 36,122 were employed in the aerospace industries. The aircraft industry employed 34,806 workers, 21 percent of city employment.

Major Long Beach industry group:

- Aerospace (SIC 372, 376, 381)
  Employment: 36,122
  Percent of Long Beach employment: 22.0%
  Location Quotient: 5.08

Transportation, Communications, Utilities

This industry division employed 11,898 workers in 1992, 7.3 percent of Long Beach employment. With a location quotient of 1.06, Long Beach employment was slightly above this division's employment share in Los Angeles County.

Major Long Beach industry group:

- Water Transportation (SIC 44)
  Employment: 2,069
  Percent of Long Beach Employment: 1.3%
  Location Quotient: 5.48

Wholesale and Retail Trade

The wholesale trade industries employed 5,180 workers in Long Beach, 3.2 percent of city employment. The location quotient for wholesale trade was the lowest of the major industry divisions, 0.46. The retail trade industries employed 21,518 workers, 13.1 percent of city employment (location quotient = 0.85).

Major Long Beach industry groups:

- Eating and Drinking Places (SIC 58)
  Employment: 9,195
  Percent of Long Beach employment: 5.6%
  Location Quotient: 0.98

- Miscellaneous Retail (SIC 59)
  Employment: 4,293
  Percent of Long Beach employment: 2.6%
  Location Quotient: 1.22

- Wholesale Trade - Durables (SIC 50)
  Employment: 3,294
  Percent of Long Beach employment: 2.0%

Location Quotient: 0.55

- Food Stores (SIC 54)
  Employment: 2,576
  Percent of Long Beach employment: 1.8%
  Location Quotient: 0.81

- Automotive Dealers and Service Stations (SIC 55)
  Employment: 1,928
  Percent of Long Beach employment: 1.2%
  Location Quotient: 0.84

- Wholesale Trade - Nondurables (SIC 51)
  Employment: 1,886
  Percent of Long Beach employment: 1.1%
  Location Quotient: 0.36

Finance, Insurance, Real Estate

The finance, insurance, and real estate industries employed 8,538 workers in Long Beach, 5.2 percent of city employment (location quotient = 0.78). An important industry in this division is Medical Service and Health Insurance (SIC 632), which employed 1,341 workers and had a location quotient of 2.83.

Major Long Beach industry groups:

- Depository Institutions (SIC 60)
  Employment: 2,821
  Percent of Long Beach employment: 1.7%
  Location Quotient: 0.73

- Real Estate (SIC 65)
  Employment: 2,553
  Percent of Long Beach employment: 1.6%
  Location Quotient: 1.08

- Insurance (SIC 63, 64)
  Employment: 2,468
  Percent of Long Beach employment: 1.5%
  Location Quotient: 0.84

Services

The services sector employed 40,967 workers, 25.0 percent of city employment. The location quotient of the services sector was 0.67. Two industry groups stand out in their importance to the Long Beach economy: Health Services, which employs more than 1 in 2 service industry workers (21,148), and was second to aerospace in total employment; and Hotels and Lodging Places, which employed 2,793 workers.

Major Long Beach industry groups:

- Health Services (SIC 80)
  Employment: 21,148
  Percent of Long Beach employment: 12.9%
  Location Quotient: 1.60

- Business Services (SIC 73)
  Employment: 7,047
  Percent of Long Beach employment: 4.3%
  Location Quotient: 0.66

- Hotels and Other Lodging Places (SIC 70)
  Employment: 2,793
  Percent of Long Beach employment: 1.7%
  Location Quotient: 1.69

- Engineering and Management Services (SIC 87)
  Employment: 2,523
  Percent of Long Beach employment: 1.5%
  Location Quotient: 0.57

TABLE 2

EMPLOYMENT BY INDUSTRY

City of Long Beach

SIC	Industry Title	Employment	Percent	Location Quotient
20-39	MANUFACTURING	47,562	29.0%	1.48
24-25, 32-39	*Durables Manufacturing*	*45,143*	*27.5%*	*2.42*
35-38	*High Technology Manufacturing*	*43,311*	*26.4%*	*3.31*
372, 376, 381	***Aerospace***	***36,122***	***22.0%***	***5.08***
372	Aircraft and Parts	34,806	21.2%	7.60
381	Search and Navigation Equipment	1,087	0.7%	0.54
	*Computers, Electronics, Instruments**	*1,282*	*0.8%*	*0.60*
382	Measuring and Controlling Devices	911	0.6%	2.11
371	*Motor Vehicles and Equipment*	*1,058*	*0.6%*	*1.75*
20-23, 26-31	Non-Durables Manufacturing	*2,419*	*1.5%*	*0.18*
27	*Printing and Publishing*	*1,024*	*0.6%*	*0.42*
40-49	TRANSPORTATION, COMM, UTILS.	11,898	7.3%	1.06
41-42, 44-47	*Transportation*	*6,136*	*3.7%*	*0.99*
41	*Local and Interurban Passenger Transit*	*1,154*	*0.7%*	*1.30*
411	Local and Suburban Transportation	1,042	0.6%	1.61
42	*Trucking and Warehousing*	*1,143*	*0.7%*	*0.56*
421	Trucking & Courier Services, Except Air	851	0.5%	0.48
44	*Water Transportation*	*2,069*	*1.3%*	*5.48*
449	Water Transportation Services	942	0.6%	3.17
47	*Transportation Services*	*931*	*0.6%*	*1.03*
473	Freight Transportation Arrangement	753	0.5%	1.66
48	*Communications*	*1,107*	*0.7%*	*0.60*
481	Telephone Communications	859	0.5%	0.75

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

50-51	WHOLESALE TRADE	5,180	3.2%	0.46
50	*Wholesale Trade -- Durable Goods*	*3,294*	*2.0%*	*0.55*
504	Professional & Commercial Equipment	747	0.5%	0.73
51	*Wholesale Trade -- Nondurable Goods*	*1,886*	*1.1%*	*0.36*

52-59	RETAIL TRADE	21,518	13.1%	0.85
52	*Building Materials and Garden Supplies*	*591*	*0.4%*	*0.72*
53	*General Merchandise Stores*	*1,298*	*0.8%*	*0.49*
531	Department Stores	1,084	0.7%	0.47
54	*Food Stores*	*2,978*	*1.8%*	*0.81*
541	Grocery Stores	2,576	1.6%	0.83
55	*Automotive Dealers and Service Stations*	*1,928*	*1.2%*	*0.84*
551	New and Used Car Dealers	808	0.5%	0.69
56	*Apparel and Accessory Stores*	*715*	*0.4%*	*0.43*
57	*Furniture and Homefurnishings Stores*	*520*	*0.3%*	*0.40*
58	*Eating and Drinking Places*	*9,195*	*5.6%*	*0.98*
59	*Miscellaneous Retail*	*4,293*	*2.6%*	*1.22*
594	Miscellaneous Shopping Goods Stores	1,183	0.7%	0.91
592	Liquor Stores	842	0.5%	3.54
591	Drug Stores and Proprietary Stores	803	0.5%	1.00

60-67	FINANCE, INSURANCE, REAL ESTATE	8,538	5.2%	0.78
60	*Depository Institutions*	*2,821*	*1.7%*	*0.73*
602	Commercial Banks	1,360	0.8%	0.54
603	Savings Institutions	1,054	0.6%	1.12
61	*Nondepository Institutions*	*236*	*0.1%*	*0.32*
62	*Security and Commodity Brokers*	*392*	*0.2%*	*0.63*
63	*Insurance Carriers*	*1,877*	*1.1%*	*0.98*
632	Medical Service and Health Insurance	1,341	0.8%	2.83

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

64	*Insurance Agents, Brokers, and Service*	*591*	*0.4%*	*0.59*
65	*Real Estate*	*2,553*	*1.6%*	*1.08*
651	Real Estate Operators and Lessors	1,257	0.8%	1.40
653	Real Estate Agents and Managers	1,112	0.7%	0.96
67	*Holding and Other Investment Offices*	*68*	*0.0%*	*0.18*
70-89	SERVICES	40,967	25.0%	0.67
70	*Hotels and Other Lodging Places*	*2,793*	*1.7%*	*1.69*
701	Hotels and Motels	2,742	1.7%	1.69
72	*Personal Services*	*1,294*	*0.8%*	*0.85*
73	*Business Services*	*7,047*	*4.3%*	*0.66*
736	Personnel Supply Services	2,797	1.7%	0.58
738	Miscellaneous Business Services	2,292	1.4%	0.74
734	Services to Buildings	775	0.5%	0.98
75	*Auto Repair, Services, and Parking*	*1,776*	*1.1%*	*0.93*
76	*Miscellaneous Repair Services*	*551*	*0.3%*	*0.87*
78	*Motion Pictures*	*235*	*0.1%*	*0.08*
79	*Amusement and Recreation*	*1,155*	*0.7%*	*0.44*
799	Miscellaneous Amusement and Recreation Services	872	0.5%	0.57
80	*Health Services*	*21,148*	*12.9%*	*1.60*
806	Hospitals	12,600	7.7%	1.88
801	Offices and Clinics of Medical Doctors	3,107	1.9%	1.11
805	Nursing and Personal Care Facilities	2,829	1.7%	1.90
802	Offices and Clinics of Dentists	861	0.5%	0.98
804	Offices of Other Health Practitioners	841	0.5%	1.62
87	*Engineering and Management Services*	*2,523*	*1.5%*	*0.57*
874	Management and Public Relations	1,258	0.8%	0.91
	ALL INDUSTRIES	164,085		

*Includes SIC 357, 366, 367, 382, 384

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

TABLE 3

EMPLOYMENT BY INDUSTRY GROUP

City of Long Beach, 1992

Ranked by Employment

SIC	Industry Title	Employment	Percent	Location Quotient
372, 376, 381	Aerospace	36,122	22.0%	5.08
80	Health Services	21,148	12.9%	1.60
58	Eating and Drinking Places	9,195	5.6%	0.98
73	Business Services	7,047	4.3%	0.66
59	Miscellaneous Retail	4,293	2.6%	1.22
50	Wholesale Trade -- Durable Goods	3,294	2.0%	0.55
54	Food Stores	2,978	1.8%	0.81
60	Depository Institutions	2,821	1.7%	0.73
70	Hotels and Other Lodging Places	2,793	1.7%	1.69
65	Real Estate	2,553	1.6%	1.08
87	Engineering and Management Services	2,523	1.5%	0.57
63, 64	Insurance	2,468	1.5%	0.84
44	Water Transportation	2,069	1.3%	5.48
55	Automotive Dealers and Service Stations	1,928	1.2%	0.84
51	Wholesale Trade -- Nondurable Goods	1,886	1.1%	0.36
75	Auto Repair, Services, and Parking	1,776	1.1%	0.93
53	General Merchandise Stores	1,298	0.8%	0.49
72	Personal Services	1,294	0.8%	0.85
	Computers, Electronics, Instruments*	1,282	0.8%	0.59
79	Amusement and Recreation	1,155	0.7%	0.44
42	Trucking and Warehousing	1,143	0.7%	0.56
48	Communications	1,107	0.7%	0.60
371	Motor Vehicles and Equipment	1,058	0.6%	1.75
27	Printing and Publishing	1,024	0.6%	0.42
47	Transportation Services	931	0.6%	1.03
33, 34	Metals	746	0.5%	0.27
	ALL INDUSTRIES	164,085		

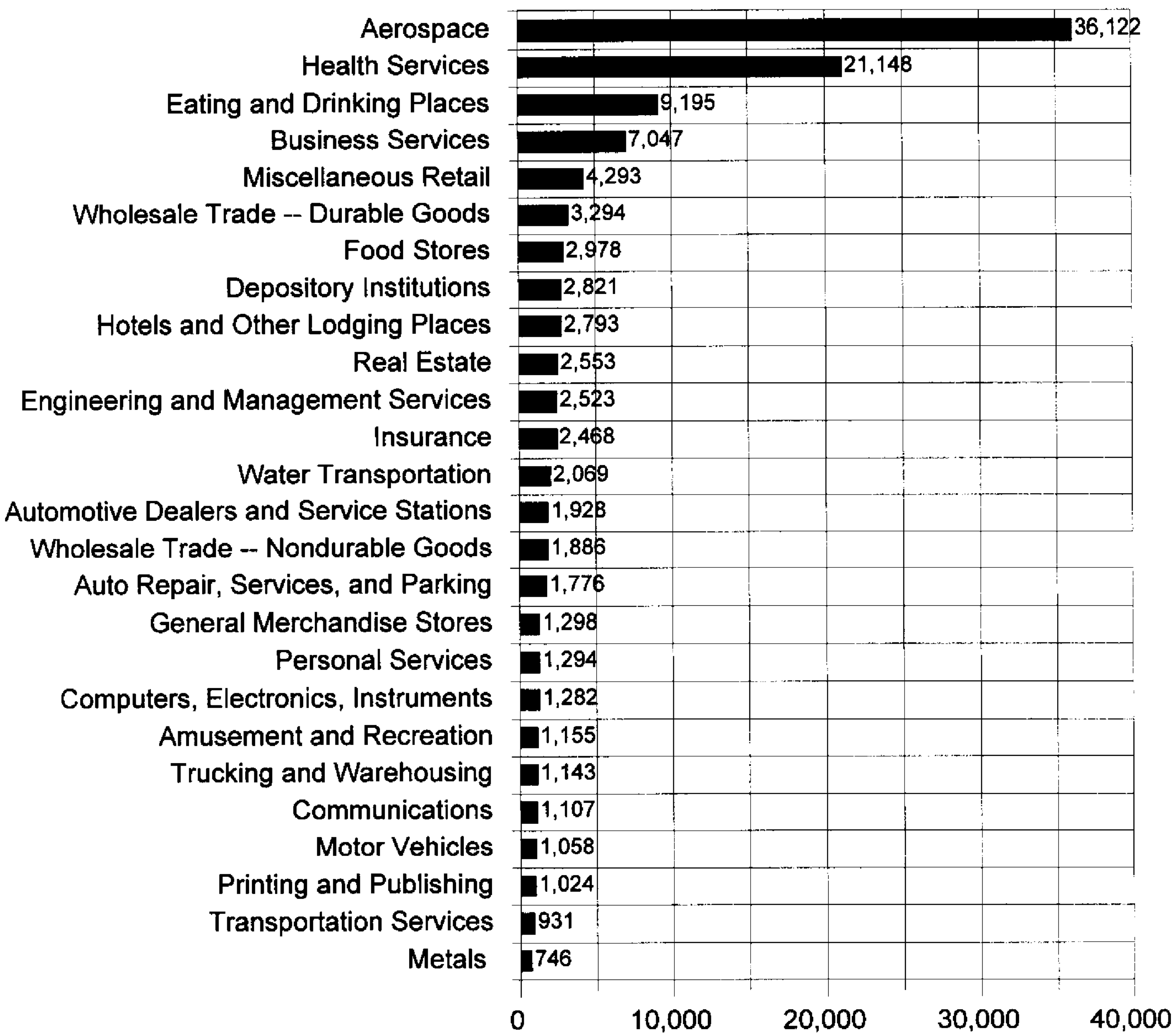
*Includes SIC 357, 366, 367, 382, 384

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

FIGURE 38

CITY OF LONG BEACH INDUSTRY GROUPS

Employment in 1992



Source: California EDD, Labor Market Information Division

TABLE 4

EMPLOYMENT BY INDUSTRY GROUP

City of Long Beach, 1992

Ranked by Location Quotient

SIC	Industry Title	Employment	Percent	Location Quotient
44	Water Transportation	2,069	1.3%	5.48
372, 376, 381	Aerospace	36,122	22.0%	5.08
371	Motor Vehicles and Equipment	1,058	0.6%	1.75
70	Hotels and Other Lodging Places	2,793	1.7%	1.69
80	Health Services	21,148	12.9%	1.60
59	Miscellaneous Retail	4,293	2.6%	1.22
65	Real Estate	2,553	1.6%	1.08
47	Transportation Services	931	0.6%	1.03
58	Eating and Drinking Places	9,195	5.6%	0.98
75	Auto Repair, Services, and Parking	1,776	1.1%	0.93
72	Personal Services	1,294	0.8%	0.85
63, 64	Insurance	2,468	1.5%	0.84
55	Automotive Dealers and Service Stations	1,928	1.2%	0.84
54	Food Stores	2,978	1.8%	0.81
60	Depository Institutions	2,821	1.7%	0.73
73	Business Services	7,047	4.3%	0.66
48	Communications	1,107	0.7%	0.60
	Computers, Electronics, Instruments*	1,282	0.8%	0.59
87	Engineering and Management Services	2,523	1.5%	0.57
42	Trucking and Warehousing	1,143	0.7%	0.56
50	Wholesale Trade -- Durable Goods	3,294	2.0%	0.55
53	General Merchandise Stores	1,298	0.8%	0.49
79	Amusement and Recreation	1,155	0.7%	0.44
27	Printing and Publishing	1,024	0.6%	0.42
51	Wholesale Trade -- Nondurable Goods	1,886	1.1%	0.36
33-34	Metals	746	0.5%	0.27
	ALL INDUSTRIES	164,085		

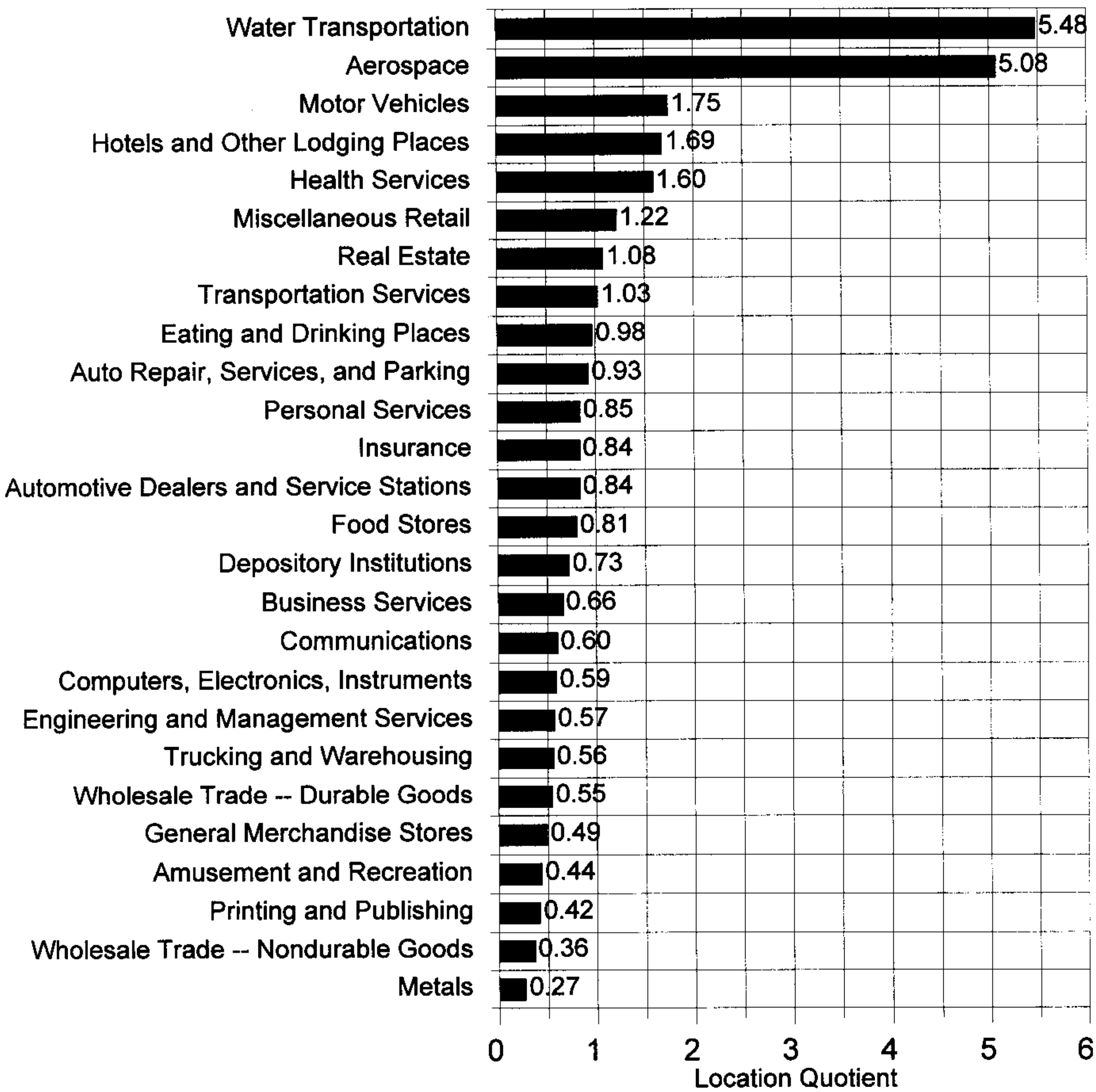
*Includes SIC 357, 366, 367, 382, 384

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

FIGURE 39

CITY OF LONG BEACH INDUSTRY GROUPS

Location Quotients in 1992



Source: California EDD, Labor Market Information Division

2.3 PAYROLL BY INDUSTRY IN LONG BEACH

The following payroll data is presented for each Long Beach industry:

- *Average Annual Payroll per Worker*

  Description: This figure is derived from the quarterly payroll totals per industry in the third quarter of 1992. This is a good indicator of average job quality and skill levels in an industry, relative to other industries.

  Source: EDD, 1992 ICE database

- *Total Annual Payroll*

  Description: This is also derived from the quarterly payroll per industry in the third quarter of 1992.

  Source: EDD, 1992 ICE database

Table 5 shows the total annual payroll per industry in millions of dollars, the percent of Long Beach payroll accounted for by each industry, the average annual payroll per worker, and a payroll index derived by dividing the average annual payroll per worker by the Los Angeles County average of $29,811 for all industries in 1992 (see also Tables 6 and 7, and Figures 40 and 41).

Manufacturing

The manufacturing sector contributed $1.94 billion in payroll to Long Beach workers, 37.6 percent of total Long Beach payroll. The average annual payroll per worker was $40,750, 37 percent higher than the Los Angeles County average. Seventy-nine percent of the total manufacturing payroll - $1.55 billion - was earned by aerospace workers (this represented almost one-third (30.1 percent) of total city payroll).

Major Long Beach industry group:

- Aerospace (SIC 372, 376, 381)

  Annual payroll: $1,552.4 million
  Percent of Long Beach payroll: 30.1%
  Average annual payroll per worker: $42,976
  Payroll Index: 137

Transportation, Communications, Utilities

The total annual payroll in this division was $469.1 million, 9.1 percent of total Long Beach payroll. The average annual payroll per worker was $39,425, 32 percent greater than the county average.

Major Long Beach industry group:

- Water Transportation (SIC 42)
  Annual payroll: $91.0 million
  Percent of Long Beach payroll: 1.8%
  Average annual payroll per worker: $43,973
  Payroll Index: 148

Wholesale and Retail Trade

The total annual payroll in the wholesale trade industries was $173.0 million, 3.4 percent of total Long Beach payroll. The average payroll per worker was $33,400, 12 percent greater than the county average. The total annual payroll of the retail trade industries was $336.7 million, 6.5 percent of total Long Beach payroll. Given the preponderance of low-wage and part-time jobs in retail trade, average annual per worker was only $15,649, only 52 percent of the county average. As a result, although the retail trade industries accounted for 13.1 percent of Long Beach jobs in 1992, they contributed 6.5 percent of the total Long Beach payroll.

Major Long Beach industry groups:

- Wholesale Trade - Durables (SIC 50)
  Annual payroll: $108.1 million
  Percent of Long Beach payroll: 2.1%
  Average annual payroll per worker: $32,830
  Payroll Index: 112

- Eating and Drinking Places (SIC 58)
  Annual payroll: $94.9 million
  Percent of Long Beach payroll: 1.8%
  Average annual payroll per worker: $10,324
  Payroll Index: 35

- Miscellaneous Retail (SIC 59)
  Annual payroll: $91.4 million
  Percent of Long Beach payroll: 1.8%
  Average annual payroll per worker: $21,291
  Payroll Index: 71

- Wholesale Trade - Nondurables (SIC 51)
  Annual payroll: $64.9 million
  Percent of Long Beach payroll: 1.3%
  Average annual payroll per worker: $34,396
  Payroll Index: 115

- Food Stores (SIC 54)
  Annual payroll: $55.3 million
  Percent of Long Beach payroll: 1.1%
  Average annual payroll per worker: $18,570
  Payroll Index: 62

- Automotive Dealers and Service Stations (SIC 55)
  Annual payroll: $50.7 million
  Percent of Long Beach payroll: 1.0%
  Average annual payroll per worker: $26,302
  Payroll Index: 88

Finance, Insurance, Real Estate

These industries paid $257.5 million to Long Beach workers in 1992, 5.0 percent of total Long Beach payroll. While the highest average earnings were found in the Security and Commodity Brokers industry group (SIC 62), it employed only 392 workers in Long Beach. The Insurance Carriers industry group (SIC 63) paid relatively high average annual earnings, on the strength of the average $37,301 earned by workers in Medical Service and Health Insurance (SIC 632).

Major Long Beach industry groups:

- Depository Institutions (SIC 60)
  Annual payroll: $83.1 million
  Percent of Long Beach payroll: 1.6%
  Average annual payroll per worker: $29,443
  Payroll Index: 99

- Insurance Carriers (SIC 63)
  Annual payroll: $69.0 million
  Percent of Long Beach payroll: 1.3%
  Average annual payroll per worker: $36,748
  Payroll Index: 123

- Real Estate (SIC 65)
  Annual payroll: $50.6 million
  Percent of Long Beach payroll: 1.0%
  Average annual payroll per worker: $19,808
  Payroll Index: 66

Services

The total annual payroll of the services industries was $1.24 billion in 1992, 24.0 percent of total Long Beach payroll. The average annual payroll per worker was $30,203, slightly higher than the county average. Above average earnings in the Health Services and Engineering and Management Services industry groups compensated for low wages in the Hotel, Business Services, and the Auto Repair, Services, and Parking industry groups.

Major Long Beach industry groups:

- Health Services (SIC 80)
  Annual payroll: $674.2 million
  Percent of Long Beach payroll: 13.1%
  Average annual payroll per worker: $31,881
  Payroll Index: 107

- Business Services (SIC 72)
  Annual payroll: $175.2 million
  Percent of Long Beach payroll: 3.4%
  Average annual payroll per worker: $24,864
  Payroll Index: 83

- Engineering and Management Services (SIC 87)
  Annual payroll: $85.9 million
  Percent of Long Beach payroll: 1.7%
  Average annual payroll per worker: $34,055
  Payroll Index: 114

- Auto Repair, Services, and Parking (SIC 75)
  Annual payroll: $40.2 million
  Percent of Long Beach payroll: 0.8%
  Average annual payroll per worker: $22,646
  Payroll Index: 76

- Hotels and Other Lodging Places (SIC 70)
  Annual payroll: $35.1 million
  Percent of Long Beach payroll: 0.7%
  Average annual payroll per worker: $12,583
  Payroll Index: 42

TABLE 5

PAYROLL BY INDUSTRY

City of Long Beach

SIC	Industry Title	Annual Payroll ($ million)	Percent of Long Beach Payroll	Average Annual Payroll	Payroll Index (LAC=100)
20-39	MANUFACTURING	1,938.1	37.6%	$40,750	137
24-25, 32-39	*Durables Manufacturing*	*1,865.9*	*36.2%*	*$41,334*	*139*
35-38	*High Technology Manufacturing*	*1,816.7*	*35.2%*	*$41,946*	*141*
372, 376, 381	***Aerospace***	***1,552.4***	***30.1%***	***$42,976***	***144***
372	Aircraft and Parts	1,490.8	28.9%	$42,831	144
381	Search and Navigation Equipment	51.6	1.0%	$47,456	159
	*Computers, Electronics, Instruments**	*40.6*	*0.8%*	*$31,669*	*106*
382	Measuring and Controlling Devices	27.5	0.5%	$30,184	101
371	*Motor Vehicles and Equipment*	*37.9*	*0.7%*	*$35,799*	*120*
33-34	*Metals*	*20.2*	*0.4%*	*$27,124*	*91*
20-23, 26-31	Non-Durables Manufacturing	*72.2*	*1.4%*	*$29,847*	*100*
27	*Printing and Publishing*	*32.5*	*0.6%*	*$31,784*	*107*
40-49	TRANSPORTATION, COMM, UTILS.	469.1	9.1%	$39,425	132
41-42, 44-47	*Transportation*	*228.5*	*4.4%*	*$37,247*	*125*

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

41	*Local and Interurban Passenger Transit*	*36.3*	*0.7%*	*$31,448*	*105*
411	Local and Suburban Transportation	34.7	0.7%	$33,331	112
414	Bus Charter Service	1.6	0.0%	$13,923	47
42	*Trucking and Warehousing*	*42.0*	*0.8%*	*$36,776*	*123*
421	Trucking & Courier Services, Except Air	31.8	0.6%	$37,424	126
44	*Water Transportation*	*91.0*	*1.8%*	*$43,973*	*148*
449	Water Transportation Services	41.2	0.8%	$43,733	147
441	Deep Sea Foreign Transportation of Freight	30.5	0.6%	$48,283	162
47	*Passenger Transportation Services*	*31.2*	*0.6%*	*$33,494*	*112*
473	Freight Transportation Arrangement	27.5	0.5%	$36,576	123
48	*Communications*	*38.2*	*0.7%*	*$34,514*	*116*
481	Telephone Communications	30.2	0.6%	$35,108	118
50-51	WHOLESALE TRADE	173.0	3.4%	$33,400	112
50	*Wholesale Trade -- Durable Goods*	*108.1*	*2.1%*	*$32,830*	*110*
504	Professional & Commercial Equipment	29.5	0.6%	$39,482	132
508	Machinery, Equipment, and Supplies	24.1	0.5%	$38,926	131
51	*Wholesale Trade -- Nondurable Goods*	*64.9*	*1.3%*	*$34,396*	*115*
517	Petroleum and Petroleum Products	28.6	0.6%	$50,542	170
52-59	RETAIL TRADE	336.7	6.5%	$15,649	52
53	*General Merchandise Stores*	*15.9*	*0.3%*	*$12,253*	*41*
54	*Food Stores*	*55.3*	*1.1%*	*$18,570*	*62*
541	Grocery Stores	51.3	1.0%	$19,897	67
55	*Automotive Dealers and Service Stations*	*50.7*	*1.0%*	*$26,302*	*88*

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

551	New and Used Car Dealers	27.0	0.5%	$33,362	112
58	*Eating and Drinking Places*	*94.9*	*1.8%*	*$10,324*	*35*
59	*Miscellaneous Retail*	*91.4*	*1.8%*	*$21,291*	*71*
598	Fuel Dealers	27.4	0.5%	$52,098	175
60-67	FINANCE, INSURANCE, REAL ESTATE	257.5	5.0%	$30,159	101
60	*Depository Instituitons*	*83.1*	*1.6%*	*$29,443*	*99*
603	Savings Institutions	37.8	0.7%	$35,879	120
602	Commercial Banks	34.4	0.7%	$25,276	85
62	*Security and Commodity Brokers*	*24.0*	*0.5%*	*$61,280*	*206*
63	*Insurance Carriers*	*69.0*	*1.3%*	*$36,748*	*123*
632	Medical Service and Health Insurance	50.0	1.0%	$37,301	125
64	*Insurance Agents, Brokers, and Service*	*17.8*	*0.3%*	*$30,156*	*101*
65	*Real Estate*	*50.6*	*1.0%*	*$19,808*	*66*
653	Real Estate Agents and Managers	25.8	0.5%	$23,217	78
70-89	SERVICES	1,237.3	24.0%	$30,203	101
70	*Hotels and Other Lodging Places*	*35.1*	*0.7%*	*$12,583*	*42*
701	Hotels and Motels	34.7	0.7%	$12,638	42
72	*Personal Services*	*20.1*	*0.4%*	*$15,531*	*52*
73	*Business Services*	*175.2*	*3.4%*	*$24,864*	*83*
738	Miscellaneous Business Services	61.3	1.2%	$26,741	90
736	Personnel Supply Services	61.0	1.2%	$21,811	73

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

75	*Auto Repair, Services, and Parking*	*40.2*	*0.8%*	*$22,646*	*76*
79	*Amusement and Recreation*	*18.6*	*0.4%*	*$16,136*	*54*
80	*Health Services*	*674.2*	*13.1%*	*$31,881*	*107*
806	Hospitals	421.0	8.2%	$33,410	112
801	Offices and Clinics of Medical Doctors	146.1	2.8%	$47,025	158
805	Nursing and Personal Care Facilities	38.7	0.8%	$13,693	46
87	*Engineering and Management Services*	*85.9*	*1.7%*	*$34,055*	*114*
874	Management and Public Relations	43.9	0.9%	$34,908	117
	ALL INDUSTRIES	5,159.3		$31,443	105

*Includes SIC 357, 366, 367, 382, 384

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

TABLE 6

PAYROLL BY INDUSTRY GROUP

City of Long Beach, 1992

Ranked by Annual Payroll per Worker

SIC	Industry Title	Annual Payroll per Worker	Payroll Index (LAC=100)	Annual Payroll ($million)	Percent of Long Beach Payroll
44	Water Transportation	$43,973	148	91.0	1.8%
372, 376, 381	Aerospace	$42,976	144	1,552.4	30.1%
42	Trucking and Warehousing	$36,776	123	42.0	0.8%
371	Motor Vehicles and Equipment	$35,799	120	37.9	0.7%
63, 64	Insurance	$35,170	118	86.8	1.7%
48	Communications	$34,514	116	38.2	0.7%
51	Wholesale Trade -- Nondurable Goods	$34,396	115	64.9	1.3%
87	Engineering and Management Services	$34,055	114	85.9	1.7%
47	Transportation Services	$33,494	112	31.2	0.6%
50	Wholesale Trade -- Durable Goods	$32,830	110	108.1	2.1%
80	Health Services	$31,881	107	674.2	13.1%
	Computers, Electronics, Instruments*	$31,795	107	39.9	0.8%
27	Printing and Publishing	$31,784	107	32.5	0.6%
60	Depository Institutions	$29,443	99	83.1	1.6%
33, 34	Metals	$27,124	91	20.2	0.4%
55	Automotive Dealers and Service Stations	$26,302	88	50.7	1.0%
73	Business Services	$24,864	83	175.2	3.4%
75	Auto Repair, Services, and Parking	$22,646	76	40.2	0.8%
59	Miscellaneous Retail	$21,291	71	91.4	1.8%
65	Real Estate	$19,808	66	50.6	1.0%
54	Food Stores	$18,570	62	55.3	1.1%
79	Amusement and Recreation	$16,136	54	18.6	0.4%
72	Personal Services	$15,531	52	20.1	0.4%
70	Hotels and Other Lodging Places	$12,583	42	35.1	0.7%
53	General Merchandise Stores	$12,253	41	15.9	0.3%
58	Eating and Drinking Places	$10,324	35	94.9	1.8%
	ALL INDUSTRIES	$31,443	105		

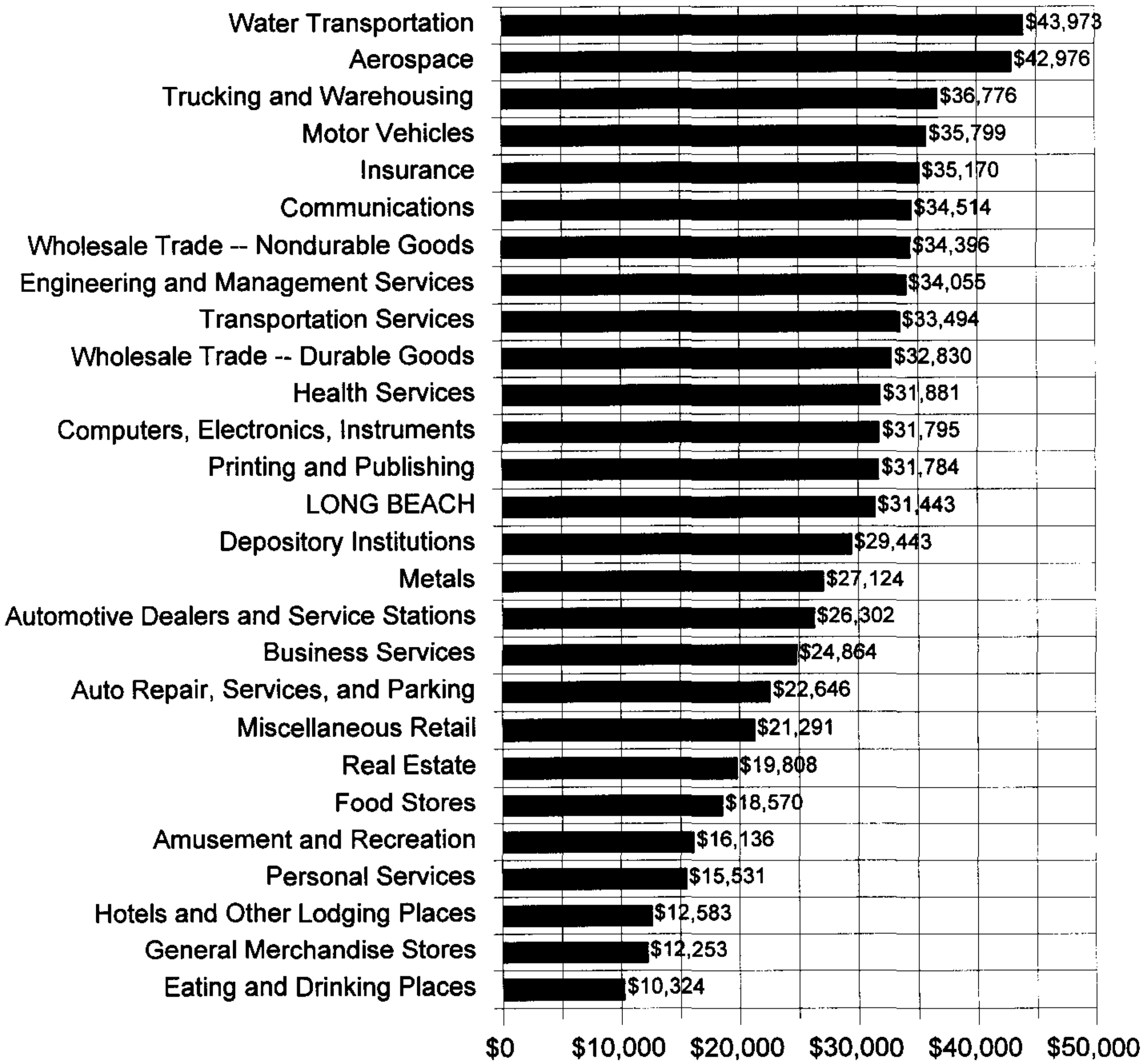
*Includes SIC 357, 366, 367, 382, 384

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

FIGURE 40

CITY OF LONG BEACH INDUSTRY GROUPS

Payroll per Worker in 1992



Source: California EDD, Labor Market Information Division

TABLE 7

PAYROLL BY INDUSTRY GROUP

City of Long Beach, 1992

Ranked by Percent of Total Payroll

SIC	Industry Title	Annual Payroll per Worker	Payroll Index (LAC=100)	Annual Payroll ($million)	Percent of Long Beach Payroll
372, 376, 381	Aerospace	$42,976	144	1,552.4	30.1%
80	Health Services	$31,881	107	674.2	13.1%
73	Business Services	$24,864	83	175.2	3.4%
50	Wholesale Trade -- Durable Goods	$32,830	110	108.1	2.1%
58	Eating and Drinking Places	$10,324	35	94.9	1.8%
44	Water Transportation	$43,973	148	91.0	1.8%
59	Miscellaneous Retail	$21,291	71	91.4	1.8%
63, 64	Insurance	$35,170	118	86.8	1.7%
87	Engineering and Management Services	$34,055	114	85.9	1.7%
60	Depository Institutions	$29,443	99	83.1	1.6%
51	Wholesale Trade -- Nondurable Goods	$34,396	115	64.9	1.3%
54	Food Stores	$18,570	62	55.3	1.1%
55	Automotive Dealers and Service Stations	$26,302	88	50.7	1.0%
65	Real Estate	$19,808	66	50.6	1.0%
42	Trucking and Warehousing	$36,776	123	42.0	0.8%
75	Auto Repair, Services, and Parking	$22,646	76	40.2	0.8%
	Computers, Electronics, Instruments*	$31,795	107	39.9	0.8%
48	Communications	$34,514	116	38.2	0.7%
371	Motor Vehicles and Equipment	$35,799	120	37.9	0.7%
70	Hotels and Other Lodging Places	$12,583	42	35.1	0.7%
27	Printing and Publishing	$31,784	107	32.5	0.6%
47	Transportation Services	$33,494	112	31.2	0.6%
33, 34	Metals	$27,124	91	20.2	0.4%
72	Personal Services	$15,531	52	20.1	0.4%
79	Amusement and Recreation	$16,136	54	18.6	0.4%
53	General Merchandise Stores	$12,253	41	15.9	0.3%
	ALL INDUSTRIES	$31,443	105		

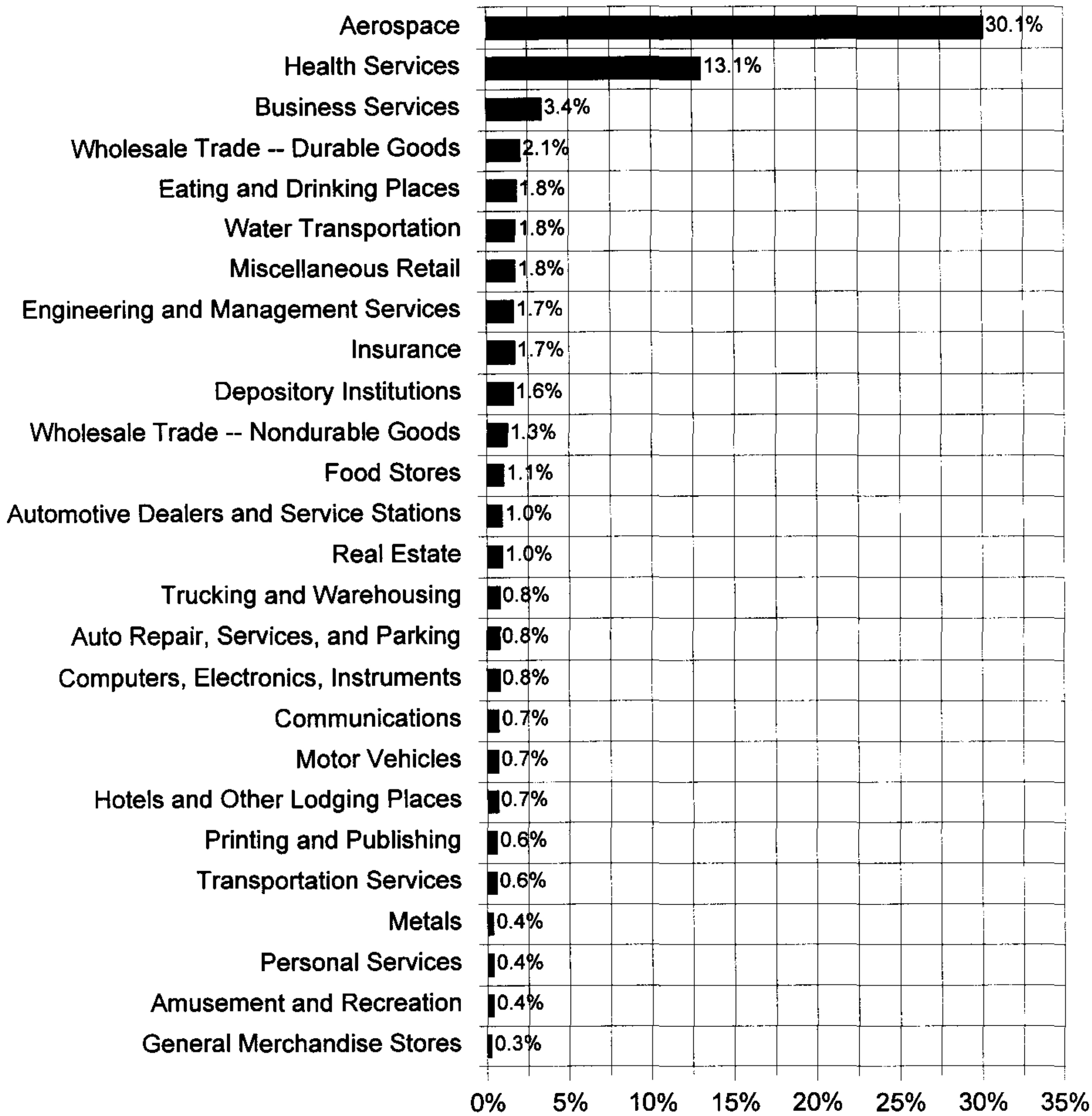
*Includes SIC 357, 366, 367, 382, 384

Source: California EDD, Labor Market Information Division, 1992 Industrial and Commercial Employer (ICE) data

FIGURE 41

CITY OF LONG BEACH INDUSTRY GROUPS

Percent of Payroll in 1992



Source: California EDD, Labor Market Information Division

3. *BUSINESS CONDITIONS IN LONG BEACH INDUSTRIES*

3.1 ANALYSIS OF MAJOR INDUSTRY SECTORS

Long Beach's industrial base is experiencing a period of rapid restructuring brought on in part by deep defense cutbacks, increasing global trade and a slow regional recovery from the 1990 recession. Some industry sectors are finding highly favorable business opportunities and others are struggling to avoid losing ground. Business conditions in twenty-one of Long Beach's major industry sectors are summarized below, with each sector given one of four possible assessments: experiencing difficulty, borderline, strong, or very strong.

It should be noted that these assessments roll-up responses from all four survey cycles, 1994 through 1997. Some industries experienced improved business trends in the last year or two that may not be apparent in this rolled-up rating.

Nondurable Manufacturing *Assessment: Borderline*

The nondurable manufacturing sector produces such things as food, apparel, printed material, refined petroleum, and molded plastic items. Firms in this sector give mixed signals about business conditions in Long Beach.

Positive Signs

- There are more firms saying sales increased than saying sales decreased.
- The percent of firms say Long Beach is a positive location for business and that they would still locate in Long Beach if they were choosing a location today is close to the average for all Long Beach firms.
- The percent of firms saying their industry is in recession is below average for Long Beach firms.

Warning Signs

- The percent of firms saying major customers and suppliers have left the area is slightly above average for Long Beach firms.
- The percent of firms saying they might relocate from Long Beach is above average.
- Responses for many key business condition indicators were less positive in the 1996-97 period than they were in 1994-95.

Printing *Assessment: Experiencing Difficulty*

The printing industry is part of the nondurable manufacturing sector and produces printed products ranging from newspapers to business forms to greeting cards. Many of Long Beach's printing firms report that business conditions are difficult for them.

Positive Signs

- Relative few firms indicate their industry is in recession.

Warning Signs

- A low percentage of firms indicate that they see Long Beach as a good business location.
- An above average percent of firms report that major customers and suppliers have left the area.
- A high percent of firms report laying off workers.

Durable Manufacturing *Assessment: Experiencing Difficulty*

The durable manufacturing sector produces such things as furniture, metal products, transportation equipment (including trucks and airplanes), and instruments and communication equipment. Firms in this sector indicate they face barriers in seeking to survive and grow.

Positive Signs

- Responses for all key business condition indicators became significantly more positive in the 1996-97 period than they were in 1994-95.

Warning Signs

- Many more firms report declining sales than report improving sales.
- Many firms report their industry is in recession and that major customers and suppliers have left the area.
- The percent of firms that have laid off workers is significantly above average.

Primary and Fabricated Metals *Assessment: Borderline*

The primary and fabricated metals industries are part of the durable manufacturing sector, and produce such products as extruded aluminum shapes, metal castings, heat-treated metal, metal fasteners, and metal forgings. This industry group appears on the borderline between growth and retrenchment.

Positive Signs

- A high percent of firms report Long Beach is a good business location.
- Responses in 1996-1997 were more positive than those in 1994-1995.

- The percent of firms reporting that they plan to expand sales is above average.

Warning Signs

- A low percent of firms report increasing sales and a high percent report decreasing sales.
- A high percent of firms report their industry is in recession and that major customers and suppliers have left the area.

High Technology Manufacturing *Assessment: Experiencing Difficulty*

Positive Signs

- The percent of firms reporting increased sales is above average.
- A high percent of firms provide training for their workers.

Warning Signs

- The percent of firms reporting they would locate in Long Beach if making the choice today is low.
- The percent of firms reporting layoffs is high.
- An above-average percent of firms say they might leave Long Beach.

Trucking *Assessment: Strong*

The trucking industry provides both local and long-distance movement of goods, provides refrigerated and general warehousing and storage, and operates terminal facilities. This industry is doing well in Long Beach.

Positive Signs

- The percent of firms saying Long Beach is a good location for business and they would still locate their business in the City is above average.
- The percent of firms reporting increased sales is above average and the percent reporting decreased sales is below average.
- Very few firms report their industry is in recession.
- The percent of firms reporting layoffs is low.

Warning Signs

- A very high percent of firms indicate concern about security problems.

Water Transportation *Assessment: Very Strong*

The water transportation industry moves freight and passengers on the open seas and inland waters. It includes related activities such as towing and cargo handling. Firms in this sector have the most positive outlook and report the best business conditions of any industry group in Long Beach. The Port of Long Beach is clearly an important driving force for the City's economy as it supports growth in this sector and linked transportation, wholesale and business service sectors.

Positive Signs

- Very positive assessments of Long Beach as a business location.
- Most firms report that sales have increased and very few report decreasing sales.
- Many firms are upgrading the skills of their workers and very few report lay-offs.

Warning Signs

- The percent of firms reporting physical barriers to expanding at their site is above average.

Transportation by Air *Assessment: Experiencing Difficulty*

This industry provides transportation by air and provides air terminal services. Many firms in this industry indicate they are experiencing difficult business conditions, although most were surveyed in the first survey cycle.

Positive Signs

- The percent of firms reporting increased sales is above average.

Warning Signs

- The percent of firms reporting that Long Beach is a good location for business and that they would locate in the City today is low.
- The percent of firms reporting their industry is in recession is above average, and the percent reporting that major customers and suppliers have left the area is the highest of any industry group.

Transportation Services *Assessment: Strong*

The transportation services industry supports transportation firms by providing services such as forwarding and packing, and the arrangement of passenger and freight transportation.

Positive Signs

- Very positive assessments of Long Beach as a business location.
- Most firms report that sales have increased and very few report decreasing sales.
- Many firms are upgrading the skills of their workers and very few report layoffs.

Warning Signs

- Approximately one-third of the respondents (including many involved in passenger transportation) report their industry is in recession.

Wholesale-Durable Goods *Assessment: Borderline*

Firms in this industry group sell merchandise with a normal life expectancy of three years or more (such as automobiles, furniture and major household appliances) to retailers, professional business users, or other wholesalers. This industry group reports borderline business conditions.

Positive Signs

- Nearly 80% of firms plan to increase sales in the near future.
- Most key business indicators were more positive in 1996-97 than in 1994-95.

Warning Signs

- More firms say sales have decreased than say they have increased.
- A high percentage of firms have reported that their industry is in recession and that major customers and suppliers have left the area.

Wholesale-Nondurable Goods *Assessment: Strong*

Nondurable wholesalers sell items which normally last less than three years (such as food, beverages and clothing) to retailers, professional businesses and other wholesalers. This industry group reports positive business conditions in Long Beach.

Positive Signs

- Significantly more firms report increasing sales than report decreasing sales.
- An above-average percent of firms report that they perceive Long Beach as a positive location for business.
- The percent of firms reporting that their industry is in recession is well below average.

Warning Signs

- Some firms report difficulty in finding qualified workers.

Food Stores-Retail *Assessment: Strong*

Retail food stores primarily sell food for home preparation and consumption. This industry group reports favorable business conditions in Long Beach.

Positive Signs

- The percent of firms saying that they would still choose Long Beach as a business location is very high.
- For the retail sector as a whole, many key business indicators were more positive in 1996-97 than they were in 1994-95.

Warning Signs

- The percent of firms reporting that sales have increased is the lowest of any industry group.

Auto Dealers and Service Stations *Assessment: Experiencing Difficulty*

This industry includes retail dealers selling new and used automobiles, boats, recreational vehicles and motorcycles, and gasoline service stations. Many of these firms report difficult business conditions in Long Beach.

Positive Signs

- For the retail sector as a whole, many key business indicators were more positive in 1996-97 than they were in 1994-95.

Warning Signs

- The percent of establishments reporting that Long Beach is a good location for business is significantly below average.
- The percent of establishments saying that they would still choose Long Beach as a business location is the lowest of any industry group.
- The percent of firms reporting that sales have increased is very low.
- A high percent of firms report that sales have decreased.

Eating and Drinking Places *Assessment: Experiencing Difficulty*

This industry is made up of establishments selling prepared foods and drinks for immediate consumption, generally on the premises. Many of these firms report difficult business conditions in Long Beach.

Positive Signs

- The percent of firms reporting layoffs is low.

Warning Signs

- The percent of establishments reporting that Long Beach is a good location for business and that they would still choose Long Beach as a business location is very low.
- The percent of firms reporting that sales have increased is low.
- A very high percent of businesses report their industry is in recession.

Miscellaneous Retail *Assessment: Experiencing Difficulty*

This industry group includes drug stores, liquor stores, used merchandise stores, and miscellaneous shopping goods stores. Many of these firms report difficult business conditions in Long Beach.

Positive Signs

- For the retail sector as a whole, many key business indicators were more positive in 1996-97 than they were in 1994-95.

Warning Signs

- The percent of establishments reporting that Long Beach is a good location for business is the lowest of any industry group.
- The percent of establishments saying that they would still choose Long Beach as a business location is very low.
- The percent of firms reporting that sales have increased is very low.
- A high percent of firms report that sales have decreased.
- The percent of firms reporting that major customers and suppliers have relocated is very high.

Finance, Insurance, Real Estate *Assessment: Very Strong*

This major industry sector includes commercial banks, savings institutions, credit unions, consumer finance companies, mortgage bankers and brokers, security brokers, insurance carriers, insurance agents and brokers, real estate owners, operators, developers, brokers and agents, and investment and holding companies. The insurance sector has been strongly represented in the surveys, and they and other firms in this sector report highly favorable business conditions in Long Beach.

Positive Signs

- The percent of firms reporting that Long Beach is a good location for business is very high.
- The percent of firms saying that they would still choose Long Beach as a business location is very high.
- A high percent of firms report that sales have increased.
- The percent of firms reporting that major customers and suppliers have relocated is well below average.

Warning Signs

- Over forty percent of firms report that their industry is in recession.

Hotels *Assessment: Borderline+*

Many of the responses from hotels were gathered the first two survey cycles, and reports from industry representatives indicate that hotel occupancy rates are much higher in 1997 than in previous years. This improvement has not yet been captured by survey data and therefore is not reflected in this assessment.

Positive Signs

- A very high percent said they would still locate in Long Beach today.

Warning Signs

- Above average reports of layoffs.
- A high percent reported decreasing sales and a low percent increasing sales.
- A low percent said that Long Beach is a good business location.

Personal Services *Assessment: Borderline*

The personal services sector provides services to individuals, such as laundries, dry cleaning plants, photographic studios, and beauty and barber shops. Firms in these industries report both positive and negative indicators about business conditions in Long Beach.

Positive Signs

- The number of businesses reporting layoffs is very low.
- Very few businesses report loss of their customer base.

Warning Signs

- A high level of complaints about security problems.
- The percent saying that Long Beach is a good business environment and that they would locate here today is below average.

Business Services *Assessment: Strong*

This industry is made up of firms providing services such as advertising, credit reporting, mailing, computer programming, data processing, and building services on a contractual or fee basis. Firms in this industry report favorable business conditions in Long Beach.

Positive Signs

- The percent of firms reporting that Long Beach is a good location for business is above average.
- The percent of firms saying that they would still choose Long Beach as a business location is well above average.
- A high percent of firms report that sales have increased.

Warning Signs

- The percent of firms reporting layoffs is slightly above average.

Health Services *Assessment: Borderline*

This industry group includes offices and clinics of doctors, dentists, chiropractors, optometrists, nursing and personal care facilities, hospitals, medical and dental laboratories, and home health care services. This sector of the service industry reports borderline business conditions.

Positive Signs

- The percent of establishments reporting that major customers and suppliers have relocated is well below average.
- The percent of establishments reporting layoffs is below average.

Warning Signs

- The percent of establishments reporting that their industry is in recession is very high.

Engineering and Management Services *Assessment: Experiencing Difficulty*

This industry group includes firms providing services such as engineering, architecture, surveying, accounting, auditing, bookkeeping, research, development and testing, management consulting, and public relations. Many of these firms report difficult business conditions in Long Beach.

Positive Signs

- The percent of firms reporting difficulty finding qualified workers is very low.

Warning Signs

- A high percent of firms report decreasing sales.
- An above-average percent of firms report their industry is in recession.
- A high percent of firms report lay offs.

3.2 INDUSTRY RANKING BASED ON COMPOSITE OF BUSINESS INDICATORS

Some industries find strong locational advantages in Long Beach's restructuring economy, while other industries are struggling to remain viable. Industries giving Long Beach the most positive ratings on business environment indicators are good candidates for business recruitment initiatives. Composite scores for twenty-one industry sectors were produced by calculating the ratio of the percent of responses by each industry to each business indicator to the overall percent of responses from all Long Beach firms to the same indicators (Tables 8 and 9, Figure 42). Since some of the business indicators are positive and others negative, it was possible for an industry to receive a score that was either positive or negative, depending on how firms perceived the business environment.

The weighting given to each of the seventeen business indicators is as follows:

Positive Indicators	*Weighting Factor*
plan to expand employment	1
plan to expand sales	1
plan to expand building	1
plan to expand equipment	1
plan to expand products or services	1

sales have increased over the past three years	6
Long Beach is a positive location for business	8
firm would still choose Long Beach as a business location	8

Negative Indicators	*Weighting Factor*
sales have decreased over the past three years	-6
industry is in recession or general downturn	-3
major customers or suppliers have closed or relocated	-3
firm may relocate outside Long Beach	-4
firm may not renew lease	-2
there are physical barriers to expansion at current site	-2
security problems have increased over the past three years	-2
firm has difficulty recruiting qualified employees	-2
firm has laid-off employees in the past year	-2

The weighting factor for each indicators was multiplied by the ratio produced by dividing the percent of firms in an industry reporting that description of business conditions was true for their company by the corresponding percent for all firms responding to the survey. Thus, if an industry had above-average positive responses the composite score would be positive, and if it had above-average negative responses the score would be negative. The tables that follow show the percent of firms in each industry characterized by each indicator, the resulting score for each industry, and a graph of composite scores for all industry groups. An example of how this calculation was done for one industry and one business indicator is shown below.

EXAMPLE:

indicator: company perceives Long Beach to be a positive location for business

weighting factor for indicator: 8

industry: Water Transportation

percent of firms in industry that say the statement is true: 83%

percent of all firms responding to survey that say the statement is true: 53%

calculation of score: 83%/53% = 1.57 x 8 = 12.58

score: 12.58

Based on their composite scores derived from all 17 business indicators, some industries have exceptionally strong perceptions of Long Beach's business environment, some strong, some borderline, and some negative. Industries in the two strongest categories are listed below.

Industry	*Composite Score*
Exceptionally Strong	
Water Transportation	27.38
Finance, Insurance, Real Estate	14.55
Wholesale, Nondurable Goods	12.21
Strong	
Transportation Services	9.60
Business Services	6.05
Trucking	3.13
Food Stores, Retail	2.69

Conclusions Based on Survey Assessments of Business Conditions

Survey responses identify a group of transportation and business linked industries that have strongly positive perceptions of Long Beach's Business environment and find it advantageous to be located in the city. These include Water Transportation, Transportation Services, Nondurable Wholesale, the Finance, Insurance and Real Estate sector, and Business Services.

TABLE 8

INDUSTRY RESPONSES ON KEY BUSINESS INDICATORS - TOTAL SURVEY RESPONSES 1994 THROUGH 1997

Percent of Survey Respondents in Each Industry Agreeing with Statements about Business Indicators

	Expansion Plans					Sales Trends		Industry Decline		Attracted to LB		Business Obstacles/Problems					
Industry Title	emp.	sales	bldg.	equip.	prod.	up	down	indust. in recession	cust./sup. moved	LB pos. locat.	LB still choice	reloc. out LB	not renew lease	phy. barrier	security prob.	diffic. hiring	lay-offs past yr.
MANUFACTURING-TOTAL (20-39)	53%	74%	22%	46%	50%	43%	41%	43%	42%	52%	46%	20%	26%	38%	46%	28%	28%
Nondurable Manufact..-Total (20-23, 26-31)	55%	74%	29%	50%	49%	45%	38%	39%	41%	53%	47%	21%	29%	40%	46%	26%	27%
Printing (27)	49%	81%	19%	54%	43%	46%	43%	35%	43%	43%	43%	30%	19%	46%	51%	22%	30%
Durable Manufacturing-Total (24-25, 32-39)	52%	74%	16%	44%	51%	42%	44%	45%	42%	51%	45%	18%	24%	37%	46%	29%	28%
Metals (33-34)	50%	78%	22%	42%	56%	33%	50%	56%	53%	64%	53%	17%	31%	36%	53%	22%	31%
High Technology Manufacturing (35-38)	49%	75%	15%	40%	64%	49%	38%	40%	42%	45%	34%	25%	26%	36%	38%	34%	26%
TRANSPORT., COM., UTIL.-TOTAL (40-49	57%	77%	22%	37%	36%	61%	26%	35%	37%	62%	56%	18%	32%	32%	36%	24%	18%
Trucking (42)	51%	65%	19%	28%	30%	51%	33%	30%	40%	58%	56%	19%	26%	42%	70%	35%	16%
Water Transportation (44)	56%	78%	22%	47%	42%	69%	14%	17%	25%	83%	83%	6%	31%	36%	17%	8%	17%
Transportation by Air (45)	78%	89%	30%	59%	59%	48%	48%	48%	59%	37%	30%	33%	33%	56%	22%	26%	26%
Transportation Services (47)	49%	81%	16%	18%	23%	63%	23%	37%	30%	58%	51%	19%	35%	11%	25%	21%	14%
WHOLESALE-TOTAL (50-51)	53%	81%	21%	32%	55%	48%	43%	44%	53%	58%	47%	16%	15%	36%	39%	30%	21%
Wholesale-Durable Goods (50)	49%	79%	16%	28%	50%	43%	48%	49%	56%	55%	46%	18%	18%	35%	44%	31%	21%
Wholesale-Nondurable Goods (51)	62%	87%	34%	43%	66%	62%	30%	32%	45%	66%	49%	13%	9%	38%	28%	28%	19%
RETAIL-TOTAL (52-59)	47%	67%	22%	33%	43%	29%	48%	45%	42%	45%	40%	16%	22%	36%	52%	22%	19%
Food Stores-Retail (54)	41%	62%	28%	38%	45%	21%	38%	38%	38%	55%	59%	14%	7%	52%	66%	10%	17%
Automotive Dealers & Service Stations (55)	58%	70%	30%	40%	48%	23%	53%	48%	45%	45%	28%	18%	23%	53%	70%	30%	30%
Eating and Drinking Places (58)	45%	67%	20%	32%	37%	33%	46%	58%	42%	41%	39%	12%	28%	36%	42%	25%	14%
Miscellaneous Retail (59)	38%	57%	9%	30%	45%	21%	62%	45%	49%	32%	36%	15%	21%	28%	45%	15%	19%
FINANCE, INS., REAL EST.-TOTAL (60-67)	51%	75%	18%	32%	41%	61%	28%	42%	32%	69%	63%	13%	16%	18%	36%	20%	16%
SERVICES-TOTAL (70-89)	44%	58%	13%	31%	38%	41%	43%	44%	35%	51%	48%	19%	27%	26%	48%	24%	18%
Hotels (70)	46%	69%	8%	8%	15%	31%	69%	38%	54%	46%	69%	0%	0%	15%	46%	38%	23%
Personal Services (72)	37%	55%	5%	21%	26%	39%	39%	37%	32%	47%	45%	16%	32%	21%	58%	24%	8%
Business Services (73)	61%	80%	12%	47%	50%	55%	31%	36%	42%	58%	58%	20%	35%	19%	45%	28%	23%
Health Services (80)	32%	47%	9%	23%	38%	38%	46%	52%	34%	49%	46%	17%	22%	31%	50%	24%	17%
Engineering & Management Services (87)	53%	62%	18%	28%	27%	42%	50%	47%	41%	53%	47%	26%	43%	15%	39%	18%	28%
TOTAL FOR ALL FIRMS 1994 THRU 1997	49%	69%	19%	36%	42%	44%	41%	43%	39%	53%	48%	18%	24%	31%	45%	25%	20%

TABLE 9

IDENTIFYING POTENTIAL ECONOMIC DEVELOPMENT TARGET INDUSTRIES BASED ON SURVEY DATA

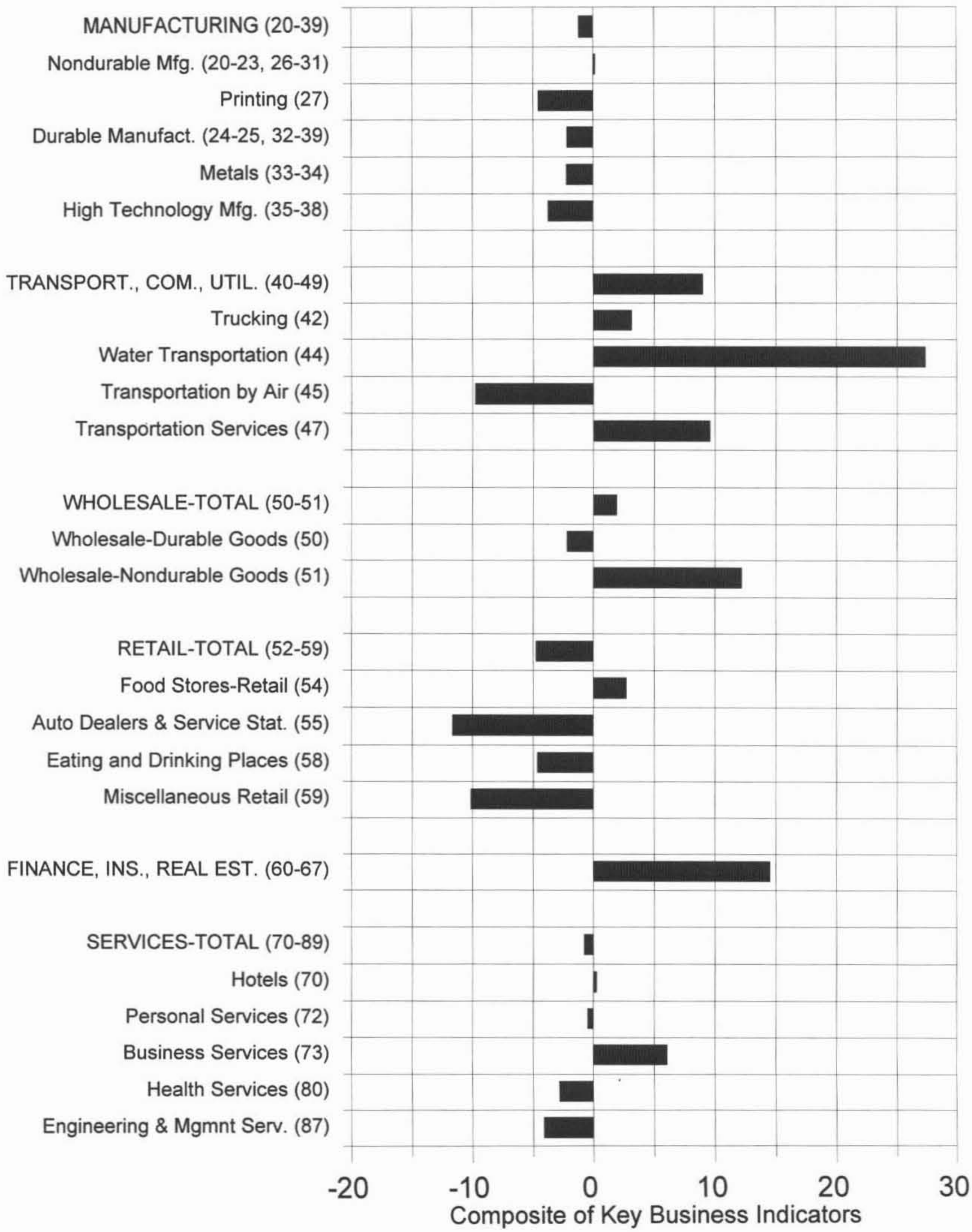
Industry Responses to Key Survey Questions Compared to Averages for All Industries from 1994 to 1997

	Expansion Plans (ratio of industry to all LB survey respondents)					Sales Trends		Industry Decline		Attracted to LB		Business Obstacles/Problems						Score
						ratio x 6	ratio x -6	ratio x- 3	ratio x- 3	ratio x 8	ratio x 8	ratio x -4	ratio x -2	ratio x -2	ratio x -2	ratio x -2	ratio x -2	
Industry Title	emp.	sales	bldg.	equip.	prod.	up	down	indust. in recession	cust./sup. moved	LB pos. locat.	LB still choice	reloc. out LB	not renew lease	phy. barrier	security prob.	diffic. hiring	lay-offs past yr.	Points Total
MANUFACTURING (20-39)	1.09	1.07	1.14	1.29	1.19	5.92	-6.04	-2.98	-3.19	7.79	7.59	-4.35	-2.16	-2.48	-2.06	-2.25	-2.78	-1.20
Nondurable Mfg. (20-23, 26-31)	1.12	1.07	1.53	1.38	1.16	6.18	-5.50	-2.74	-3.14	8.00	7.83	-4.75	-2.42	-2.59	-2.05	-2.12	-2.74	0.20
Printing (27)	0.99	1.18	1.00	1.50	1.03	6.27	-6.33	-2.45	-3.31	6.53	7.21	-6.61	-1.58	-2.96	-2.28	-1.73	-2.97	-4.53
Durable Manufact. (24-25, 32-39)	1.07	1.08	0.87	1.22	1.22	5.74	-6.42	-3.15	-3.22	7.64	7.42	-4.07	-1.98	-2.40	-2.06	-2.34	-2.80	-2.20
Metals (33-34)	1.02	1.13	1.17	1.16	1.32	4.55	-7.32	-3.87	-4.04	9.64	8.80	-3.70	-2.55	-2.33	-2.35	-1.78	-3.06	-2.21
High Technology Mfg. (35-38)	1.00	1.09	0.79	1.10	1.53	6.69	-5.52	-2.76	-3.18	6.84	5.66	-5.45	-2.20	-2.31	-1.68	-2.72	-2.64	-3.76
TRANSPORT., COM., UTIL. (40-49	1.16	1.11	1.17	1.02	0.85	8.26	-3.80	-2.45	-2.82	9.30	9.37	-4.08	-2.70	-2.06	-1.61	-1.90	-1.78	9.03
Trucking (42)	1.04	0.94	0.98	0.78	0.72	6.98	-4.76	-2.11	-3.03	8.78	9.30	-4.13	-2.13	-2.70	-3.10	-2.79	-1.63	3.13
Water Transportation (44)	1.13	1.13	1.17	1.31	0.99	9.47	-2.03	-1.16	-1.92	12.58	13.89	-1.23	-2.55	-2.33	-0.74	-0.67	-1.67	27.38
Transportation by Air (45)	1.59	1.29	1.56	1.65	1.41	6.57	-7.05	-3.36	-4.54	5.59	4.94	-7.41	-2.78	-3.58	-0.99	-2.07	-2.59	-9.78
Transportation Services (47)	1.00	1.17	0.83	0.49	0.54	8.61	-3.34	-2.57	-2.28	8.74	8.48	-4.29	-2.92	-0.68	-1.09	-1.68	-1.40	9.60
WHOLESALE-TOTAL (50-51)	1.08	1.18	1.12	0.89	1.30	6.61	-6.30	-3.09	-4.04	8.78	7.78	-3.64	-1.26	-2.31	-1.75	-2.38	-2.06	1.92
Wholesale-Durable Goods (50)	1.00	1.14	0.85	0.78	1.19	5.89	-7.07	-3.43	-4.28	8.31	7.63	-3.95	-1.48	-2.24	-1.96	-2.44	-2.12	-2.18
Wholesale-Nondurable Goods (51)	1.26	1.26	1.79	1.18	1.57	8.41	-4.36	-2.23	-3.42	9.96	8.16	-2.84	-0.71	-2.47	-1.23	-2.21	-1.91	12.21
RETAIL-TOTAL (52-59)	0.95	0.96	1.15	0.92	1.03	3.99	-7.09	-3.16	-3.18	6.85	6.60	-3.59	-1.86	-2.31	-2.29	-1.78	-1.92	-4.73
Food Stores-Retail (54)	0.84	0.90	1.45	1.05	1.07	2.82	-5.55	-2.65	-2.91	8.33	9.77	-3.07	-0.57	-3.34	-2.91	-0.83	-1.72	2.69
Auto Dealers & Service Stat. (55)	1.17	1.01	1.58	1.11	1.13	3.07	-7.68	-3.31	-3.45	6.79	4.58	-3.89	-1.88	-3.39	-3.11	-2.40	-3.00	-11.65
Eating and Drinking Places (58)	0.91	0.97	1.04	0.88	0.88	4.49	-6.74	-4.04	-3.23	6.16	6.58	-2.63	-2.30	-2.29	-1.87	-2.00	-1.45	-4.65
Miscellaneous Retail (59)	0.78	0.83	0.45	0.83	1.06	2.90	-9.03	-3.12	-3.75	4.82	6.03	-3.31	-1.77	-1.78	-1.99	-1.19	-1.91	-10.15
FINANCE, INS., REAL EST. (60-67	1.04	1.09	0.96	0.88	0.97	8.37	-4.16	-2.93	-2.44	10.46	10.42	-2.78	-1.33	-1.17	-1.62	-1.64	-1.59	14.55
SERVICES-TOTAL (70-89)	0.90	0.85	0.68	0.86	0.90	5.64	-6.32	-3.09	-2.70	7.69	7.97	-4.31	-2.24	-1.66	-2.12	-1.95	-1.84	-0.76
Hotels (70)	0.94	1.00	0.40	0.21	0.37	4.20	-10.13	-2.68	-4.13	6.97	11.54	0.00	0.00	-0.99	-2.05	-3.08	-2.31	0.26
Personal Services (72)	0.75	0.80	0.28	0.58	0.63	5.38	-5.78	-2.57	-2.42	7.15	7.46	-3.51	-2.63	-1.36	-2.57	-1.89	-0.79	-0.49
Business Services (73)	1.24	1.16	0.64	1.31	1.19	7.56	-4.55	-2.54	-3.21	8.77	9.68	-4.50	-2.93	-1.22	-1.98	-2.27	-2.30	6.05
Health Services (80)	0.65	0.67	0.49	0.65	0.90	5.15	-6.72	-3.65	-2.58	7.46	7.66	-3.75	-1.84	-2.03	-2.22	-1.95	-1.69	-2.80
Engineering & Mgmnt Serv. (87)	1.08	0.90	0.92	0.79	0.64	5.71	-7.32	-3.30	-3.11	7.96	7.88	-5.71	-3.60	-0.96	-1.74	-1.41	-2.84	-4.09

FIGURE 42

INDUSTRY SCORES BASED ON SURVEY DATA

Long Beach Industry Surveys 1994-97



4. *INPUT-OUTPUT STUDY OF THE LONG BEACH ECONOMY*

This section of the report presents results of an input-output study of the Long Beach economy. The discussion is separated into four sections. Section 1 provides a brief introduction to the technique of input-output analysis, Section 2 discusses the concept of the multiplier, Section 3 provides an overview of output and employment multipliers for all two-digit Standard Industrial Classification (SIC) industries in the Long Beach economy, and Section 4 details more specific multiplier information for a series of key industrial sectors within the economy of Long Beach.

4.1 INTRODUCTION TO INPUT-OUTPUT ANALYSIS

Input-output analysis provides a general theory of production based on the interdependence between industries within an economy. The technique is based on the fundamental notion that the production of any commodity requires inputs from many different sectors within the economy. Input-output analysis traces the interconnections between sectors by recording all the purchases and sales between them over a given period, typically a year. These flows of goods and services are then used to construct a detailed picture of inter-industry relationships. Combining industrial linkages with other information on employment and output allows a wide variety of diagnostic measures of the economy to be derived. Some of the most useful such measures are multipliers. Appendix 1 provides a more detailed description of the methodology of input-output analysis and reveals the source of the input-output data.

Multipliers

Multiplier analysis is used to estimate the regional economic impacts resulting from a specified change in demand for a commodity or group of commodities. Typically, three types of economic "effects" are identified:

Direct Effects are production changes associated with the immediate effects of final demand changes. For example, if consumer spending on commodity A increases by one million dollars, then the industry producing commodity A must expand output by one million dollars.

Indirect Effects are production changes in industries that make inputs consumed by sectors experiencing direct effects. For example, if the output of commodity A expands by one million dollars, and if commodities B and C are used as inputs in the production of commodity A, then the output of commodities B and C will also increase with an expansion in demand for commodity A. The production of commodities B and C also consumes inputs that have to be produced, and so this multiplier process continues across many sectors and rounds of production.

Induced Effects are production changes that result from increased consumer spending throughout the regional economy. Labor is an input in all sectors of the economy and as direct and indirect effects demand greater volumes of output be produced within the economy, so additional labor is used. This labor receives a wage a portion of which is spent within the region stimulating further demand.

These three types of economic impacts may be summed together to reveal the Total Effect of a change in final demand on the regional economy.

Two common multipliers used in input-output analysis are the output and employment multipliers. Each of these multipliers is calculated by dividing Total Effects by Direct Effects, where Total Effects are the sum of Direct, Indirect, and Induced Effects, and thus show how much a change in economic activity in one industry impacts the rest of the economy. For example, an output multiplier of 3.5 for industry A means that every $1 of output in industry A requires the output of an additional $2.5 of output in the economy as a whole. An employment multiplier of 14.3 in industry B means that every one job (unit of employment) in the industry is supported by an additional 13.3 jobs (units of employment) throughout the economy as a whole. Estimation of multipliers is detailed in Appendix 1.

4.2 OVERVIEW OF EMPLOYMENT AND OUTPUT MULTIPLIERS FOR LONG BEACH INDUSTRIES

Table 10 presents a summary of output multipliers for each two-digit sector of the Long Beach economy. The direct effect represents a hypothetical increase in final (consumer) demand for each industry. The indirect, induced, and total effects demonstrate the impacts of such changes throughout the economy as a whole. Thus, for each additional $1 of final demand for the output of the agricultural products industry, the economy as a whole must expand by $2.55. Of this $2.55 overall economic output, $1.48 represents induced effects (generated by wage increases), $0.07 represents the indirect impacts, and $1 the original change in final demand.

Sixty-one two-digit SIC sectors are identified in the input-output analysis, including 21 manufacturing sectors (transportation is divided into two separate industries). Values of output multipliers vary from a high of 3.47 in the credit agency sector to a low of 1.23 in the petroleum products industry. Therefore, for every additional $1 of output, credit agencies generate 2.82 times as much overall economic activity in the Long Beach economy as does the petroleum products industry. The average (unweighted mean) output multiplier for the Long Beach economy is 2.06. Sectors with relatively high output multipliers are credit agencies, personal services, private educational services, and consulting and research. A relatively low output multiplier is found in the security and commodity broker, utility, real estate, and petroleum products sectors. In more formal statistical terms, the only industries that have output multipliers significantly different from the average (more than two standard deviations removed) are the personal services and credit agencies sectors of the economy.

TABLE 10

SUMMARY OF OUTPUT MULTIPLIERS
Los Angeles County

	Direct	Indirect	Induced	TOTAL
CREDIT AGENCIES	1.00	0.80	1.66	**3.47**
PERSONAL SERVICES	1.00	0.28	1.72	**2.99**
AG SERVICES, FOR & FISHER	1.00	0.25	1.64	**2.90**
PRIVATE EDUCATION SERVICE	1.00	0.41	1.28	**2.69**
FEDERAL GOVT. - MILITARY	1.00	0.00	1.65	**2.65**
CONSULTING & RESEARCH	1.00	0.37	1.26	**2.63**
RETAIL TRADE	1.00	0.23	1.34	**2.57**
AGRICULTURE PRODUCTION	1.00	0.07	1.48	**2.55**
BUSINESS SERVICES	1.00	0.19	1.35	**2.54**
INSURANCE AGENTS & BROKERS	1.00	0.18	1.36	**2.54**
MEMBERSHIP & NON-PROFIT ORG.	1.00	0.45	1.08	**2.53**
HOTELS & LODGING PLACES	1.00	0.16	1.35	**2.50**
SOCIAL SERVICES	1.00	0.33	1.16	**2.49**
MOTOR FREIGHT TRNSPTN.	1.00	0.50	0.80	**2.31**
MOTION PICTURES	1.00	0.63	0.63	**2.26**
WHOLESALE TRADE	1.00	0.38	0.87	**2.25**
LOCAL, INTERURBAN PASSNGR. TRNSPTN.	1.00	0.18	1.07	**2.25**
INSURANCE CARRIERS	1.00	0.53	0.71	**2.24**
TRANSPORTATION SERVICES	1.00	0.33	0.88	**2.21**
AMUSEMENT SERVICES	1.00	0.34	0.84	**2.18**
BANKING	1.00	0.47	0.70	**2.17**
APPAREL	1.00	0.32	0.80	**2.12**
LUMBER & WOOD PRODUCTS	1.00	0.34	0.76	**2.11**
AUTOMOTIVE SERVICES	1.00	0.41	0.69	**2.10**
HEALTH SERVICES	1.00	0.19	0.89	**2.08**
CONSTRUCTION	1.00	0.35	0.74	**2.08**
MISCELLANEOUS MANUFACTURING	1.00	0.34	0.73	**2.07**
AIR TRANSPORTATION	1.00	0.45	0.53	**1.98**
REPAIR SERVICES	1.00	0.23	0.74	**1.97**
COAL MINING	1.00	0.19	0.78	**1.97**
GLASS, CLAY AND STONE	1.00	0.37	0.58	**1.95**
FURNITURE & FIXTURE	1.00	0.31	0.63	**1.94**
LEATHER PRODUCTS	1.00	0.21	0.72	**1.94**
PRINTING & PUBLISHING	1.00	0.28	0.64	**1.92**
NON-ELECTRICAL MACHINERY	1.00	0.34	0.56	**1.90**
FEDERAL CIVILIAN	1.00	0.08	0.79	**1.87**
RUBBER AND PLASTICS	1.00	0.38	0.48	**1.86**
WATER TRANSPORTATION	1.00	0.45	0.40	**1.86**
STATE & LOCAL GOVERNMENT	1.00	0.08	0.77	**1.85**
LEGAL SERVICES	1.00	0.20	0.63	**1.84**
FABRICATED METAL PRODUCTS	1.00	0.29	0.50	**1.79**
MOTOR VEHICLES	1.00	0.40	0.37	**1.77**
NON-METAL MINING	1.00	0.31	0.42	**1.74**
ELECTRONIC EQUIPMENT	1.00	0.33	0.41	**1.73**
COMMUNICATIONS	1.00	0.29	0.44	**1.73**

SCIENTIFIC INSTRUMENTS	1.00	0.32	0.38	**1.71**
PRIMARY METALS	1.00	0.31	0.39	**1.70**
CHEMICALS & ALLIED	1.00	0.38	0.32	**1.70**
RAILROADS & RELATED SERVICES	1.00	0.24	0.44	**1.68**
FOOD & KINDRED	1.00	0.34	0.31	**1.66**
TEXTILE MILL	1.00	0.21	0.43	**1.64**
PULP & PAPER	1.00	0.27	0.37	**1.64**
TRANSPORTATION EQPMT. EXC. AUTO.	1.00	0.28	0.35	**1.63**
SECURITY & COMMODITY BROKERS	1.00	0.19	0.39	**1.57**
METAL MINING	1.00	0.31	0.26	**1.56**
UTILITIES	1.00	0.32	0.25	**1.56**
OIL & GAS EXTRACTION	1.00	0.25	0.27	**1.52**
REAL ESTATE	1.00	0.22	0.29	**1.51**
PIPE LINES EXC. NAT. GAS	1.00	0.12	0.14	**1.26**
PETROLEUM PRODUCTS	1.00	0.15	0.08	**1.23**

Industry employment multipliers are shown in Table 11. The direct effect shows how many jobs are generated for each $1 million of output in each sector of the Long Beach economy. This value is the inverse of labor productivity and it reveals how labor intensive an industry is. The direct employment figure ranges from a low of 0.92 in the petroleum industry to a high of 39.62 in the military sector of the government. The average number of jobs created by $1 million of output in each sector is 14.34. Along with the military sector, the personal services industries employ significantly more people per unit of output than average. No industries are significantly less labor intensive than average, in statistical terms. However, along with the petroleum industry, the metal mining, food, chemicals, motor-vehicles, pipelines excluding natural gas, water transportation, utilities, and real estate sectors employ fewer than 5 people for each $1 million of output.

The average number of jobs created throughout the economy as a consequence of meeting a $1 million increase in final demand in each sector of the economy is 30.38. Total employment creation is greatest in the credit agencies and the personal services sector. Total employment creation is lowest in the petroleum products and non-natural gas pipelines industries.

The average industry employment multiplier (total jobs divided bydirect jobs) is 2.12. This means that on average, for every job generated in a specific industry an additional 1.12 jobs are created in the region's economy. Employment multipliers are highest in the insurance carriers, water transportation, petroleum products, motor vehicles, food, utilities and banking sectors. These are sectors where the direct employment effect is relatively small. Employment multipliers are relatively low in the agricultural and government sectors along with other industries where the direct employment effect tends to be relatively large.

These employment data may be used in various ways for policy purposes. First, the total employment effects indicate how many jobs will likely be generated as a result of purchasing a certain amount of output in each industry. Those industries with larger total employment effects sustain the most jobs per dollar of output manufactured. Second, the employment multipliers provide some indication of the consequences of supporting or not supporting jobs in different industries, for the value of the multiplier reports the change in employment in the rest of the economy resulting from a one unit increase or decrease in employment in a given industry.

TABLE 11

SUMMARY OF EMPLOYMENT MULTIPLIERS
Los Angeles County

INDUSTRY	EMPLOYMENT EFFECT Direct	Indirect	Induced	TOTAL	EMPLOYMENT MULTIPIER
INSURANCE CARRIERS	6.58	10.77	11.29	28.63	**4.35**
WATER TRANSPORTATION	4.32	5.51	6.40	16.23	**3.76**
PETROLEUM PRODUCTS	0.92	1.25	1.22	3.38	**3.68**
MOTOR VEHICLES	4.49	4.65	5.95	15.09	**3.36**
METAL MINING	3.15	3.36	4.07	10.58	**3.36**
CHEMICALS & ALLIED	4.20	3.89	5.06	13.15	**3.13**
UTILITIES	3.34	2.94	3.93	10.21	**3.05**
BANKING	9.32	7.87	11.20	28.39	**3.04**
FOOD & KINDRED	4.30	3.68	4.99	12.98	**3.02**
MOTION PICTURES	9.04	6.33	10.01	25.38	**2.81**
AIR TRANSPORTATION	7.66	5.28	8.43	21.38	**2.79**
PIPE LINES EXC. NAT. GAS	2.12	1.51	2.27	5.91	**2.78**
PRIMARY METALS	5.75	3.72	6.17	15.63	**2.72**
SCIENTIFIC INSTRUMENTS	5.78	3.60	6.11	15.49	**2.68**
ELECTRONIC EQUIPMENT	6.23	3.70	6.47	16.40	**2.63**
TRANSPORTATION EQPMT. EXC. AUTO.	5.44	3.10	5.56	14.11	**2.59**
NON-METAL MINING	6.60	3.66	6.68	16.95	**2.57**
RUBBER AND PLASTICS	7.60	4.18	7.67	19.45	**2.56**
REAL ESTATE	4.74	2.70	4.66	12.10	**2.55**
AUTOMOTIVE SERVICES	10.93	5.92	10.97	27.82	**2.54**
PULP & PAPER	5.86	3.10	5.83	14.79	**2.52**
MOTOR FREIGHT TRNSPTN.	13.04	6.55	12.76	32.35	**2.48**
CREDIT AGENCIES	26.93	13.01	26.42	66.37	**2.46**
CONSTRUCTION	12.16	5.77	11.68	29.61	**2.43**
NON-ELECTRICAL MACHINERY	9.45	4.19	8.88	22.52	**2.38**
FABRICATED METAL PRODUCTS	8.49	3.69	7.93	20.10	**2.37**
COMMUNICATIONS	7.52	3.23	7.00	17.76	**2.36**
SECURITY & COMMODITY BROKERS	6.66	2.74	6.12	15.51	**2.33**
WHOLESALE TRADE	15.01	5.92	13.85	34.78	**2.32**
GLASS, CLAY AND STONE	10.16	4.07	9.27	23.50	**2.31**
FURNITURE & FIXTURE	11.06	4.36	10.05	25.48	**2.30**
AMUSEMENT SERVICES	14.63	5.76	13.28	33.67	**2.30**
RAILROADS & RELATED SERVICES	7.74	3.04	7.02	17.80	**2.30**
MISCELLANEOUS MANUFACTURING	13.39	4.53	11.67	29.58	**2.21**
PRINTING & PUBLISHING	11.66	3.93	10.16	25.76	**2.21**
OIL & GAS EXTRACTION	5.09	1.79	4.30	11.18	**2.20**
CONSULTING & RESEARCH	23.06	7.18	20.01	50.26	**2.18**
LUMBER & WOOD PRODUCTS	14.26	4.38	12.13	30.77	**2.16**
TRANSPORTATION SERVICES	16.23	4.83	13.93	34.98	**2.16**
TEXTILE MILL	8.04	2.45	6.83	17.32	**2.15**

APPAREL	15.04	4.43	12.68	32.14	**2.14**
MEMBERSHIP & NON-PROFIT ORG.	20.45	5.40	17.10	42.94	**2.10**
LEGAL SERVICES	12.18	3.26	10.05	25.48	**2.09**
PRIVATE EDUCATION SERVICE	25.27	5.47	20.33	51.07	**2.02**
SOCIAL SERVICES	23.33	4.55	18.44	46.32	**1.99**
LEATHER PRODUCTS	14.89	2.71	11.47	29.08	**1.95**
REPAIR SERVICES	15.39	2.77	11.82	29.98	**1.95**
AG SERVICES, FOR & FISHER	33.87	5.54	26.07	65.47	**1.93**
HEALTH SERVICES	18.90	2.48	14.14	35.52	**1.88**
PERSONAL SERVICES	36.53	4.66	27.25	68.43	**1.87**
COAL MINING	16.93	2.09	12.39	31.41	**1.86**
BUSINESS SERVICES	29.35	3.15	21.50	54.00	**1.84**
RETAIL TRADE	29.23	2.97	21.30	53.50	**1.83**
LOCAL, INTERURBAN PASSNGR. TRNSPTN.	23.42	2.27	17.00	42.69	**1.82**
INSURANCE AGENTS & BROKERS	30.12	2.61	21.65	54.39	**1.81**
HOTELS & LODGING PLACES	29.96	2.43	21.43	53.82	**1.80**
FEDERAL CIVILIAN	18.31	0.97	12.56	31.84	**1.74**
AGRICULTURE PRODUCTION	33.90	1.57	23.47	58.94	**1.74**
STATE & LOCAL GOVERNMENT	17.81	0.88	12.17	30.87	**1.73**

4.3 INDUSTRY STUDIES

This section of the report details output and employment multipliers and industrial linkages in seven key sectors of the Long Beach economy: aerospace, business services, health services, insurance, tourism, transportation, and wholesale trade. The following caveat needs to be kept in mind regarding this analysis. To estimate the employment and output effects created by Long Beach industries, we estimated Long Beach output in each industry based on its share of industry employment in Los Angeles County. Next, the input-output analyses were run using the Los Angeles County input-output coefficients. The results show the employment and payroll generated throughout the Long Beach economy by each of the Long Beach industries selected for analysis, *assuming that Long Beach has the same employment structure as Los Angeles County*. Thus, for industries that are not well represented in Long Beach relative to the county, the output and employment effects are only partially captured by firms in Long Beach. Nonetheless, the tables provide a good estimate of jobs and output generated by each of the Long Beach industries throughout the local economy, and help to indicate industries that should be targeted by the City to capture more effectively the economic benefits of industry linkages with these key sectors of the Long Beach economy.

Aerospace

The aerospace industry in Long Beach is dominated by the aircraft and parts industry. In 1992, this industry faced a final demand for output equal to $6,908.6 million, requiring total industry output of some $7,062.6 million. The local economy as whole produced output with an estimated value totalling $11,347.7 million in support of the aerospace sector, providing an output multiplier for this industry of 1.64. The sectors providing most inputs into aerospace include the scientific instruments, electronic equipment, wholesale trade, and business services industries. Other strongly related sectors include non-electrical machinery, retail trade and health services (Table 12).

Employment in the aerospace sector in 1992 was approximately 36,933. Throughout the economy an additional 59,460 workers supported aerospace production. The employment multiplier for the aerospace industry of Long Beach is estimated to be 2.61, meaning that for every worker employed in the aerospace sector, an additional 1.61 workers are employed elsewhere in the local economy. Most related jobs are found in the wholesale and retail trade, business, and health services industries (Table 13).

Business Services

The business services industry in Long Beach consists of firms in SIC codes 736 and 738, the personnel supply and business services industries. In 1992, business services firms in Long Beach met a final demand of approximately $192.56 million, producing almost $207 million total

TABLE 12

LONG BEACH AEROSPACE INDUSTRY

Output Multipliers

Industries Ranked by Total Output Effect

Aerospace Output Multiplier = 1.64

	OUTPUT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
TRANSPORTATION EQPMT. EXC. AUTO.	6,908.7	153.5	7.6%	0.5	0.0%	7,062.6	62.2%
RETAIL TRADE	0.0	6.8	0.3%	413.4	17.0%	420.2	3.7%
SCIENTIFIC INSTRUMENTS	0.0	399.2	19.9%	10.4	0.4%	409.6	3.6%
REAL ESTATE	0.0	51.7	2.6%	329.9	13.6%	381.7	3.4%
WHOLESALE TRADE	0.0	170.4	8.5%	140.7	5.8%	311.2	2.7%
HEALTH SERVICES	0.0	0.0	0.0%	294.6	12.1%	294.7	2.6%
ELECTRONIC EQUIPMENT	0.0	235.2	11.7%	15.1	0.6%	250.3	2.2%
BUSINESS SERVICES	0.0	136.5	6.8%	66.7	2.7%	203.3	1.8%
BANKING	0.0	38.6	1.9%	83.0	3.4%	121.6	1.1%
UTILITIES	0.0	51.0	2.5%	60.3	2.5%	111.2	1.0%
LEGAL SERVICES	0.0	45.9	2.3%	57.5	2.4%	103.4	0.9%
COMMUNICATIONS	0.0	52.1	2.6%	44.0	1.8%	96.1	0.8%
AIR TRANSPORTATION	0.0	75.5	3.8%	17.2	0.7%	92.7	0.8%
INSURANCE CARRIERS	0.0	15.6	0.8%	73.9	3.0%	89.5	0.8%
PETROLEUM PRODUCTS	0.0	27.0	1.3%	61.4	2.5%	88.4	0.8%
CONSTRUCTION	0.0	52.1	2.6%	32.7	1.3%	84.8	0.7%
APPAREL	0.0	23.1	1.1%	56.3	2.3%	79.3	0.7%
PRINTING & PUBLISHING	0.0	54.4	2.7%	17.5	0.7%	71.9	0.6%
AUTOMOTIVE SERVICES	0.0	9.9	0.5%	61.0	2.5%	70.9	0.6%
PRIVATE EDUCATION SERVICE	0.0	27.5	1.4%	38.9	1.6%	66.4	0.6%
FOOD & KINDRED	0.0	0.6	0.0%	62.3	2.6%	62.9	0.6%
NON-ELECTRICAL MACHINERY	0.0	54.6	2.7%	6.5	0.3%	61.1	0.5%
FABRICATED METAL PRODUCTS	0.0	56.5	2.8%	3.2	0.1%	59.7	0.5%
CONSULTING & RESEARCH	0.0	35.7	1.8%	22.5	0.9%	58.2	0.5%
HOTELS & LODGING PLACES	0.0	42.0	2.1%	14.4	0.6%	56.4	0.5%
MOTOR FREIGHT TRNSPTN.	0.0	28.9	1.4%	26.7	1.1%	55.6	0.5%
TOTAL	**6,908.7**	**2,009.6**		**2,429.4**		**11,347.7**	

TABLE 13

LONG BEACH AEROSPACE INDUSTRY

Employment Multipliers

Industries Ranked by Total Employment Effect

Aerospace Employment Multiplier = 2.61

INDUSTRY	EMPLOYMENT EFFECTS						
	Direct	*Indirect*	*Percent of Total Indirect Employment*	*Induced*	*Percent of Total Induced Employment*	*TOTAL*	*PERCENT OF TOTAL EMPLOYMENT*
TRANSPORTATION EQPMT. EXC. AUTO.	36,933.1	833.0	3.9%	2.9	0.0%	37,769.0	39.2%
RETAIL TRADE	0.0	213.0	1.0%	12,174.6	32.0%	12,387.6	12.9%
HEALTH SERVICES	0.0	0.3	0.0%	5,612.2	14.7%	5,612.5	5.8%
BUSINESS SERVICES	0.0	3,622.2	16.9%	1,927.0	5.1%	5,549.2	5.8%
WHOLESALE TRADE	0.0	2,558.9	12.0%	2,112.6	5.5%	4,671.5	4.8%
SCIENTIFIC INSTRUMENTS	0.0	2,331.4	10.9%	72.1	0.2%	2,403.5	2.5%
PRIVATE EDUCATION SERVICE	0.0	761.2	3.6%	1,024.5	2.7%	1,785.6	1.9%
HOTELS & LODGING PLACES	0.0	1,259.6	5.9%	430.1	1.1%	1,689.7	1.8%
REAL ESTATE	0.0	440.9	2.1%	1,072.8	2.8%	1,513.7	1.6%
ELECTRONIC EQUIPMENT	0.0	1,279.7	6.0%	93.0	0.2%	1,372.8	1.4%
CONSULTING & RESEARCH	0.0	819.0	3.8%	522.2	1.4%	1,341.2	1.4%
LEGAL SERVICES	0.0	558.8	2.6%	700.6	1.8%	1,259.5	1.3%
PERSONAL SERVICES	0.0	53.9	0.3%	1,173.5	3.1%	1,227.3	1.3%
BANKING	0.0	359.5	1.7%	774.2	2.0%	1,133.6	1.2%
CONSTRUCTION	0.0	680.2	3.2%	434.3	1.1%	1,114.5	1.2%
APPAREL	0.0	232.0	1.1%	851.8	2.2%	1,083.8	1.1%
AMUSEMENT SERVICES	0.0	75.5	0.4%	942.2	2.5%	1,017.6	1.1%
NON-ELECTRICAL MACHINERY	0.0	886.4	4.1%	49.5	0.1%	935.9	1.0%
PRINTING & PUBLISHING	0.0	660.9	3.1%	204.5	0.5%	865.4	0.9%
MOTOR FREIGHT TRNSPTN.	0.0	377.3	1.8%	348.2	0.9%	725.5	0.8%
AIR TRANSPORTATION	0.0	578.5	2.7%	131.8	0.3%	710.4	0.7%
COMMUNICATIONS	0.0	372.1	1.7%	336.7	0.9%	708.8	0.7%
AUTOMOTIVE SERVICES	0.0	86.8	0.4%	584.8	1.5%	671.6	0.7%
INSURANCE CARRIERS	0.0	102.5	0.5%	486.1	1.3%	588.6	0.6%
FABRICATED METAL PRODUCTS	0.0	506.0	2.4%	25.4	0.1%	531.3	0.6%
INSURANCE AGENTS & BROKERS	0.0	87.4	0.4%	414.2	1.1%	501.6	0.5%
TOTAL	**36,933.1**	**21,381.2**		**38,078.6**		**96,392.9**	

TABLE 14

LONG BEACH BUSINESS SERVICES

Output Multipliers

Industries Ranked by Total Output Effect

Business Services Output Multiplier = 2.85

	OUTPUT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
BUSINESS SERVICES	192.6	5.4	16.3%	8.9	2.7%	206.8	37.7%
RETAIL TRADE	0.0	0.3	1.0%	54.9	17.0%	55.2	10.1%
REAL ESTATE	0.0	2.7	8.2%	43.8	13.6%	46.5	8.5%
HEALTH SERVICES	0.0	0.0	0.0%	39.1	12.1%	39.1	7.1%
WHOLESALE TRADE	0.0	1.6	4.8%	18.7	5.8%	20.3	3.7%
BANKING	0.0	0.6	1.9%	11.0	3.4%	11.7	2.1%
INSURANCE CARRIERS	0.0	0.2	0.7%	9.8	3.0%	10.1	1.8%
LEGAL SERVICES	0.0	1.8	5.4%	7.6	2.4%	9.4	1.7%
PETROLEUM PRODUCTS	0.0	0.5	1.5%	8.2	2.5%	8.7	1.6%
UTILITIES	0.0	0.7	2.0%	8.0	2.5%	8.7	1.6%
AUTOMOTIVE SERVICES	0.0	0.4	1.2%	8.1	2.5%	8.5	1.6%
FOOD & KINDRED	0.0	0.0	0.1%	8.3	2.6%	8.3	1.5%
CONSULTING & RESEARCH	0.0	5.1	15.2%	3.0	0.9%	8.0	1.5%
APPAREL	0.0	0.0	0.0%	7.5	2.3%	7.5	1.4%
COMMUNICATIONS	0.0	1.2	3.6%	5.8	1.8%	7.0	1.3%
PRIVATE EDUCATION SERVICE	0.0	0.0	0.1%	5.2	1.6%	5.2	0.9%
CONSTRUCTION	0.0	0.9	2.6%	4.3	1.3%	5.2	0.9%
CHEMICALS & ALLIED	0.0	0.1	0.4%	4.9	1.5%	5.0	0.9%
ELECTRONIC EQUIPMENT	0.0	2.7	8.2%	2.0	0.6%	4.7	0.9%
PERSONAL SERVICES	0.0	0.0	0.1%	4.2	1.3%	4.2	0.8%
MOTOR FREIGHT TRNSPTN.	0.0	0.6	1.7%	3.5	1.1%	4.1	0.7%
AMUSEMENT SERVICES	0.0	0.2	0.7%	3.6	1.1%	3.9	0.7%
PRINTING & PUBLISHING	0.0	1.2	3.7%	2.3	0.7%	3.6	0.6%
SECURITY & COMMODITY BROKERS	0.0	0.2	0.6%	3.0	0.9%	3.2	0.6%
AIR TRANSPORTATION	0.0	0.6	1.7%	2.3	0.7%	2.8	0.5%
TOTAL	**192.6**	**33.2**		**322.7**		**548.4**	

TABLE 15

LONG BEACH BUSINESS SERVICES

Employment Multipliers

Industries Ranked by Total Employment Effect

Business Services Employment Multiplier = 1.77

INDUSTRY	EMPLOYMENT EFFECTS Direct	Indirect	Percent of Total Indirect Employment	Induced	Percent of Total Induced Employment	TOTAL	PERCENT OF TOTAL EMPLOYMENT
BUSINESS SERVICES	7,214.4	169.8	31.9%	256.0	5.1%	7,640.1	59.7%
RETAIL TRADE	0.0	11.2	2.1%	1,617.3	32.0%	1,628.5	12.7%
HEALTH SERVICES	0.0	0.0	0.0%	745.5	14.7%	745.6	5.8%
WHOLESALE TRADE	0.0	23.8	4.5%	280.6	5.5%	304.4	2.4%
CONSULTING & RESEARCH	0.0	115.9	21.8%	69.4	1.4%	185.3	1.4%
REAL ESTATE	0.0	23.1	4.3%	142.5	2.8%	165.6	1.3%
PERSONAL SERVICES	0.0	1.6	0.3%	155.9	3.1%	157.5	1.2%
PRIVATE EDUCATION SERVICE	0.0	1.1	0.2%	136.1	2.7%	137.2	1.1%
AMUSEMENT SERVICES	0.0	3.7	0.7%	125.2	2.5%	128.8	1.0%
LEGAL SERVICES	0.0	21.8	4.1%	93.1	1.8%	114.8	0.9%
APPAREL	0.0	0.2	0.0%	113.2	2.2%	113.3	0.9%
BANKING	0.0	5.9	1.1%	102.8	2.0%	108.7	0.8%
AUTOMOTIVE SERVICES	0.0	4.0	0.7%	77.7	1.5%	81.7	0.6%
HOTELS & LODGING PLACES	0.0	12.3	2.3%	57.1	1.1%	69.4	0.5%
CONSTRUCTION	0.0	11.3	2.1%	57.7	1.1%	69.0	0.5%
INSURANCE CARRIERS	0.0	1.6	0.3%	64.6	1.3%	66.1	0.5%
TOTAL	**7,214.4**	**532.2**		**5,058.3**		**12,805.0**	

output. In support of the business services sector, the regional economy of Long Beach produced a total output of $548.45 million, yielding an output multiplier of 2.85. The top three sectors providing indirect inputs to business services were consulting and research services, real estate, and electronic equipment industries (Table 14).

To produce the direct output of the business services industries in Long Beach, just over 7,214 people were employed. An additional 5,591 jobs were generated throughout the economy as a result of activities in business services, giving an employment multiplier of 1.78 (Table 15).

Health Services

The health services sector comprises firms in industries SIC 806 and 807. In 1992, final demand in the health services industry of Long Beach totalled some $567.27 million, and the industry produced a total output of $631.36 million. A relatively large number of two-digit sectors provided inputs into the health services sector (see Table 16). The total value of goods and services produced throughout the Long Beach economy that are used by health services was $1,221.89 in 1992. The output multiplier for the health services sector was thus 2.15. Table 16 shows that key input sectors to the region's health services industry are the real estate, business services, chemicals, wholesale, and scientific instruments sectors. In addition, the real estate and retail trade industries are strongly connected to the health services industry through induced effects.

Direct employment in the region's health services sector was approximately 11,216 in 1992. The employment generated throughout the Long Beach economy in support of the health services industry was 20,967, generating an employment multiplier of 1.87. A relatively large number of industrial sectors provide inputs into the health services industry. The most important input sectors are business services, wholesale trade, and real estate (Table 17).

Insurance

The insurance industry examined here incorporates SIC 632, insurance carriers. Final demand for this industry in Long Beach in 1992 equalled $344.66 million, requiring a total industry output of close to $355 million. Regional output in support of this sector totalled $779.86 million, producing an output multiplier of 2.26. Not unexpectedly, the most closely linked industry to insurance carriers is insurance agents and brokers. Other key industries providing indirect local support to the insurance sector of Long Beach include the business services, real estate, security and commodity brokers, legal services, and credit agencies sectors (Table 18).

The insurance carriers industry employed 2,226 people to meet final demand in this sector in 1992, while 10,004 people were employed throughout the Long Beach region in

TABLE 16

LONG BEACH HEALTH SERVICES

Output Multipliers

Industries Ranked by Total Output Effect

Health Services Output Multiplier = 2.15

	OUTPUT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
HEALTH SERVICES	567.3	0.0	0.0%	64.1	12.1%	631.4	51.7%
REAL ESTATE	0.0	25.4	20.2%	71.8	13.6%	97.2	8.0%
RETAIL TRADE	0.0	0.8	0.7%	89.9	17.0%	90.8	7.4%
WHOLESALE TRADE	0.0	10.5	8.3%	30.6	5.8%	41.1	3.4%
BUSINESS SERVICES	0.0	15.2	12.0%	14.5	2.7%	29.7	2.4%
CHEMICALS & ALLIED	0.0	15.4	12.2%	8.0	1.5%	23.4	1.9%
BANKING	0.0	0.8	0.7%	18.1	3.4%	18.9	1.5%
UTILITIES	0.0	5.2	4.2%	13.1	2.5%	18.4	1.5%
INSURANCE CARRIERS	0.0	1.4	1.1%	16.1	3.0%	17.5	1.4%
PETROLEUM PRODUCTS	0.0	3.6	2.8%	13.4	2.5%	16.9	1.4%
FOOD & KINDRED	0.0	3.0	2.3%	13.6	2.6%	16.5	1.4%
LEGAL SERVICES	0.0	3.0	2.4%	12.5	2.4%	15.5	1.3%
AUTOMOTIVE SERVICES	0.0	1.3	1.0%	13.3	2.5%	14.6	1.2%
APPAREL	0.0	1.8	1.4%	12.2	2.3%	14.0	1.1%
SCIENTIFIC INSTRUMENTS	0.0	10.6	8.4%	2.3	0.4%	12.9	1.1%
COMMUNICATIONS	0.0	1.5	1.2%	9.6	1.8%	11.0	0.9%
CONSTRUCTION	0.0	3.3	2.6%	7.1	1.3%	10.4	0.9%
PRIVATE EDUCATION SERVICE	0.0	0.4	0.3%	8.5	1.6%	8.9	0.7%
CONSULTING & RESEARCH	0.0	3.5	2.8%	4.9	0.9%	8.4	0.7%
MOTOR FREIGHT TRNSPTN.	0.0	1.9	1.5%	5.8	1.1%	7.8	0.6%
PERSONAL SERVICES	0.0	0.3	0.2%	6.8	1.3%	7.1	0.6%
AMUSEMENT SERVICES	0.0	0.3	0.3%	6.0	1.1%	6.3	0.5%
PRINTING & PUBLISHING	0.0	1.9	1.5%	3.8	0.7%	5.7	0.5%
TOTAL	**567.3**	**126.2**		**528.4**		**1,221.9**	

TABLE 17

LONG BEACH HEALTH SERVICES

Employment Multipliers

Industries Ranked by Total Employment Effect

Health Services Employment Multiplier = 1.87

	EMPLOYMENT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Employment*	*Induced*	*Percent of Total Induced Employment*	*TOTAL*	*PERCENT OF TOTAL EMPLOYMENT*
HEALTH SERVICES	11,216.1	0.0	0.0%	1,220.8	14.7%	12,436.9	59.3%
RETAIL TRADE	0.0	27.3	1.9%	2,648.2	32.0%	2,675.6	12.8%
BUSINESS SERVICES	0.0	450.0	30.7%	419.2	5.1%	869.2	4.1%
WHOLESALE TRADE	0.0	157.0	10.7%	459.5	5.5%	616.6	2.9%
REAL ESTATE	0.0	216.8	14.8%	233.4	2.8%	450.1	2.1%
PERSONAL SERVICES	0.0	11.7	0.8%	255.3	3.1%	266.9	1.3%
PRIVATE EDUCATION SERVICE	0.0	10.7	0.7%	222.9	2.7%	233.6	1.1%
AMUSEMENT SERVICES	0.0	5.9	0.4%	204.9	2.5%	210.8	1.0%
APPAREL	0.0	21.7	1.5%	185.3	2.2%	207.0	1.0%
CONSULTING & RESEARCH	0.0	82.0	5.6%	113.6	1.4%	195.6	0.9%
LEGAL SERVICES	0.0	36.4	2.5%	152.4	1.8%	188.8	0.9%
BANKING	0.0	7.7	0.5%	168.4	2.0%	176.1	0.8%
AUTOMOTIVE SERVICES	0.0	11.6	0.8%	127.2	1.5%	138.8	0.7%
CONSTRUCTION	0.0	44.2	3.0%	94.5	1.1%	138.6	0.7%
INSURANCE CARRIERS	0.0	9.4	0.6%	105.7	1.3%	115.1	0.5%
HOTELS & LODGING PLACES	0.0	13.7	0.9%	93.6	1.1%	107.3	0.5%
CHEMICALS & ALLIED	0.0	67.8	4.6%	34.1	0.4%	101.8	0.5%
MOTOR FREIGHT TRNSPTN.	0.0	25.4	1.7%	75.7	0.9%	101.2	0.5%
INSURANCE AGENTS & BROKERS	0.0	8.0	0.5%	90.1	1.1%	98.1	0.5%
TOTAL	**11,216.1**	**1,468.3**		**8,282.8**		**20,967.3**	

TABLE 18

LONG BEACH INSURANCE INDUSTRY

Output Multipliers

Industries Ranked by Total Output Effect

Insurance Industry Output Multiplier = 2.26

	OUTPUT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
INSURANCE CARRIERS	344.7	2.6	1.4%	7.7	3.0%	354.9	45.5%
INSURANCE AGENTS & BROKERS	0.0	64.6	35.3%	1.4	0.6%	66.0	8.5%
REAL ESTATE	0.0	15.6	8.5%	34.2	13.6%	49.9	6.4%
RETAIL TRADE	0.0	1.6	0.9%	42.9	17.0%	44.5	5.7%
HEALTH SERVICES	0.0	0.0	0.0%	30.6	12.1%	30.6	3.9%
BUSINESS SERVICES	0.0	16.3	8.9%	6.9	2.7%	23.2	3.0%
LEGAL SERVICES	0.0	12.9	7.0%	6.0	2.4%	18.9	2.4%
SECURITY & COMMODITY BROKERS	0.0	14.9	8.1%	2.3	0.9%	17.2	2.2%
WHOLESALE TRADE	0.0	1.8	1.0%	14.6	5.8%	16.4	2.1%
BANKING	0.0	3.5	1.9%	8.6	3.4%	12.2	1.6%
CREDIT AGENCIES	0.0	10.6	5.8%	1.2	0.5%	11.8	1.5%
COMMUNICATIONS	0.0	4.7	2.6%	4.6	1.8%	9.2	1.2%
CONSULTING & RESEARCH	0.0	6.3	3.5%	2.3	0.9%	8.7	1.1%
AUTOMOTIVE SERVICES	0.0	1.2	0.7%	6.3	2.5%	7.6	1.0%
UTILITIES	0.0	1.2	0.6%	6.3	2.5%	7.4	1.0%
PETROLEUM PRODUCTS	0.0	0.9	0.5%	6.4	2.5%	7.3	0.9%
FOOD & KINDRED	0.0	0.1	0.1%	6.5	2.6%	6.6	0.8%
CONSTRUCTION	0.0	3.1	1.7%	3.4	1.3%	6.5	0.8%
APPAREL	0.0	0.1	0.0%	5.8	2.3%	5.9	0.8%
PRINTING & PUBLISHING	0.0	3.8	2.1%	1.8	0.7%	5.6	0.7%
MOTOR FREIGHT TRNSPTN.	0.0	2.2	1.2%	2.8	1.1%	5.0	0.6%
HOTELS & LODGING PLACES	0.0	2.8	1.6%	1.5	0.6%	4.3	0.6%
PRIVATE EDUCATION SERVICE	0.0	0.2	0.1%	4.0	1.6%	4.2	0.5%
CHEMICALS & ALLIED	0.0	0.2	0.1%	3.8	1.5%	4.0	0.5%
AMUSEMENT SERVICES	0.0	0.8	0.4%	2.8	1.1%	3.6	0.5%
TOTAL	**344.7**	**183.1**		**252.1**		**779.9**	

TABLE 19

LONG BEACH INSURANCE INDUSTRY

Employment Multipliers

Industries Ranked by Total Employment Effect

Insurance Industry Employment Multiplier = 2.26

	EMPLOYMENT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Employment*	*Induced*	*Percent of Total Induced Employment*	*TOTAL*	*PERCENT OF TOTAL EMPLOYMENT*
INSURANCE CARRIERS	2,266.3	17.0	0.4%	50.4	1.3%	2,333.8	23.3%
INSURANCE AGENTS & BROKERS	0.0	1,945.8	51.4%	43.0	1.1%	1,988.8	19.9%
RETAIL TRADE	0.0	55.6	1.5%	1,263.5	32.0%	1,319.0	13.2%
BUSINESS SERVICES	0.0	477.2	12.6%	200.0	5.1%	677.2	6.8%
HEALTH SERVICES	0.0	0.1	0.0%	582.4	14.7%	582.5	5.8%
CREDIT AGENCIES	0.0	285.0	7.5%	33.0	0.8%	317.9	3.2%
WHOLESALE TRADE	0.0	27.7	0.7%	219.2	5.5%	246.9	2.5%
REAL ESTATE	0.0	133.4	3.5%	111.3	2.8%	244.7	2.4%
LEGAL SERVICES	0.0	156.9	4.1%	72.7	1.8%	229.6	2.3%
CONSULTING & RESEARCH	0.0	147.1	3.9%	54.2	1.4%	201.3	2.0%
HOTELS & LODGING PLACES	0.0	85.2	2.3%	44.6	1.1%	129.8	1.3%
PERSONAL SERVICES	0.0	1.6	0.0%	121.8	3.1%	123.4	1.2%
SECURITY & COMMODITY BROKERS	0.0	99.3	2.6%	15.4	0.4%	114.7	1.1%
BANKING	0.0	33.0	0.9%	80.3	2.0%	113.3	1.1%
AMUSEMENT SERVICES	0.0	13.9	0.4%	97.8	2.5%	111.7	1.1%
PRIVATE EDUCATION SERVICE	0.0	3.9	0.1%	106.3	2.7%	110.2	1.1%
APPAREL	0.0	1.0	0.0%	88.4	2.2%	89.4	0.9%
CONSTRUCTION	0.0	41.2	1.1%	45.1	1.1%	86.2	0.9%
AUTOMOTIVE SERVICES	0.0	11.4	0.3%	60.7	1.5%	72.1	0.7%
COMMUNICATIONS	0.0	35.2	0.9%	34.9	0.9%	70.1	0.7%
PRINTING & PUBLISHING	0.0	45.0	1.2%	21.2	0.5%	66.2	0.7%
MOTOR FREIGHT TRNSPTN.	0.0	29.1	0.8%	36.1	0.9%	65.2	0.7%
TOTAL	**2,266.3**	**3,785.6**		**3,951.6**		**10,003.7**	

industries that supported the insurance carriers industry. The industry thus generates an employment multiplier of 4.42. Most of the supporting jobs were located in the insurance agents and brokers and retail trade sectors (Table 19).

Tourism

The tourism industry was defined as comprising SICs 58 and 701, eating and drinking establishments and hotels and motels, respectively. These sectors produced services totalling \$479.45 million in 1992. The volume of economy-wide output generated and supporting these activities was \$1,064.14 million in Long Beach in 1992. This sector produces an output multiplier of 2.85. Table 15 displays the most closely related sectors to the tourism industry. These sectors are the real estate, wholesale trade, health services, and food industries (Table 20).

The tourism industry employed 16,393 workers in Long Beach in 1992. The overall employment impact of this sector is much greater, however, standing at 23,764, and yielding an employment multiplier equal to 1.80. This table also highlights those sectors of the Long Beach economy most closely related to the tourism industry in terms of employment. These sectors are health services and the wholesale trade industry (Table 21).

Transportation

The transportation industry is defined as SICs 449 and 473, water transportation services and freight transportation arrangement. Total final demand in this sector in 1992 was \$613.44 million, leading to total industry output of \$715.03 million. All other sectors of the economy produced goods and services valued at \$580.39 million in support of the transportation industry. The output multiplier for transportation is 2.11. The most important indirect inputs come from the transportation sector itself, together with the petroleum products and transportation services industries. Overall the sectors most closely dependent on the transportation industry include the retail trade, real estate, health services, wholesale trade, and petroleum products industries (Table 22).

The Long Beach transportation industry provided 4,423 jobs directly in 1992. This industry generated 15,267 jobs in total throughout the economy in the same year, producing a relatively large employment multiplier of 2.72. After the transportation sectors themselves, key sources of related employment include the retail trade industry, business and health services, the wholesale trade, and consulting and research activities (Table 23).

Wholesale Trade

The wholesale trade industry comprises SIC codes 50 and 51, the durable and non-durable goods sectors of wholesale trade. This sector met final demand for output of \$360.98 million in

TABLE 20

LONG BEACH TOURISM-RELATED INDUSTRIES

Output Multipliers

Industries Ranked by Total Output Effect

Tourism-Related Industries Output Multiplier = 2.85

				OUTPUT EFFECTS			
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
RETAIL TRADE	272.6	0.4	0.4%	101.9	17.0%	374.9	35.2%
HOTELS & LODGING PLACES	100.8	0.2	0.3%	3.5	0.6%	104.6	9.8%
REAL ESTATE	0.0	8.5	9.2%	81.3	13.6%	89.8	8.4%
HEALTH SERVICES	0.0	0.0	0.0%	72.6	12.1%	72.6	6.8%
WHOLESALE TRADE	0.0	10.1	11.0%	34.7	5.8%	44.8	4.2%
FOOD & KINDRED	0.0	21.4	23.3%	15.4	2.6%	36.8	3.5%
BUSINESS SERVICES	0.0	8.1	8.8%	16.5	2.7%	24.6	2.3%
BANKING	0.0	1.1	1.2%	20.5	3.4%	21.6	2.0%
UTILITIES	0.0	4.5	4.9%	14.9	2.5%	19.4	1.8%
INSURANCE CARRIERS	0.0	0.5	0.6%	18.2	3.0%	18.7	1.8%
LEGAL SERVICES	0.0	3.6	3.9%	14.2	2.4%	17.7	1.7%
PETROLEUM PRODUCTS	0.0	1.1	1.3%	15.1	2.5%	16.3	1.5%
AUTOMOTIVE SERVICES	0.0	0.7	0.7%	15.0	2.5%	15.7	1.5%
APPAREL	0.0	0.5	0.5%	13.9	2.3%	14.3	1.3%
COMMUNICATIONS	0.0	2.0	2.2%	10.8	1.8%	12.9	1.2%
CONSTRUCTION	0.0	3.9	4.3%	8.1	1.3%	12.0	1.1%
PRIVATE EDUCATION SERVICE	0.0	0.1	0.1%	9.6	1.6%	9.7	0.9%
CHEMICALS & ALLIED	0.0	0.5	0.5%	9.1	1.5%	9.5	0.9%
MOTOR FREIGHT TRNSPTN.	0.0	2.5	2.8%	6.6	1.1%	9.1	0.9%
AMUSEMENT SERVICES	0.0	2.3	2.5%	6.7	1.1%	9.0	0.8%
CONSULTING & RESEARCH	0.0	3.3	3.6%	5.5	0.9%	8.8	0.8%
PERSONAL SERVICES	0.0	0.3	0.3%	7.8	1.3%	8.1	0.8%
PRINTING & PUBLISHING	0.0	2.1	2.3%	4.3	0.7%	6.4	0.6%
SECURITY & COMMODITY BROKERS	0.0	0.3	0.3%	5.5	0.9%	5.8	0.5%
TOTAL	**373.4**	**91.9**		**598.9**		**1,064.1**	

TABLE 21

LONG BEACH TOURISM-RELATED INDUSTRIES

Employment Multipliers

Industries Ranked by Total Employment Effect

Tourism-Related Industries Employment Multiplier = 1.79

	EMPLOYMENT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Employment*	*Induced*	*Percent of Total Induced Employment*	*TOTAL*	*PERCENT OF TOTAL EMPLOYMENT*
RETAIL TRADE	10,246.1	12.3	1.1%	3,001.5	32.0%	13,259.8	55.8%
HOTELS & LODGING PLACES	3,020.0	7.2	0.7%	106.0	1.1%	3,133.3	13.2%
HEALTH SERVICES	0.0	0.0	0.0%	1,383.6	14.7%	1,383.7	5.8%
BUSINESS SERVICES	0.0	304.8	27.4%	475.1	5.1%	779.9	3.3%
WHOLESALE TRADE	0.0	152.1	13.7%	520.8	5.5%	672.9	2.8%
REAL ESTATE	0.0	72.2	6.5%	264.5	2.8%	336.7	1.4%
PERSONAL SERVICES	0.0	12.7	1.1%	289.3	3.1%	302.0	1.3%
PRIVATE EDUCATION SERVICE	0.0	1.6	0.1%	252.6	2.7%	254.2	1.1%
AMUSEMENT SERVICES	0.0	16.4	1.5%	232.3	2.5%	248.7	1.0%
LEGAL SERVICES	0.0	43.3	3.9%	172.7	1.8%	216.0	0.9%
APPAREL	0.0	5.3	0.5%	210.0	2.2%	215.3	0.9%
CONSULTING & RESEARCH	0.0	76.7	6.9%	128.7	1.4%	205.4	0.9%
BANKING	0.0	10.5	0.9%	190.9	2.0%	201.4	0.8%
FOOD & KINDRED	0.0	94.1	8.5%	71.1	0.8%	165.1	0.7%
CONSTRUCTION	0.0	51.3	4.6%	107.1	1.1%	158.4	0.7%
AUTOMOTIVE SERVICES	0.0	6.3	0.6%	144.2	1.5%	150.5	0.6%
INSURANCE CARRIERS	0.0	3.4	0.3%	119.8	1.3%	123.2	0.5%
MOTOR FREIGHT TRNSPTN.	0.0	33.2	3.0%	85.8	0.9%	119.1	0.5%
CREDIT AGENCIES	0.0	40.4	3.6%	78.3	0.8%	118.7	0.5%
TOTAL	**13,266.1**	**1,110.4**		**9,387.7**		**23,764.5**	

TABLE 22

LONG BEACH TRANSPORTATION INDUSTRY

Output Multipliers

Industries Ranked by Total Output Effect

Transportation Industry Output Multiplier = 2.11

	OUTPUT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
MOTOR FREIGHT TRNSPTN.	339.1	65.1	21.9%	4.2	1.1%	408.5	31.5%
WATER TRANSPORTATION	274.3	31.2	10.5%	1.1	0.3%	306.6	23.7%
RETAIL TRADE	0.0	10.0	3.4%	65.5	17.0%	75.4	5.8%
REAL ESTATE	0.0	16.1	5.4%	52.3	13.6%	68.3	5.3%
HEALTH SERVICES	0.0	0.0	0.0%	46.7	12.1%	46.7	3.6%
WHOLESALE TRADE	0.0	14.2	4.8%	22.3	5.8%	36.5	2.8%
PETROLEUM PRODUCTS	0.0	24.0	8.1%	9.7	2.5%	33.7	2.6%
BUSINESS SERVICES	0.0	17.3	5.8%	10.6	2.7%	27.9	2.2%
TRANSPORTATION SERVICES	0.0	23.7	8.0%	0.7	0.2%	24.3	1.9%
AUTOMOTIVE SERVICES	0.0	10.5	3.5%	9.7	2.5%	20.2	1.6%
BANKING	0.0	6.0	2.0%	13.2	3.4%	19.2	1.5%
CONSULTING & RESEARCH	0.0	14.1	4.8%	3.6	0.9%	17.7	1.4%
INSURANCE CARRIERS	0.0	5.4	1.8%	11.7	3.0%	17.1	1.3%
UTILITIES	0.0	7.5	2.5%	9.5	2.5%	17.1	1.3%
LEGAL SERVICES	0.0	4.5	1.5%	9.1	2.4%	13.6	1.0%
COMMUNICATIONS	0.0	4.3	1.4%	7.0	1.8%	11.3	0.9%
APPAREL	0.0	1.4	0.5%	8.9	2.3%	10.4	0.8%
CONSTRUCTION	0.0	5.1	1.7%	5.2	1.3%	10.3	0.8%
FOOD & KINDRED	0.0	0.4	0.1%	9.9	2.6%	10.2	0.8%
MEMBERSHIP & NON-PROFIT ORG.	0.0	0.8	0.3%	7.4	1.9%	8.2	0.6%
PRIVATE EDUCATION SERVICE	0.0	0.3	0.1%	6.2	1.6%	6.4	0.5%
CHEMICALS & ALLIED	0.0	0.6	0.2%	5.8	1.5%	6.4	0.5%
TOTAL	**613.4**	**297.2**		**384.8**		**1,295.4**	

TABLE 23

LONG BEACH TRANSPORTATION INDUSTRY

Employment Multipliers

Industries Ranked by Total Employment Effect

Transportation Industry Employment Multiplier = 2.72

	EMPLOYMENT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Employment*	*Induced*	*Percent of Total Induced Employment*	*TOTAL*	*PERCENT OF TOTAL EMPLOYMENT*
MOTOR FREIGHT TRNSPTN.	4,423.1	849.5	23.4%	55.2	0.9%	5,327.7	35.0%
RETAIL TRADE	0.0	269.9	7.4%	1,928.2	32.0%	2,198.1	14.4%
WATER TRANSPORTATION	1,184.7	134.6	3.7%	4.6	0.1%	1,323.9	8.7%
HEALTH SERVICES	0.0	0.3	0.0%	888.9	14.7%	889.1	5.8%
BUSINESS SERVICES	0.0	513.0	14.1%	305.2	5.1%	818.2	5.4%
WHOLESALE TRADE	0.0	213.4	5.9%	334.6	5.5%	548.0	3.6%
CONSULTING & RESEARCH	0.0	334.9	9.2%	82.7	1.4%	417.7	2.7%
TRANSPORTATION SERVICES	0.0	335.1	9.2%	11.6	0.2%	346.7	2.3%
REAL ESTATE	0.0	137.1	3.8%	169.9	2.8%	307.0	2.0%
PERSONAL SERVICES	0.0	19.2	0.5%	185.9	3.1%	205.1	1.3%
AUTOMOTIVE SERVICES	0.0	88.3	2.4%	92.6	1.5%	180.9	1.2%
BANKING	0.0	56.3	1.6%	122.6	2.0%	178.9	1.2%
PRIVATE EDUCATION SERVICE	0.0	7.8	0.2%	162.3	2.7%	170.0	1.1%
LEGAL SERVICES	0.0	54.2	1.5%	111.0	1.8%	165.2	1.1%
APPAREL	0.0	22.7	0.6%	134.9	2.2%	157.6	1.0%
AMUSEMENT SERVICES	0.0	7.8	0.2%	149.2	2.5%	157.0	1.0%
CREDIT AGENCIES	0.0	97.6	2.7%	50.3	0.8%	147.9	1.0%
CONSTRUCTION	0.0	67.3	1.9%	68.8	1.1%	136.1	0.9%
INSURANCE CARRIERS	0.0	35.4	1.0%	77.0	1.3%	112.4	0.7%
HOTELS & LODGING PLACES	0.0	28.0	0.8%	68.1	1.1%	96.1	0.6%
INSURANCE AGENTS & BROKERS	0.0	30.2	0.8%	65.6	1.1%	95.8	0.6%
COMMUNICATIONS	0.0	32.4	0.9%	53.3	0.9%	85.7	0.6%
TOTAL	**5,607.8**	**3,628.2**		**6,030.8**		**15,266.9**	

the Long Beach region in 1992, producing a total output of \$391.85 million. The overall value of output throughout the region's economy generated by the wholesale trade industry was \$811.42 million, giving an output multiplier of 2.25. The main input sectors to the wholesale industry were the business services and real estate industries. Induced effects from this industry generated significant volumes of output in the retail trade and health services sector, in addition to the real estate industry (Table 24).

The wholesale trade industry employed 5,419 workers in Long Beach in 1992. An additional 6,964 jobs supported this activity in other sectors of the economy. The wholesale trade industry generates an employment multiplier of 2.29. Most employment related to the wholesale trade industry is distributed across the retail trade, business and health services industries (Table 25).

TABLE 24

LONG BEACH WHOLESALE TRADE

Output Multipliers

Industries Ranked by Total Output Effect

Wholesale Trade Output Multiplier = 2.25

	OUTPUT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Output*	*Induced*	*Percent of Total Induced Output*	*TOTAL*	*PERCENT OF TOTAL OUTPUT*
WHOLESALE TRADE	361.0	12.8	9.3%	18.1	5.8%	391.8	48.3%
RETAIL TRADE	0.0	2.0	1.5%	53.1	17.0%	55.1	6.8%
REAL ESTATE	0.0	11.2	8.1%	42.4	13.6%	53.6	6.6%
HEALTH SERVICES	0.0	0.0	0.0%	37.9	12.1%	37.9	4.7%
BUSINESS SERVICES	0.0	26.4	19.1%	8.6	2.7%	35.0	4.3%
LEGAL SERVICES	0.0	7.2	5.2%	7.4	2.4%	14.6	1.8%
BANKING	0.0	3.4	2.5%	10.7	3.4%	14.1	1.7%
AUTOMOTIVE SERVICES	0.0	5.9	4.2%	7.8	2.5%	13.7	1.7%
UTILITIES	0.0	5.2	3.8%	7.7	2.5%	13.0	1.6%
PETROLEUM PRODUCTS	0.0	4.0	2.9%	7.9	2.5%	11.9	1.5%
COMMUNICATIONS	0.0	5.4	3.9%	5.7	1.8%	11.0	1.4%
INSURANCE CARRIERS	0.0	1.3	0.9%	9.5	3.0%	10.8	1.3%
CONSULTING & RESEARCH	0.0	6.5	4.7%	2.9	0.9%	9.4	1.2%
CONSTRUCTION	0.0	4.6	3.4%	4.2	1.3%	8.8	1.1%
FOOD & KINDRED	0.0	0.1	0.1%	8.0	2.6%	8.1	1.0%
APPAREL	0.0	0.3	0.3%	7.2	2.3%	7.6	0.9%
PRINTING & PUBLISHING	0.0	5.0	3.6%	2.3	0.7%	7.2	0.9%
PERSONAL SERVICES	0.0	1.9	1.4%	4.0	1.3%	6.0	0.7%
AIR TRANSPORTATION	0.0	3.7	2.7%	2.2	0.7%	5.9	0.7%
PULP & PAPER	0.0	5.0	3.6%	0.8	0.2%	5.8	0.7%
AMUSEMENT SERVICES	0.0	2.2	1.6%	3.5	1.1%	5.7	0.7%
MOTOR FREIGHT TRNSPTN.	0.0	2.1	1.5%	3.4	1.1%	5.5	0.7%
CHEMICALS & ALLIED	0.0	0.5	0.3%	4.7	1.5%	5.2	0.6%
PRIVATE EDUCATION SERVICE	0.0	0.1	0.1%	5.0	1.6%	5.1	0.6%
HOTELS & LODGING PLACES	0.0	2.8	2.0%	1.8	0.6%	4.6	0.6%
MOTION PICTURES	0.0	2.1	1.5%	1.9	0.6%	4.0	0.5%
REPAIR SERVICES	0.0	2.5	1.8%	1.2	0.4%	3.7	0.5%
TOTAL	**361.0**	**138.3**		**312.1**		**811.4**	

TABLE 25

LONG BEACH WHOLESALE TRADE

Employment Multipliers

Industries Ranked by Total Employment Effect

Wholesale Trade Employment Multiplier = 2.29

	EMPLOYMENT EFFECTS						
INDUSTRY	*Direct*	*Indirect*	*Percent of Total Indirect Employment*	*Induced*	*Percent of Total Induced Employment*	*TOTAL*	*PERCENT OF TOTAL EMPLOYMENT*
WHOLESALE TRADE	5,419.2	192.1	9.3%	271.4	5.5%	5,882.7	47.5%
RETAIL TRADE	0.0	64.5	3.1%	1,564.0	32.0%	1,628.5	13.2%
BUSINESS SERVICES	0.0	745.8	36.0%	247.6	5.1%	993.3	8.0%
HEALTH SERVICES	0.0	0.1	0.0%	721.0	14.7%	721.1	5.8%
REAL ESTATE	0.0	95.8	4.6%	137.8	2.8%	233.6	1.9%
CONSULTING & RESEARCH	0.0	151.5	7.3%	67.1	1.4%	218.6	1.8%
PERSONAL SERVICES	0.0	49.2	2.4%	150.8	3.1%	199.9	1.6%
LEGAL SERVICES	0.0	87.2	4.2%	90.0	1.8%	177.2	1.4%
AMUSEMENT SERVICES	0.0	24.7	1.2%	121.1	2.5%	145.7	1.2%
HOTELS & LODGING PLACES	0.0	83.4	4.0%	55.3	1.1%	138.7	1.1%
PRIVATE EDUCATION SERVICE	0.0	2.4	0.1%	131.6	2.7%	134.0	1.1%
BANKING	0.0	31.7	1.5%	99.5	2.0%	131.1	1.1%
AUTOMOTIVE SERVICES	0.0	52.6	2.5%	75.1	1.5%	127.7	1.0%
CONSTRUCTION	0.0	60.7	2.9%	55.8	1.1%	116.5	0.9%
APPAREL	0.0	4.5	0.2%	109.4	2.2%	113.9	0.9%
PRINTING & PUBLISHING	0.0	60.1	2.9%	26.3	0.5%	86.3	0.7%
COMMUNICATIONS	0.0	39.6	1.9%	43.3	0.9%	82.8	0.7%
MOTOR FREIGHT TRNSPTN.	0.0	27.5	1.3%	44.7	0.9%	72.2	0.6%
INSURANCE CARRIERS	0.0	8.4	0.4%	62.4	1.3%	70.8	0.6%
INSURANCE AGENTS & BROKERS	0.0	7.2	0.3%	53.2	1.1%	60.4	0.5%
REPAIR SERVICES	0.0	36.4	1.8%	19.6	0.4%	56.0	0.5%
TOTAL	**5,419.2**	**2,072.4**		**4,891.8**		**12,383.6**	

5. *ASSESSMENT OF LONG BEACH TARGET INDUSTRIES*

Five industry indicators were combined to provide an overall "score" of Long Beach industries to identify industry sectors that would be recommended for targeting by the City of Long Beach for its external marketing program. Three indicators have been described above: employment concentration (based on location quotients), payroll per worker, and employment change in Los Angeles County (1992-1996). The other indicators used were (1) the Economic Roundtable assessment of Long Beach business conditions in different industries, based on our analysis of the 1994-1997 Long Beach Business Surveys, and (2) employment multipliers. The employment multiplier indicates the number of jobs generated throughout the economy by each additional $1 million output per industry. (See the separate input-output analysis of the Long Beach economy for a detailed discussion and presentation of multipliers for Long Beach industries). Together these variables provide a "state of the industry" summary for the target industries.

Long Beach industry groups were ranked for each indicator. In each case, the industries were divided into three groups and assigned scores of +1 (positive), 0 (neutral or stable), and -1 (negative). A composite score for each industry was created by adding the scores for each of the five indicators.

Scores were assigned based on the following breakdowns:

SCORE	LOCATION QUOTIENT	PAYROLL INDEX	EMPLOYMENT CHANGE (1992-96)	BUSINESS CONDITIONS REPORTED IN SURVEYS	EMPLOYMENT MULTIPLIER
1	>=1.2	>=120	>=5%	Strong	>2.5
0	>0.8, <1.2	>80, <120	>-5%, <5%	Borderline	2.0-2.5
-1	<=0.8	<=80	<=-5%	Experiencing Difficulty	<2.0

Four industry groups for which employment and payroll data were collected are not included in this analysis due to lack of information regarding business conditions and employment change, or both. These include: Communications (SIC 48), General Merchandise Stores (SIC 53), Auto Repair Services (SIC 76), and Amusement and Recreation Services (SIC 79).

The City of Long Beach suggested that the following six industry sectors be included in the overall screening of industries for the external marketing campaign. These include:

- High Technology
- International Trade
- Retail
- Finance, Insurance, Real Estate
- Tourism
- Health Services

What follows is a general assessment of these industry sectors, based on the employment, payroll, and business conditions indicators described above (see Tables 26 through 28). We also present information on important Long Beach industry groups not included in the six target sectors identified above. At the end of this section we recommend industries to be targeted for the City's external marketing campaign.

High Technology

Major Long Beach industry groups in this sector include: aerospace; computers, electronics, and instruments; motor vehicles and equipment; and engineering and management services. In 1992, the high technology industries employed 45,800 workers, 28 percent of Long Beach employment. By comparison, the high technology industries employed 318,600 workers in Los Angeles County, 9 percent of total county employment. These number has dropped significantly in recent years due to layoffs in the aerospace industry.

The industry indicators offer a mixed picture of the high technology industries. On the positive side, the high technology manufacturing industries have high employment multipliers and medium to high payrolls per worker. On the negative side, each of the high technology industries is experiencing negative business conditions, due largely to the collapse of employment in the aerospace industry. With a high multiplier, this has contributed to significant job loss throughout the economy (for every aerospace job lost, approximately 1.6 other jobs are lost due reduced inputs and wages).

TABLE 26

POTENTIAL LONG BEACH TARGET INDUSTRIES

Key Indicators

SIC	Industry	Employment Concentration	Payroll per Worker	LA County Employment Change 1992-96	Long Beach Business Conditions	Employment Multipliers
27	Printing and Publishing	Low	$31,784	-13.6%	Borderline**	Medium
33, 34	Metals	Low	$27,124	-7.4%	Borderline	High
371	Motor Vehicles and Equipment	High	$35,799	-4.2%	Experiencing Difficulty***	High
	Computers, Electronics, Instruments*	Low	$31,795	-13.8%	Experiencing Difficulty***	High
372, 376, 381	Aerospace	High	$42,976	-34.9%	Experiencing Difficulty***	High
42	Trucking and Warehousing	Low	$36,776	-13.4%	Strong	Medium
44	Water Transportation	High	$43,973	12.7%	Strong	High
47	Transportation Services	Medium	$33,494	3.6%	Strong	Medium
50	Wholesale Trade -- Durable Goods	Low	$32,830	-2.9%	Borderline	Medium
51	Wholesale Trade -- Nondurable Goods	Low	$34,396	-0.1%	Strong	Medium
54	Food Stores	Medium	$18,570	0.9%	Strong	Low
55	Automotive Dealers and Service Stations	Medium	$26,302	5.4%	Experiencing Difficulty	Low
58	Eating and Drinking Places	Medium	$10,324	2.2%	Experiencing Difficulty	Low
59	Miscellaneous Retail	High	$21,291	-0.1%	Experiencing Difficulty	Low
60	Depository Institutions	Low	$29,443	-21.4%	Strong****	High
63, 64	Insurance	Medium	$35,170	-21.7%	Strong****	High
65	Real Estate	Medium	$19,808	-8.1%	Strong****	High
70	Hotels and Other Lodging Places	High	$12,583	0.0%	Borderline	Low
72	Personal Services	Medium	$15,531	1.6%	Borderline	Low
73	Business Services	Low	$24,864	28.2%	Strong	Low
80	Health Services	High	$31,881	-0.6%	Borderline	Low
87	Engineering and Management Services	Low	$34,055	-4.4%	Experiencing Difficulty	Medium

*Includes SIC 357, 366, 367, 382, 384
**Business Conditions for Non-Durables Manufacturing in Long Beach
***Business Conditions for High Technology Manufacturing in Long Beach
****Business Conditions for Finance, Insurance, Real Estate in Long Beach

TABLE 27

POTENTIAL LONG BEACH TARGET INDUSTRIES

Ranking by Composite Score

SIC	Industry	Employment Concentration	Payroll per Worker	Employment Change	Long Beach Business Conditions	Employment Multipliers	COMPOSITE SCORE
44	Water Transportation	1	1	1	1	1	**5**
372, 376, 381	Aerospace	1	1	-1	-1	1	**1**
371	Motor Vehicles and Equipment	1	0	0	-1	1	**1**
47	Transportation Services	0	0	0	1	0	**1**
63, 64	Insurance	0	0	-1	1	1	**1**
65	Real Estate	0	-1	-1	1	1	**0**
60	Depository Institutions	-1	0	-1	1	1	**0**
51	Wholesale Trade -- Nondurable Goods	-1	0	0	1	0	**0**
73	Business Services	-1	0	1	1	-1	**0**
80	Health Services	1	0	0	0	-1	**0**
42	Trucking and Warehousing	-1	1	-1	1	0	**0**
70	Hotels and Other Lodging Places	1	-1	0	0	-1	**-1**
54	Food Stores	0	-1	0	1	-1	**-1**
50	Wholesale Trade -- Durable Goods	-1	0	0	0	0	**-1**
33, 34	Metals	-1	0	-1	0	1	**-1**
55	Automotive Dealers and Service Stations	0	0	1	-1	-1	**-1**
27	Printing and Publishing	-1	0	-1	0	0	**-2**
87	Engineering and Management Services	-1	0	0	-1	0	**-2**
72	Personal Services	0	-1	0	0	-1	**-2**
59	Miscellaneous Retail	1	-1	0	-1	-1	**-2**
	Computers, Electronics, Instruments*	-1	0	-1	-1	1	**-2**
58	Eating and Drinking Places	0	-1	0	-1	-1	**-3**

*Includes SIC 357, 366, 367, 382, 384

Most aerospace employment in Long Beach is at Douglas Aircraft. Currently, there are approximately 14,000 workers employed here, down from 40,000 workers in 1991 (*Southern California Business Directory*). The loss of roughly 26,000 jobs represents a 65 percent employment decline. Based on the employment multiplier, an estimated 41,600 jobs have been lost throughout the economy (in Long Beach and elsewhere) as a result of employment decline at McDonnell-Douglas in Long Beach.

Major Long Beach high technology industry groups:

Aerospace (SIC 372, 376, 381) (Composite Score = 1)

Positive:	high employment concentration, high payroll per worker, high employment multiplier
Negative:	employment decline, business conditions

Motor Vehicles and Equipment (SIC 371) (Composite Score = 1)

Positive:	high employment concentration, high employment multiplier
Neutral:	medium payroll per worker, medium employment change
Negative:	business conditions

Engineering and Management Services (SIC 87) (Composite Score = -2)

Neutral:	medium payroll per worker, stable employment change, medium employment multiplier
Negative:	low employment concentration, business conditions

Computers, Electronics, Instruments
(SIC 357, 366, 367, 382, 384) (Composite Score = -2)

Positive:	high employment multiplier
Neutral:	medium payroll per worker
Negative:	low employment concentration, employment decline, business conditions

International Trade

This sector includes the transportation industries (water transportation, transportation services, trucking and warehousing) and wholesale trade. In 1992, these industries employed

TABLE 28
POTENTIAL LONG BEACH TARGET INDUSTRIES
Summary of Employment, Payroll, Business Conditions

Industry	**Payroll per Worker**			**Employment Concentration**			**Employment Change in LA County**			**Long Beach Business Conditions**			**Employment Multiplier**		
	high	*medium*	*high*	*low*	*medium*	*high*	*declining*	*stable*	*growing*	*negative*	*borderline*	*positive*	*low*	*medium*	*high*
HIGH TECHNOLOGY															
Aerospace			X			X	X			X					X
Motor Veh.		X				X		X		X					X
Engineering, Management Services		X		X				X		X				X	
Computers, Electronics, Instruments		X		X			X			X					X
INTERNATIONAL TRADE															
Water Transportation			X			X			X			X			X
Transportation Services		X			X			X				X		X	
Trucking and Warehousing			X	X			X					X		X	
Wholesale -- Nondurable		X		X				X				X		X	

Industry	Payroll per Worker			Employment Concentration			Employment Change in LA County			Long Beach Business Conditions			Employment Multiplier		
	high	*medium*	*high*	*low*	*medium*	*high*	*declining*	*stable*	*growing*	*negative*	*borderline*	*positive*	*low*	*medium*	*high*
Wholesale -- Durable		X		X				X			X			X	
HEALTH SERVICES															
Health Serv.		X				X		X			X		X		
TOURISM															
Hotels	X					X		X				X	X		
RETAIL															
Food Stores	X				X			X				X	X		
Auto Dealers, Service Stat.		X			X				X	X			X		
Misc. Retail	X					X		X		X			X		
Eating, Drink-ing Places	X				X			X		X			X		
FINANCE, INSURANCE, AND REAL ESTATE															
Insurance		X			X		X					X			X
Real Estate	X				X		X					X			X
Depository Institutions		X		X			X					X			X

11,300 workers, 7 percent of Long Beach employment. This sector employed 387,200 workers in Los Angeles County, 11 percent of county employment.

Overall, the international trade sector indicators present a very good picture for the international trade sector. Conditions are especially positive in the water transportation industry, which was the only Long Beach industry to have positive scores for all five employment, payroll, and business conditions indicators. This industry includes ocean shipping of freight, marine cargo handling, and various water transportation services.

Business conditions were good throughout the international trade sector. The only negative indicators were employment decline in the trucking and warehousing industry, and low employment concentration in the trucking and warehousing and wholesale trade industries.

Major Long Beach international trade groups:

Water Transportation (SIC 44) (Composite Score = 5)

Positive:	high employment concentration in Long Beach, high payroll per worker, employment growth, business conditions, high employment multiplier

Transportation Services (SIC 47) (Composite Score = 1)

Positive:	business conditions
Neutral:	medium employment concentration, medium payroll per worker, stable employment change, medium employment multiplier

Trucking and Warehousing (SIC 42) (Composite Score = 0)

Positive:	high payroll per worker, business conditions
Neutral:	medium employment multiplier
Negative:	low employment concentration, employment decline

Wholesale Trade - Nondurables (SIC 51) (Composite Score = 0)

Positive:	business conditions
Neutral:	medium payroll per worker, stable employment change, medium employment multiplier
Negative:	low employment concentration

Wholesale Trade - Durables (SIC 50) (Composite Score = -1)

Neutral:	medium payroll per worker, stable employment change, borderline business conditions, medium employment multiplier
Negative:	low employment concentration

Retail Trade

The major Long Beach retail trade industries were eating and drinking places, miscellaneous retail (including shopping goods and drug stores), and food stores. In 1992, the retail trade sector employed 21,500 workers in Long Beach, 13 percent of total employment. The retail trade industries employed 16 percent of the workforce in Los Angeles County.

The general assessment of retail trade in the city is negative, based on the indicators used. Payroll per worker is relatively low in the retail industries. Except for food stores, business conditions were negative, although some improvement was reported in 1996 and 1997. The retail trade sector also has relatively low employment multipliers.

Retail trade depends upon consumer spending for growth. The decline of employment in a high wage industry such as aerospace, which has dominated the Long Beach economy, negatively affects retail sales. Based on the input-output analysis of the Long Beach economy, the Long Beach aerospace industry contributed indirectly to more output in retail trade than in any other industry group.

Major Long Beach retail industry groups:

Food Stores (SIC 54) (Composite Score = -1)

Positive:	business conditions
Neutral:	medium employment concentration, stable employment change
Negative:	low payroll per worker, low employment multiplier

Auto Dealers and Service Stations (SIC 55) (Composite Score = -1)

Positive:	employment growth
Neutral:	medium employment concentration, medium payroll per worker
Negative:	business conditions, low employment multiplier

Miscellaneous Retail (SIC 59) (Composite Score = -2)

Positive:	high employment concentration
Neutral:	stable employment change
Negative:	low payroll per worker, business conditions, low employment multiplier

Eating and Drinking Places (SIC 58) (Composite Score = -3)

Neutral:	medium employment concentration, stable employment change
Negative:	low payroll per worker, business conditions, low employment multiplier

Finance, Insurance, and Real Estate

These industries employed 8,500 workers in Long Beach in 1992, 5 percent of total employment. In Los Angeles County, this sector employed 7 percent of the workforce.

The overall assessment of this industry is mixed. There is one major negative indicator: serious employment decline in these industries in Los Angeles County since 1992. As discussed above, only the aerospace industry experienced a greater loss of jobs between 1992 and 1996.

On the other hand, these industries reported positive business conditions and have high employment multipliers. Payroll is average in the insurance and banking industry, and low in real estate. Employment concentration is medium in the insurance and real estate industries, and low in banking.

Of special note is the importance of the medical service and health insurance industry (SIC 632) in Long Beach. Local employment concentration is high, and the average payroll per worker in 1992 was 25 percent higher than the average county payroll per worker. This reinforces the importance of the health-related industries in Long Beach discussed below.

Major Long Beach industries:

Insurance (SIC 63, 64) (Composite Score = 1)

Positive:	business conditions, high employment multiplier
Neutral:	medium employment concentration, medium payroll per worker
Negative:	employment decline

Real Estate (SIC 65) (Composite Score = 0)

Positive:	business conditions, high employment multiplier
Neutral:	medium employment concentration
Negative:	low payroll per worker, employment decline

Health Services

This sector includes hospitals, doctors' and dentists' clinics and offices, medical and dental laboratories and nursing care facilities. This is a major industry sector in Long Beach, employing 21,100 workers in 1992, 12.9 percent of Long Beach employment.

The overall assessment of the health services sector is neutral. On the positive side, employment concentration in Long Beach is very high. On the negative side, this sector has a low employment multiplier. Payroll per worker is average, employment was relatively stable in Los Angeles County between 1992 and 1996, and business conditions are borderline.

Major Long Beach industry:

Health Services (SIC 80) (Composite Score = 0)

Positive:	high employment concentration
Neutral:	medium payroll per worker, stable employment change, business conditions
Negative:	low employment multiplier

Tourism

The main tourism-related industry in Long Beach is the hotel industry. Hotels and other lodging places employed 2,800 workers in 1992, 1.7 percent of Long Beach employment.

The industry indicators provide a mixed picture of the hotel industry in Long Beach. On the positive side, the industry has a high employment concentration in Long Beach, and business conditions are reported to have improved significantly in the past year. On the negative side, this is a low wage industry with a relatively low employment multiplier. Employment change has been stable in this industry in Los Angeles County.

Major Long Beach tourism industries:

Hotels and Other Lodging Places (SIC 70) (Composite Score = 0)

Positive:	high employment concentration, improved business conditions
Neutral:	stable employment change
Negative:	low payroll per worker, low employment multiplier

Other Industry Groups

The following industry groups are not included in the target industry sectors, but have a significant presence in Long Beach:

Business Services (SIC 73) (Composite Score = 0)

Positive:	employment growth, business conditions
Neutral:	medium payroll per worker
Negative:	low employment concentration, low employment multiplier

Metals (SIC 33, 34) (Composite Score = -1)

Positive:	high employment multiplier
Neutral:	medium payroll per worker, business conditions
Negative:	low employment concentration, employment decline

Printing and Publishing (SIC 27) (Composite Score = -2)

Neutral:	medium payroll per worker, business conditions, medium employment multiplier
Negative:	low employment concentration, employment decline

Personal Services (SIC 72) (Composite Score = -2)

Neutral:	medium employment concentration, stable employment change, business conditions
Negative:	low payroll per worker, low employment multipliers

6. *INDUSTRY NETWORKS IN LONG BEACH*

The input-output analysis presented above shows the strength of linkages between industries. In this section we present the major linkages between selected target industries and other industries in the economy. The strength of inter-industry linkages is shown by (a) the indirect output effect, which estimates the value of output generated in Industry B by a specified amount of output in Industry A, and (b) the indirect employment effect, which estimates the number of jobs created in Industry B in order to provide inputs to Industry A.

The purpose of this analysis is to determine industries that are strongly linked to target industries, and should be considered along with the major target industries for the external marketing campaign. Tables 29 and 30 show the estimated percent of total indirect jobs and output created in linked industries by output in seven Long Beach industries. The recommended target industries identified above are found in this group of seven industries (aerospace, health services, insurance, transportation). As well, three other industry groups were included as representative of other target industry sectors identified by the City of Long Beach: business services, tourism (eating and drinking places and hotels), and wholesale trade.

This analysis focuses on the indirect output and employment generated by production in a target industry group. The indirect effects help to identify industries that are closely linked by production networks. In particular, we will identify those industries linked to target industries that pay average to above average wages and salaries.

The Electronic Equipment industry group is strongly linked with the Aerospace, Business Services, and Wholesale Trade industries. Electronic Equipment accounts for 12 percent of indirect output generated by the Aerospace industry, 9 percent of indirect output generated by Wholesale Trade, and 8 percent of indirect output generated by Business Services.

The aerospace industry includes SIC 372 (aircraft and parts), guided missiles and space vehicles (SIC 376), and search and navigation equipment (SIC 381). In Long Beach, 96 percent of the 36,100 aerospace workers employed in 1992 worked in the aircraft and parts industry, with almost all of these workers employed at Douglas Aircraft. The industry network analysis thus separates the aircraft industry, which is included in the input-output table with SIC 376 as part of the Transportation Equipment except Automobiles industry group, from the search and navigation equipment industry, which is part of the Scientific Instruments industry group. Based on the input-output tables, the scientific instruments industries accounted for 11 percent of the indirect jobs generated by production in the Long Beach aircraft industry, and 20 percent of the indirect output created by production in the aircraft industry. In Long Beach, SIC 381 employed under 1,100 workers in 1992, far fewer jobs than are created indirectly in this industry by the Long Beach aircraft industry.

Scientific Instruments accounted for 8 percent of indirect output generated by the Health Services industry. The Scientific Instruments industry group includes manufacturers of laboratory apparatus (SIC 382) and medical instruments (SIC 384). Long Beach should attract firms in these industries that can benefit from proximity to the city's strong Health Services industry.

The Wholesale Trade industries have strong linkages to the Aerospace, Business Services, Health Services, and Tourism industries. Twelve percent of indirect jobs generated by the Aerospace industry are created in Wholesale Trade, which includes distributors of aircraft and aeronautical parts and equipment, electronic parts and equipment, industrial machinery, and metals. Thirteen percent of indirect jobs created by the Tourism industry are found in Wholesale Trade, as are 11 percent of indirect jobs created by Health Services.

The business industries are strongly linked with each of the seven anchor industries. Seventeen percent of indirect jobs generated by the aerospace industry are created in business services, as are 36 percent of indirect jobs created by wholesale trade, 31 percent of indirect jobs created by the health services industry, 27 percent of indirect jobs created by the tourism industry, 14 percent of indirect jobs created by transportation, and 13 percent of indirect jobs created by the insurance industry. The business services are responsible for 19 percent of the indirect output created by wholesale trade and 12 percent of indirect output created by health services.

Producing business services for other firms itself generates indirect jobs and output throughout the economy. Most of the indirect jobs and output generated by business services firms are created in other business service firms. Twenty-two percent of indirect jobs generated by business services are found in consulting and research firms (engineering and management services), as is 15 percent of indirect output.

TABLE 29

LONG BEACH INDUSTRY NETWORKS: JOBS CREATED IN LINKED INDUSTRIES

Linked Industry	***Percent of Total Indirect Jobs Created in Linked Industries by Production in Long Beach Industries***						
	AEROSPACE	BUSINESS SERVICES	HEALTH SERVICES	INSURANC E	TOURISM	TRANSPORTATION	WHOLESALE TRADE
Business Services	16.9	31.9	30.7	12.6	27.4	14.1	36
Consulting and Research		21.8	5.6	3.9	6.9	9.2	7.3
Insurance Agents				51.8			
Real Estate			14.8		6.5		4.6
Scientific Instruments	10.9						
Transportation						27.1	
Wholesale Trade	12.0		10.7		13.7		9.3

TABLE 30

LONG BEACH INDUSTRY NETWORKS: OUTPUT CREATED IN LINKED INDUSTRIES

Linked Industry	***Percent of Total Indirect Output Created in Linked Industries by Production in Long Beach Target Industries***						
	AEROSPACE	BUSINESS SERVICES	HEALTH SERVICES	INSURANCE	TOURISM	TRANSPOR-TATION	WHOLESALE TRADE
Business Services	6.8	16.3	12.0	8.9		5.8	19.1
Chemicals			12.2				
Consulting and Research		15.2					
Electronic Equipment	11.7	8.2					9.3
Food Products					23.3		
Insurance Agents				35.3			
Petroleum						8.1	
Real Estate		8.2	20.2		9.2	5.4	8.1
Scientific Instruments	19.9		8.4				
Transportation						40.4	
Wholesale Trade			8.3		11		

7. *RECOMMENDATIONS*

The dominant trend in the Long Beach economy since 1992 has been the decline in aerospace employment due to layoffs at Douglas Aircraft, where approximately 26,000 jobs have been lost since 1991. The resulting loss of consumer spending power has led to sluggish retail sales. However, unlike other "aerospace cities", the City of Long Beach has developed important specializations -- international trade and health services -- that help compensate for the loss of aerospace jobs and payroll.

We recommend that the City of Long Beach reinforce and improve existing specializations in international trade and health services, while working to retain a presence in the restructured aerospace industry. Firms in the electronic equipment industry should be attracted to Long Beach to help diversify the local high technology sector. The city should capitalize on the locational and logistical advantages created by the port and the Alameda Corridor project to target firms in other durables manufacturing industries such as motor vehicles and equipment, due to their relatively good wages and high employment multipliers. Finally, the City should attract firms in professional and high technology services industries that pay average to above average wages and are experiencing considerable growth.

The ten industries recommended for business retention and recruitment initiatives are described below. These industries are grouped into four target industry sectors: High Technology Manufacturing, International Trade, Health, and Professional and High Technology Services.

HIGH TECHNOLOGY MANUFACTURING

Aerospace (SIC 372, 376, 381)

Despite recent layoffs, and uncertainties regarding Douglas Aircraft production following the acquisition of McDonnell Douglas by Boeing, the aerospace industry is very important to the Long Beach economy, providing over 14,000 jobs that pay above average wages and salaries. With a high employment multiplier (2.61), aerospace supports at least 22,500 jobs throughout the regional economy. The City should work with Boeing to encourage increased commercial aircraft production, and work to attract, and encourage growth in, firms producing search and navigation equipment. This segment of the aerospace industry includes firms making search, navigation, and guidance systems for both defense and commercial markets, and has experienced recent growth in Los Angeles County. Employment in the search and navigation industry in Los Angeles County increased by 4 percent between 1995 and 1996.

Electronic Equipment (SIC 36)

The Electronic Equipment industry group includes manufacturers of communications equipment (SIC 366) and electronic components (SIC 367). SIC 366 includes firms that manufacture space satellites and satellite communications equipment, which is a growing high technology industry.

Long Beach has few firms in this industry group, employing just over 300 workers in 1992. These industries pay average to above average wages, and are a major supplier of inputs to aerospace firms and business services. The City should attract electronic equipment firms to diversify its high technology manufacturing sector.

Motor Vehicles and Equipment (SIC 371)

This industry has a high employment concentration in Long Beach and a high multiplier. The major Long Beach firms in this industry specialize in the manufacture of truck bodies. Strengthening the motor vehicles and equipment industry in Long Beach will help diversify the city's manufacturing base. Manufacturers can take advantage of their proximity to the Port of Long Beach to develop export markets in the Pacific Rim.

INTERNATIONAL TRADE

Water Transportation (SIC 44)

The water transportation industry ranked highly in each of the industry indicators. This industry will continue to grow in importance given Long Beach's position as a gateway for international trade between the booming Pacific Rim economies. As the economies of East Asia continue to grow, expanding markets for US products will increase trade flows through the Port of Long Beach. Likewise, East Asian producers will ship increasing amounts of goods through the port, destined for regional and continental markets.

Transportation Services (SIC 47)

The water transportation industry is complemented by transportation services, which include freight forwarding. Though not a major employer in Long Beach (930 workers in 1992), transportation services will also grow in importance as international trade expands. Long Beach appears to have excellent locational advantages for attracting growth in this industry.

Wholesale Trade (SIC 50 - 51)

The Wholesale Trade industries pay average to above average wages and salaries. Wholesale Trade employment concentration in Long Beach is relatively low. Wholesale trade in Los Angeles County is highly concentrated in the Carson and Commerce industrial parks, while Long Beach specializes in water transportation and transportation services connected to port activity.

The Wholesale Trade industries are strongly linked to firms in aerospace, health services, and tourism.

HEALTH

Health Services (SIC 80)

Following mass layoffs in the Long Beach aircraft industry, health services has emerged as the city's major industry group in terms of employment and total payroll. Despite ongoing restructuring in this industry, employment levels in Los Angeles County have remained stable. The health services provide numerous job opportunities for Long Beach residents in skilled occupations.

With the recent decline in aerospace employment, this is the major industry group in terms of employment in Long Beach. Approximately one in eight persons working in Long Beach are employed in the Health Services industries. City employment is highly concentrated in hospitals, nursing and personal care facilities, and offices of health practitioners other than medical doctors and dentists. The health services provide good jobs in numerous technical and scientific occupations.

Medical Services and Health Insurance (SIC 632)

As a group the finance, insurance, and real estate industries are not highly concentrated in Long Beach, and have experienced significant employment decline in Los Angeles County since 1992. However, Long Beach has developed a niche in the medical services and health insurance industry, which has a high employment concentration in the city and pays high wages and salaries. The status of Long Beach as a regional center for health services is reinforced by its specialization in medical services and health insurance. In 1992, this industry employed over 1,300 people in Long Beach who earned an average annual income of $37,000. Based on its concentration in Long Beach and linkages to the City's hospitals, there may be opportunity for growth in this sector of the insurance industry.

PROFESSIONAL AND HIGH TECHNOLOGY SERVICES

Business Services (SIC 73)

The business services industries are, together with motion pictures, the fastest growing industries in the Los Angeles economy. Firms in diverse industries, from aerospace to transportation to tourism, contract with business services firms for a variety of needs. These include "high-end" professional services such as advertising, commercial art and graphic design, commercial photography, and computer programming and data processing services; "low-end" services such as mailing and reproduction, cleaning and janitorial services, and security guards; as well as employment agencies and temporary help supply agencies. Demand for each of these services is growing in the contemporary economy.

The business services industry employed 7,000 people in Long Beach in 1992, with a relatively low employment concentration compared to the county. Business services firms are highly concentrated along the Wilshire Corridor from Santa Monica to downtown Los Angeles. Despite this, the City of Long Beach should work to attract "high-end" business services to the city, due to the good wages and salaries paid in these industries, and the strong demand for these services throughout the economy.

Engineering and Management Services (SIC 87)

This industry includes Engineering and Architectural Services (SIC 871), Accounting and Bookkeeping Services (SIC 872), Research, Development, and Testing Services (SIC 873), and Management and Public Relations Services (SIC 874).

These industries pay above average wages and salaries, and are not well represented in the Long Beach economy. The City should develop a strategy that attracts firms in this industry together with "high-end" business services firms, due to their strong inter-industry connections and above average job quality.

TABLE 31

RECOMMENDED TARGET INDUSTRIES FOR CITY OF LONG BEACH EXTERNAL MARKETING CAMPAIGN

Target Industry	Comments
HIGH TECHNOLOGY MANUFACTURING	
Aerospace	The aerospace industry is very important to the Long Beach economy, providing over 14,000 jobs that pay above average wages and salaries. With a high employment multiplier (2.61), aerospace supports at least 22,500 jobs throughout the regional economy. The City should work with Boeing to encourage increased commercial aircraft production, and work to attract, and encourage growth in, firms producing search and navigation equipment.
Electronic Equipment	This industry group includes firms that manufacture space satellites and satellite communications equipment, which is a growing high technology industry. These industries pay average to above average wages, and are a major supplier of inputs to aerospace firms and business services. The City should attract electronic equipment firms to diversify its high technology manufacturing sector.
Motor Vehicles and Equipment	This industry has a high employment concentration in Long Beach and a high multiplier. Strengthening the motor vehicles and equipment industry in Long Beach will help diversify the city's manufacturing base. Manufacturers can take advantage of their proximity to the Port of Long Beach to develop export markets in the Pacific Rim.

Target Industry	Comments
INTERNATIONAL TRADE	
Water Transportation	The water transportation industry ranked highly in each of the industry indicators. This industry will continue to grow in importance given Long Beach's position as a gateway for international trade between the booming Pacific Rim economies.
Transportation Services	The water transportation industry is complemented by transportation services, which include freight forwarding. Though not a major employer in Long Beach (930 workers in 1992), transportation services will also grow in importance as international trade expands. Long Beach appears to have excellent locational advantages for attracting growth in this industry.
Wholesale Trade	The Wholesale Trade industries pay average to above average wages and salaries. These industries are strongly linked to firms in aerospace, health services, and tourism.
HEALTH	
Health Services	With the recent decline in aerospace employment, this is the major industry group in terms of employment in Long Beach. Approximately one in eight persons working in Long Beach are employed in the Health Services industries. City employment is highly concentrated in hospitals, nursing and personal care facilities, and offices of health practitioners other than medical doctors and dentists.
Medical Services and Health Insurance	Long Beach has developed a niche in the medical services and health insurance industry, which has a high employment concentration in the city and pays high wages and salaries. The status of Long Beach as a regional center for health services is reinforced by its specialization in medical services and health insurance.

Target Industry	Comments
PROFESSIONAL AND HIGH TECHNOLOGY SERVICES	
Business Services	The City of Long Beach should work to attract "high-end" business services to the city, due to the good wages and salaries paid in these industries, and the strong demand for these services throughout the economy. "High-end" business services include advertising, commercial art and graphic design, and computer programming and computer related services.
Engineering and Management Services	These industries pay above average wages and salaries, and are not well represented in the Long Beach economy. The City should develop a strategy that attracts firms in this industry together with "high-end" business services firms, due to their strong inter-industry connections and above average job quality.

Appendix 1

INPUT-OUTPUT ANALYSIS

A1.1 INPUT-OUTPUT ANALYSIS: A BRIEF INTRODUCTION

Input-output analysis is a framework designed to examine the inter-industry flows of commodities throughout an economy. The input-output method divides an economy into a series of sectors or industries and measures the flows of goods and services between them. An industry may be thought of as a group of firms producing the same or a similar mix of outputs. The technique of input-output recognizes that to engage in production an industry consumes a variety of inputs including raw materials, semi-finished or intermediate goods, capital equipment and labor. These materials must be purchased within the economy or imported from outside. Input-output analysis provides a structured accounting system that records the purchase of inputs within each industry in an economy over a set period of time, usually a year. In addition, input-output analysis also records the sales by each industry to all other sectors within the economy, including sales to consumers and the government, as well as exports. The non inter-industry sales represent consumption by final demand.

The foundation of input-output analysis is the transactions table, a matrix which records the sales and purchases made between all sectors within the economy. The heart of the transactions table is the inter-industry portion of the matrix that illustrates the flow of goods between the "producing" industries of the economy. A simplified representation of the transactions table is shown in Figure 43. Each row of the transactions table shows how the output of a particular industry is distributed amongst the other producing sectors, as well as elements of final demand. The sum of the elements along any row for a producing sector in the transactions table records the total output of the corresponding row industry for the stated time period. The columns of the transactions table record the inputs used by each industry in the production of their output. The sum of the values in a producing industry column equals the total value of inputs purchased by an industry in a given period of time.

As well as illustrating flows between producing industries, the transactions table also records the non-industrial inputs to production, chiefly value added or payment to labor, and also inputs such as government services. In addition, the transactions table keeps track of sales made outside the producing sector of the economy, to elements of final demand. Final demand is defined as purchases made for the intention of consumption rather than further processing of commodities, and includes personal consumption expenditure, purchases by government, purchases for investment and export.

FIGURE 43
INPUT-OUTPUT TRANSACTIONS TABLE

		PRODUCERS								FINAL DEMAND			
		Agri-culture	Mining	Construc-tion	Manu-facturing	Trade	Transpor-tation	Services	Other	Personal Consump-tion Expend-itures	Gross Private Domestic Investment	Net Exports of Goods and Services	Government Purchases of Goods and Services
PRO-DUCERS	Agriculture												
	Mining												
	Construction												
	Manufacturing												
	Trade												
	Transportation												
	Services												
	Other												
VALUE ADDED	Employees				Employee compensation					GROSS NATIONAL PRODUCT			
	Owners of Business and Capital				Profit-type income and capital consumption allowances								
	Government				Indirect business taxes								

Source: U.S. Department of Commerce, Bureau of Economic Analysis (February, 1979).

A1.2 ASSUMPTIONS OF INPUT-OUTPUT ANALYSIS

The techniques of input-output analysis rest upon a number of critical assumptions regarding the nature of technology in an economy, the capacity of the system to produce different quantities of output and the nature of industrial linkages. The first, and perhaps most important, assumption is that the production technology is one of fixed proportions (Leontief technology), or that there are no economies of scale in production. Thus, in an input-output world, an industry would have to double all inputs in order to double its output. The fixed proportions technology assures that the flow of goods between two sectors of the economy depends on the technology and the volume of output of the receiving sector. Production technology is also assumed to be constant over the period of investigation, usually one year. Techniques of production do change through time and these changes may be captured by altering the values of the fixed coefficients production functions (ratios of inputs to output) in the input-output tables of different years.

A second assumption of input-output analysis is that there are no capacity or supply-side constraints on the scale of production. Thus, if demand for an industry's output increases by any amount, the industry is assumed to be able to meet this demand without running-up against any bottlenecks in the supply process.

The assumptions outlined above imply a certain cost. We know that production functions are not of the fixed coefficients variety and that increasing returns are significant in today's economy. Furthermore, we know that the production process is not seamless and free of capacity constraints. These costs imply a certain degree of error in our specifications of the production process. However, with limited information on the variable nature of production technology and capacity, and with the limited ability of the input-output method to incorporate such information, the above assumptions are necessary to examine the effects of changes in demand and production technology throughout an economy.

A1.3 APPLICATIONS OF INPUT-OUTPUT ANALYSIS AND OUTPUT AND EMPLOYMENT MULTIPLIERS

The transactions table describes an economy in equilibrium. It maps the final demand for goods and services and the inter-industry transactions that are required to satisfy that demand. More than simply describing the form of production in an economy, input-output analysis can be used to examine a number of important economic issues. Input-output methods have been used to predict the impacts of changes in federal taxes on economic activity, to examine the consequences of reductions in federal defense spending, to investigate the income and employment effects of downsizing industries and to analyze industrial and regional linkages. Input-output also provides a useful framework for tracing energy use and other activities such as environmental pollution associated with inter-industry activity.

A vital ingredient in input-output investigations is the multiplier. The concept of the multiplier may be illustrated with reference to inter-industry flows of commodities. An increase in the demand for the output of one industry, say industry A, will cause a direct increase in output within industry A. However, this does not represent the total additional output required to satisfy the original change in final demand. The additional output of commodity A will result in additional purchases by industry A of the inputs required in production. Thus, industry A will demand additional inputs from industry B and C, for example. These additional demands necessitate an increase in output of industries B and C which in turn place greater demands on their supply sectors, possibly including sector A. These indirect effects will spread throughout the processing sector of the economy. This is not the end of the story of course, for greater volumes of output in the economy mean increased employment, wages and purchases by households. These induced effects necessitate further increases in industry output. In a general sense, input-output multipliers measure the ratio of the combined change in economic activity (the sum of direct, indirect and induced effects) to the initial direct effect. The multiplier thus provides a measure of the degree of economic interdependence of any sector. Sectors with higher multipliers are more closely integrated with the economy as a whole than sectors with relatively small multipliers.

Employment multipliers may be estimated from input-output techniques as well as output multipliers. Employment multipliers demonstrate how much employment is generated throughout the economy in order to produce a certain volume of output in any particular industry. As with output multipliers, employment multipliers capture the employment generated directly within a producing sector, say A; they capture the employment generated indirectly within the industries providing inputs to the producing sector A; and they capture the employment induced by consumption in the economy as the workers employed spend their income.

A1.4 DATA

The input-output data employed in this report were provided by IMPLAN (IMpact analysis for PLANning), a private firm managing economic data that was developed from the Land Management Division of the U.S.D.A. Forest Service. IMPLAN constructs regional input-output accounts and models for any region of the United States. The county is the smallest areal unit of measurement for which input-output data can be produced. IMPLAN input-output data are developed from U.S. national input-output accounts constructed by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), together with companion data available by state and county.

The input-output data employed in this report are from 1992. These data are the most recent available for input-output studies in the United States. Input-output coefficients change over time relatively slowly and thus the 1992 data most likely provide a relatively accurate picture of production technology in Long Beach.

The data in input-output tables are either of a physical, say tons, or a monetary dimension. Because of the difficulty of consistently measuring the heterogeneous outputs of some industries in physical terms, transactions table information is increasingly of the monetary kind. In this study, the transactions between sectors of the economy are measured in U.S. dollars. Further, the transactions are all measured in terms of producer prices, or 'free-on-board' (f.o.b.) prices, rather than wholesale or retail prices and thus ignore wholesale and retail trade margins as well as transport costs.

The input-output data provided by IMPLAN includes information on inter-industry transactions, components of value added, final demand and the gross output of each industry. The data are relatively disaggregated: in total approximately 525 sectors of the economy are distinguished, including about 330 manufacturing industries. In the U.S., establishments are assigned to an industry according to their primary product. However, many firms produce several different types of output. In this case, the establishment is classified according to its dominant output, the remaining commodities produced being referred to as secondary products. Because secondary products now constitute such a large proportion of U.S. industrial output, input-output tables are constructed on the basis of the flows of specific commodity types between industrial sectors. Prior to the analysis conducted below, the input-output data were converted to an industry by industry base rather than a commodity by industry base.

To complement the monetary transactions between the sectors of the economy, analysis of industry employment also requires information on the physical amount of labor employed in each of the producing sectors of the economy. These data were also provided by IMPLAN and are based upon data from the Bureau of Labor Statistics.