CLOSING THE GAPS

Employment Demand and Workforce Training in Orange County's New Economy

Presented By: The Orange County Business Council
Presented To: The Orange County Workforce Investment Board
Date: 2000

CLOSING THE GAPS: Employment Demand and Workforce Training in Orange County's New Economy

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

Wallace Walrod, Beth Hoch, Roger Morton, and Marlon Boarnet wrote this report, collected the data, and performed the analyses that serve as the basis of this report. The authors wish to thank a number of people for their assistance; Michael Ruane, Kelly Pijl, and Kari Parsons of the County of Orange, Chief Executive Office; Andrew Munoz, Margo West, Mark Matthews, and Thomas Cripps of the Orange County Workforce Investment Board; Ann Marshall, Labor Market Analyst with the local office of the California Employment Development Department; ERISS Corporation; James Gollub, Karen Bluestone, and IdeA; Conrad Gauntlet and the staff of the Labor Market Information Division for access to California wage and employment data; Julie Puentes and Stan Oftelie at OCBC.

The Orange County Business Council (OCBC) is grateful to the Orange County Workforce Investment Board and the County of Orange for their dedicated support of this project, especially the OCWIB Labor Market Information committee: Euiwon Chough, David Cline, Tom Ellick, Don McCrea, Jack Mixner, Sandy Sutton, and Kay Turley-Kirchner. We also wish to thank the James Irvine Foundation and C2K for their support of OCBC workforce development efforts in Orange County.

Orange County Business Council

The Orange County Business Council (OCBC) was formed in 1994 to enhance economic performance, encourage prosperity, and increase the quality of life for all of Orange County. OCBC is the leading business organization in Orange County. Representing hundreds of local enterprises from small shops to multi-national companies, OCBC provides the forum for businesses to join together, in conjunction with government and educational institutions, to invest in the growth and prosperity of the fifth largest county in America. OCBC provides Orange County leaders with a source of timely, objective and accessible expertise on local, regional, state, and national fiscal, economic, and social policy issues. The OCBC is committed to public policies that influence and improve the economic and social well-being of low- and middle-income Orange Countians and their communities. The OCBC pursues this goal through independent research, policy analysis and public education. Support for the OCBC comes from private investors, government institutions, foundation grants, and individual member contributions.

Orange County Business Council
2 Park Plaza, Suite 100
Irvine, CA 92614
(949) 476-2242
wwalrod@ocbc.org
www.ocbc.org

EXECUTIVE SUMMARY

This report presents the results of the Phase 2 work agreement between the Orange County Business Council, the County of Orange, and the Orange County Workforce Investment Board. The Orange County Business Council has researched workforce development issues. This includes background information on the Orange County economy, workforce demand in Orange County, workforce supply, and an analysis of the gaps between labor supply and demand in the county, with recommendations for future workforce development efforts. Key results are summarized below.

Sources of Orange County Economic Strength

- Orange County has a diversified high-technology economy. Of the fourteen high-tech sectors studied in a recent Milken Institute (1999) report, Orange County had employment concentrations that exceeded national concentration levels in ten of the sectors. Only Boston, with concentrations in eleven high-tech sectors, has a more diversified technology economy than Orange County.
- Orange County has competitive advantages, controlling for national and industry trends, in construction, manufacturing, wholesale trade, and retail trade.
- Future job growth in Orange County is expected across many sectors, suggesting that the county's economy will remain well diversified.

Workforce Demand

- Most job growth in Orange County, and in California, is projected to be in low-wage occupations.
- While several sectors with high percentage future job growth pay relatively high wages, those sectors are projected to realize rapid growth rates starting from a low base. The sectors with the largest absolute projected increases in jobs are mostly low-wage sectors.
- The demand for workers, as indicated by surveys done by ERISS in 1999 and 2000, is broad-based. Firms in many sectors now demand employees with and without experience, indicating a tight Orange County labor market.

Workforce Supply

- The California Training and Education Providers (CTEP) data base indicates that there are 204 classes in Orange County related to the top nine growth occupations in the County.
- The Orange County Business Council has supplemented the CTEP data base with substantial additional information, to yield a more comprehensive source of training supply information for Orange County. This includes 90 schools not in the CTEP data base. The Business Council gathered information from trainers and education providers that ranged from short-term and on-the-job training providers to university degree programs.
- The supply of labor in Orange County is influenced both by domestic and international migration. During the 1990s, Orange County experienced net in-migration from international destinations in each year. In most years during the past decade, the county had net domestic (within the United States) out-migration.

Workforce Reconciliation and Recommendations

- Forty-six percent of Orange County job growth is projected to occur in occupations requiring only short or moderate on-the-job training.
- A significant labor supply-demand mismatch is a shortage of job seekers with at least a college degree. That might be mitigated by in-migration of college educated workers.
- Other areas of potential labor shortage include job seekers with doctoral degrees, professional degrees, and bachelors degrees with work experience.
- Potential areas of labor oversupply (job seekers outnumbering available jobs) include occupations requiring Masters degrees and AA degrees.
- The Orange County Business Council recommends the following: ongoing research drawing on both the economic forecasts of Cal State University Fullerton and Chapman University and the cluster analysis and business leadership of the Business Council; development of an early warning system to provide information on new and evolving developments in the County's economy; policies that promote access to high-skilled, high-wage jobs; policies that

address labor shortages through innovative partnerships with industry; and targeting economic development efforts toward high-wage sectors.

INTRODUCTION

"Not enough qualified workers. Workforce is our #1 issue"

In Orange County we hear this predicament expressed almost every day by local business leaders. What exactly does it mean?

By almost any measure, Orange County's economy is booming. The pessimism that accompanied the economic restructuring of the early 1990s has been replaced with a sense of renewed optimism in the "New Economy". In Orange County, the symbols of this "New Economy" are the "dot-com" entrepreneurs, broadband hardware and chipmakers such as Conexant and Broadcom, the biotechnology and biomedical cluster, and the burgeoning local multimedia and software entertainment industry.

Unemployment rates are near all-time lows. The County has regained jobs lost during the recession of the early 1990's and added even more. Both Orange County's and California's job growth have outpaced the nation since 1996, with employment in California increasing by 343,200 and Orange County by approximately 40,000 in 1999 alone. The number of Orange County millionaires (and billionaires) is at an all-time high. However, even in these best of times, many Orange County workers are just beginning to share in the rewards of this strong economy. Tight labor markets have only recently begun to translate into real wage increases for the majority of Orange County.

There are a number of reasons why many in Orange County are falling behind. Frequently cited factors include:

- changes in the structure of the County's economy, particularly the declining share of the workforce employed in manufacturing and the rising share of employment in the service sector;
- changing technology that favors high- over low-skilled workers;
- declining rates of unionization;
- mismatches and gaps between training supply and employer demand
- global competition;
- a relatively large number of new immigrants in Orange County's workforce.

It is apparent that most if not all of these factors revolve around workforce issues. Workforce development is not just an issue for Orange County workers, but also directly affects economic development, and the competitiveness of Orange County firms. In fact, workforce development issues (difficulty in hiring skilled labor force, high cost of labor) were mentioned as the #2 and #3 barriers to doing business by Orange County executives in the 2000 Orange County Executive Survey. Sixty-six percent of Orange County executives cited difficulty with hiring a skilled labor force as a top barrier to doing business in Orange County, while 65% mentioned high cost of labor as a barrier. In 2000, workforce problems were felt by both small and large companies. The high cost of labor was the top barrier in the 1999 Orange County Executive Survey as well, signaling a long-term concern with this issue by local executives and employers.

Most local industry leaders report that Orange County's No. 1 problem is the shortage of workers and the resultant high salaries for technical talent. Anecdotal reports of a significant skills gap between the students coming out of school today and the workers that businesses and industries need are printed almost daily in both local and national newspapers. In fact, there seems to be a national cry regarding the need to close the gap between our educational and training system and what's required for today's and tomorrow's work force.

This report explores whether changing employment demand patterns and Orange County workforce training capabilities can come together to reverse this trend for both Orange County companies and those who work or seek to work to support themselves and their families. Specifically, this report attempts to answer four sets of questions:

- Where is Orange County's current and future employment demand going to be? Is the County's economy creating jobs that provide sufficient income to support a family?

- What is Orange County's current and future occupational training supply picture?

- What are the key workforce data sources available to Orange County decision-makers and how can they best be used?

- How can we reconcile demand opportunities with supply capacity to optimize Orange County's long-term workforce development needs (and in so doing, economic development needs). Do the skills required for the jobs that will be in demand match the skills of training programs and those seeking work? What are the innovative programs and strategies Orange County needs to make this happen?

These questions are particularly timely in light of the recent changes to state and federal welfare laws. The new welfare laws were predicated on the notion of giving job seekers better tools to make informed decisions about where future employment demand and opportunities will be in Orange County. The federal Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 and its California counterpart, the California Work Opportunity and Responsibility to Kids (CalWORKs) program, ended welfare as we knew it through a set of time limits and work requirements designed to more quickly move families from public assistance to employment. Orange County high-growth, high demand industry Clusters and the associated largest growth occupations in the local area are mandated to guide the focus of training services allowed under WIA.

Business leaders in Orange County have identified workforce development as one of their top priorities for ensuring Orange County has the necessary components for a strong economy for the 21st Century. As the Orange County economy continues to thrive, challenges are emerging about how to sustain the elements necessary to ensure this strong economy continues. One of the key challenges business owners are facing

is recruiting and retaining their best employees. Another key challenge is *growing* a strong workforce in the future.

Project Background

In late 1999, the County of Orange and the Orange County Workforce Investment Board directed the Orange County Business Council to develop a work program focusing on conducting an ongoing, consistent, and comprehensive Workforce Development Assessment. The assessment would identify training gaps within the workforce development process in Orange County and lead to better, more informed decision-making regarding Orange County workforce development investments as the Orange County Private Industry Council transitioned to being the Orange County Workforce Investment Board. The Workforce Assessment would be also a key component of the comprehensive Countywide ongoing economic development assessment that would better link County of Orange efforts with local business and employer needs.

The research and analysis contained in this Workforce Assessment supports many of the core goals of the Workforce Investment Act (WIA), including the collection, delivery, and analysis of relevant, timely, and statistically valid labor market information. The ultimate benefit of this assessment will be the increased analysis and linkage between the multitude of public and private workforce development programs and Orange County employer workforce development needs. Towards meeting these objectives, the Orange County Business Council (OCBC) developed a Phase I work program that was highly coordinated with workforce training efforts currently underway in Orange County at the Orange County Workforce Investment Board. Phase I consisted of development and initial assessments of Orange County's workforce situation during the period of transition from the Orange County Private Industry Council to the now constituted Orange County Workforce Investment Board.

The tasks described in this Phase II work program continue and strengthen the efforts underway to advocate toward a countywide approach to workforce development, including completing the current transition of the Orange County Private Industry Council to the Orange County Workforce Investment Board (OCWIB). This Work Program anticipates a continued high level of cooperation and support between OCBC and the OCWIB, leveraging the expertise and data capabilities of each party. OCBC was committed to helping facilitate creation of the OCWIB with business input and consultation on research matters. The Workforce Development Assessment is also intended to serve as a foundation for the work of the three Workforce Investment Boards (WIBs) to move toward a more integrated, countywide workforce development program.

The outcomes, assessment, and reports that are the work product of this work program agreement provide advice and counsel to decision makers such as the OCWIB about how to target Orange County training funding dollars to areas where business says demand and needs are greatest. OCWIB Board members and others in the

Orange County workforce community have expressed their need for a source of credible, locally oriented workforce assessment data.

In addition, this work program will continue to highlight the County of Orange's objective of working with Orange County universities, community colleges, and K-12 educational systems to better link academic programs to the needs of local employers. Finally, the labor market information system and strategic analysis will help the County of Orange develop a proactive, state-of-the-art early warning system that measures potential barriers or threats to economic development that are anticipated by Orange County's key employers.

The initial development-phase Phase I contract period was January 1, 2000 through June 30, 2000. Phase I of the Workforce Development Assessment began to set up a baseline process for broadly assessing workforce needs among Orange County employers, taking an inventory of workforce training, and developing an analysis of the gaps, mismatches, and areas of success.

This workforce assessment initiative needs to be conducted annually on a long-term basis over a number of years, to better understand Orange County's evolving economy and workforce needs. This initial workforce development assessment agreement is the beginning of an anticipated long-term Orange County commitment to the issue of workforce development assessment, a key driver of economic development and success.

UNDERSTANDING ORANGE COUNTY'S ECONOMIC FOUNDATION

This section provides an overview of recent and possible future trends for Orange County's economy. This includes a broad overview of Orange County's economy and demographics, an analysis of industry clusters in Orange County, and detailed analysis of industries in which Orange County has either a competitive advantage or a competitive disadvantage compared to the nation. The analysis reveals that current areas of strength and competitive advantage for Orange County are high-tech manufacturing, wholesale trade, business services and construction. These industry areas are likely areas of strong workforce demand for the foreseeable future in Orange County, generating above-average rates of job growth and wage growth.

Economic and Demographic Overview

Economic Conditions

Economic conditions in Orange County remain fundamentally strong, benefiting from strong population growth, increasing personal income, and historically low unemployment rates. The economy continued to gain momentum, and has recorded another six months of sound expansion through the first half of 2000. Job growth has been broad based and industry diverse. Additionally, the County continues to generate impressive economic performance through new, innovative, high-growth segments of the economy (known as high-growth industry clusters). OCBC expects Orange County to continue growing and expanding and to generally outperform both the state and the nation going forward, especially in high-value added research and development-intensive industry clusters. However, growth will likely to be more moderate in the near future (as compared to recent years) as Orange County's economy shifts from a recovery phase to ongoing expansion phase.

The Orange County economy continues to outperform the nation and state in terms of job creation, although at a slower pace than the remarkable growth achieved in 1997 and 1998. Total Orange County employment grew 2.7% year-over-year in July 2000, outpacing U.S. growth of 2.1%. Orange County has fully recovered from the job losses associated with the 1989-92 recession, and total employment is now approximately 100,000 above the 1989 pre-recession peak. Seasonally adjusted unemployment was 3.0% in July 2000, compared to the high of 7.5% reached during the recession in July 1992. Given the region's superior growth, the fall in Orange County unemployment has been more pronounced than in the rest of California and the U.S. In August of 2000, Orange County's unemployment rate was almost 1 percentage point below the U.S. unemployment rate of 4.0% and over 2 percentage points below California's rate of 5.4%. Orange County's unemployment rate is lower than all peer neighboring counties in the Southern California region – Los Angeles County's rate was 5.8%, San Diego County's rate was 3.5%, and Riverside County/San Bernardino County's rate was 6.4%.

Although Orange County should continue its economic expansion, it does face some risks in the future. The heavy concentration of manufacturing in the local

economy leaves Orange County somewhat exposed to foreign and domestic cyclical economic demand forces. Additionally, although the region has diversified away from its heavy concentration of defense-related industries, their continued presence in the region remains exposed to changes in military spending patterns. Finally, a slowdown in both the national and foreign economies could hinder the growth of the burgeoning tourism industry. Aside from these moderate risks, Orange County's attractive climate, geographic location, and proximity to markets in Los Angeles and San Diego should continue to attract new residents and businesses to the region, ensuring a healthy pace of economic expansion.

Controlling for national and international growth factors, and industry performance, Orange County performed best in the Manufacturing and Wholesale Trade Clusters, with moderately good performance in the Construction and Service sectors (especially Business Services). Significant negative performance was observed in the Agriculture, Mining, and Retail Trade sectors, with moderately negative performance in the Transportation and Utilities and FIRE (Finance, Insurance, Real Estate) sector.

Table 1: Industry Sectors – Orange County Competitive Advantage (1 digit SIC level)

	Orange County Growth vs. U.S. Growth
Agriculture	Significantly Negative
Mining	Significantly Negative
Construction	Moderately Positive
Manufacturing	Significantly Positive
Transportation & Utilities	Moderately Negative
Wholesale Trade	Significantly Positive
Retail Trade	Significantly Negative
FIRE	Moderately Negative
Services	Moderately Positive

Source: OCBC analysis of County Business Patterns data, 1993 through 1998

Demographics

The population of Orange County, at 2.8 million, has averaged 1.5% growth annually since 1990, 50% higher than the national pace. The population of Orange County is younger than that of the U.S. as a whole. The 18-34 age group accounts for 27.4% of the County's population versus 23.6% for the U.S. The 35-49 age group accounts for 24.5% of the population versus 23.5% for the U.S. Orange County's civilian labor force began a growth trend in 1996, experiencing 3.5% annual growth, significantly above the state average. However, Orange County's population of persons over 50 is projected to be the fastest growing age group during the next 20 years. The services, retail trade, and manufacturing sectors will account for 68% of Orange County job growth between 2000 and 2004.

As the population continues to expand, the wealth of Orange County has increased significantly. Per capita income in Orange County totaled $32,541 in 1998, far greater than the U.S. level of $27,203 and California's $28,163. However, the gap between per capita income levels in Orange County and the U.S. is shrinking. While per capita income in Orange County is currently about 19% higher than the U.S. average, in 1990 just prior to the downturn, per capita income in Orange County was 33% higher than the U.S. average. This shrinkage reflects the loss of high-paying jobs in the aerospace and defense industries, which contracted sharply (50-70%) as a result of the large defense cutbacks following the end of the Cold War.

Industry Sectors And Clusters

Orange County is a dominant international force in technology, advanced manufacturing and communications. The county is constantly expanding and advancing its high-tech economy and diverse high-tech industry clusters. About 30% of the county's fastest growing companies are high-tech. Orange County is home to dozens of businesses and industries that did not exist ten years ago.

The Concept of Industry "Clustering"

- Industry clusters are geographic concentrations of sometimes competing, sometimes collaborating firms and their related supplier-network.

- Industry clustering permits a pooled labor force of workers that possess industry-specific skills.

- Retention or attraction of knowledge-intensive human capital is essential to the vitality of high-tech industry clusters.

- Multiplier effects--As high-tech industries grow and clusters develop, a vast supplier-network infrastructure is formed.

- The impacts of high-tech clustering are dynamic and can lead to a circle of positive feedback on the local economy.

Recent National High-tech Industry Cluster Trends

- High-tech has doubled its share of the U.S. economy over the past 20 years.

- Growth in the high-tech sector has averaged four times that of the overall economy during the 1990's.

    - Advances in technology in recent years have created entirely new growth industries, including e-commerce, online information services, mobile communications, and greater advances in medical research.

    - Technological innovation has improved productivity growth and boosted U.S. long-term economic growth.

- Information processing equipment accounts for over 50 percent of all capital spending. From 1995 through 1998, growth in real business investment in information processing equipment averaged 25 percent, directly accounting for nearly 27 percent of total economic growth.

- Information Technology (IT) workers earned $56,000 in 1998, more than 70 percent above the private-sector average.

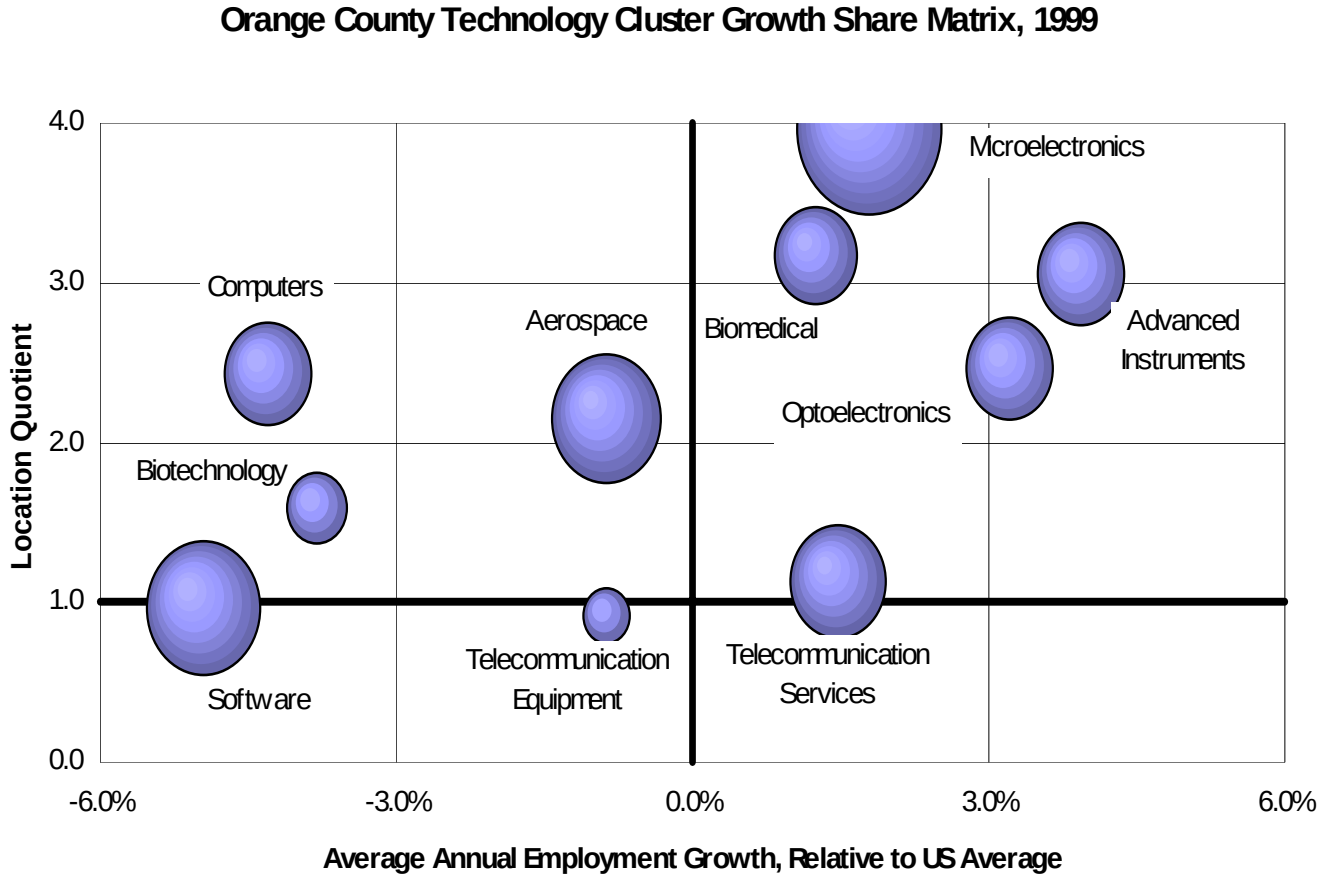
A recent Milken Institute report analyzed high-tech industry cluster concentrations in urban areas across the Unite States. Orange County has concentrated clusters in ten of the fourteen high technology industries included in the analysis – a diversity of high-tech clusters exceeded only by Boston (Milken Institute, 1999). Within the county, Irvine is most concentrated with regards to high-tech activity, while Santa Ana and Anaheim also have a significant high-tech presence. The high-tech industry clusters in Orange County are listed in Table 2 and displayed in Figure 1, below. In Figure 1, the size of the bubble shows the size of the industry within Orange County. The position of the bubble shows the employment growth within the industry compared to national rates (the horizontal axis) and the location quotient, which measures the concentration of the industry in Orange County. Industries with location quotients greater than one are more concentrated in Orange County than in the nation as a whole. Note that the most concentrated local industries – microelectronics, advanced instruments, biomedical, and optoelectronics, also showed the strongest local employment growth relative to national trends. This indicates the importance of clustering for employment growth, although maintaining a diverse high-tech base that can respond to national and international employment trends is also vital and so should not be overlooked.

Table 2: Orange County's High Growth Industry Clusters

Cluster	Employment, 1999 (000s)	Employment Growth Rate in Orange County, 1990-99	Employment Growth Rate in the US, 1990-99	Orange County Employment Growth Rate Relative to US, 1990-99	Location Quotient*, 1999
Advanced Instruments	9.439	3.1%	-0.8%	3.9%	3.05
Aerospace	15.081	-5.1%	-4.2%	-0.9%	2.16
Biomedical	9.087	2.6%	1.3%	1.2%	3.18
Biotechnology	4.616	-1.9%	1.9%	-3.8%	1.59
Computers	9.281	-6.2%	-1.9%	-4.3%	2.43
Microelectronics	26.768	3.1%	1.3%	1.8%	3.97
Optoelectronics	9.463	2.2%	-1.0%	3.2%	2.48
Software	17.152	4.2%	9.2%	-5.0%	0.97
Telecommunication Equipment	2.604	-0.5%	0.3%	-0.9%	0.93
Telecommunication Services	12.346	2.7%	1.2%	1.5%	1.14

*A location quotient (LQ) is the calculated ratio between the local economy and the national economy for employment in a given industry cluster. This ratio is calculated to determine whether or not the local economy has a greater share of that industry than expected. If a local economy has a cluster concentration equal to the nation, the LQ is 1.0. If less concentrated, the LQ is less than 1. If more concentrated, the LQ is greater than 1.0.

Figure 1: Orange County's Technology Clusters Competitive Position



Shift-Share Analysis – Macro Level

Shift Share Analysis is an analysis of the growth or shrinkage of employment levels for particular industries relative to national economic trends, trends within the industry, and geographic advantages particular to the region. Shift-share analysis allows employment change to be disaggregated into employment change influenced by overall economic growth rates, employment change influenced by industry growth rate trends, and employment change influenced by local (Orange County) competitive advantage. Industry sectors displaying high Orange County Competitive Advantage Growth are areas in which to focus resources and investments.

The shift share analysis was conducted utilizing data from the US Census Bureau County Business Patterns database for Orange County for 1993 through 1998. Analyzing Orange County trends over time demonstrates the key shifts in the composition of the Orange County Economy after the defense industry downsizing of the Cold War's end and the 1994 Orange County Bankruptcy. The following charts show a continuation of trends, economic growth patterns, and Orange County competitive advantage that have been observable since at least 1995.

For the most recent analysis, the new North American Industrial Classification System (NAICS) was used, rather than the previous Standard Industrial Classification coding system (SIC). The new system more accurately categorizes the new kinds of service industries emerging in the Information Age/New Economy.

Table 3, below, shows one-digit SIC industries and Orange County's competitive advantage or disadvantage relative to the national economy. These results are based on the shift-share analysis.

Table 3: Orange County Competitive Advantage or Disadvantage

Industries of Orange County Competitive Advantage

Industry	Growth Due to Orange County Competitive Advantage	Overall Employment Growth Last 5 Years
1. Manufacturing	33,233	43,850
2. Wholesale Trade	13,627	23,708
3. Services	11,820	43,066
4. Transportation & Public Utilities	11,382	4,279
5. Construction	1,268	16,250

Industries of Orange County Competitive Disadvantage

Industry	Growth Due to Orange County Competitive Disadvantage	Overall Employment Growth Last 5 Years
1. Retail Trade	-27,039	-28,852
2. FIRE	-20,338	- 8,361
3. Agriculture	- 3,624	-12,154
4. Mining	- 897	- 1,233

Note: FIRE denotes Finance, Insurance, and Real Estate sector.

The matrix in Table 4, below, groups industries according to two criteria – whether Orange County has a competitive advantage or disadvantage in that industry and whether the industry is growing or declining in the national economy. Thus, construction is growing nationally and Orange County has an advantage in that industry relative to the country. Similarly, Orange County has a competitive advantage in manufacturing, transportation and public utilities, wholesale trade, and services – all nationally declining industries.

Table 4: Orange County Advantage and National Growth Trends, 1-digit SIC industries

	Industry Growing, Nationwide	Industry Declining, Nationwide
Orange County has competitive advantage	Construction	Manufacturing Transportation & Public Utilities Wholesale Trade Services
Orange County has competitive disadvantage	None	Agriculture Mining Retail Trade FIRE

Table 5, below, shows wages in the 1-digit SIC code industries in Orange County.

Table 5: Orange County Industry Sector Wage Level Comparison

	Average OC Wage	OC Wage Above State Average?
Total All Industries	$35,714	Yes (35,349)
Agriculture	$19,355	Yes (17,167)
Mining	$60,764	No (61,089)
Construction	$36,429	Yes (36,081)
Manufacturing	$42,282	No (44,720)
Transportation & Utilities	$38,458	No (41,391)
Wholesale Trade	$49,022	Yes (43,532)
Retail Trade	$20,029	Yes (19,326)
FIRE	$50,852	No (51,895)
Services	$33,379	No (34,668)
Government	$37,371	No (38,228)

Source: California Trade and Commerce, 1998 figures

Detailed Shift Share Analysis

For each of the major industries in Orange County, we conducted a shift-share analysis at the 2-digit SIC code level to obtain more detailed information on areas or competitive advantage and disadvantage for Orange County. The results are described below.

Manufacturing

The manufacturing sector or Orange County is large relative to the U.S., representing approximately 17% of the total workforce, while the U.S. manufacturing sector makes up about 14% of total U.S. employment. Orange County experienced remarkable manufacturing growth in 1997 and 1998: a 5.7% average annual rate compared to less than 1% average growth in U.S. manufacturing employment during the same period. Manufacturing is projected to grow by 18% from 1997 to 2004.

Orange County ranks 13th among U.S. metro areas in terms of composite high-tech manufacturing presence (Milken Institute, 2000) with a high-tech concentration about 50% greater than the national average. Diversity of its technology economic base is Orange County's greatest strength, as the County has 10 high-tech industries (out of a possible 14) with a concentration above the national average, tying Silicon Valley and exceeded only by Boston.

In addition to a large aircraft production presence, Orange County also has a significant defense-related manufacturing base. Compared to the U.S. average, the

Defense/Aerospace cluster represents Orange County's highest concentration of high-tech activity. Many of the nation's major defense contractors have divisions in Orange County. Sharp reductions in defense spending have eliminated thousands of high-paying jobs since the start of the decade. Defense spending has now stabilized, suggesting that this important segment of the Orange County economy will not exert the drag on growth that it did through most of the 1990's.

Stimulating the renewed growth in the aircraft and parts manufacturing industries was the arrival of Boeing to the Orange County area. After purchasing the Rockwell aerospace and defense operations and acquiring McDonnel Douglas, Boeing became the second largest private employer in Orange County with approximately 12,000 employees. However, Boeing has faced a number of difficulties in the last few years, including a drop in commercial aircraft orders in the aftermath of the Asian crisis, a growing uncertainty of future defense orders, and the loss of orders to competitor Airbus Industries. As a result, Boeing has periodically announced plans to eliminate jobs at its Orange County operations in order to stay competitive. On a positive note, the bulk of Boeing's missile and space research activities are based in Orange County, and Boeing plans to move its space-shuttle operations in Downey to Huntington Beach.

Orange County has a large electronic component manufacturing industry that should benefit from the international secular fundamental growth cycle in telecommunications infrastructure. This sector, fueled by deregulation and a wave of new wireless communication service innovations, should also benefit from further recovery in Asia and other developing countries. Electronic equipment is projected to account for over 25% of new manufacturing jobs from 1997 to 2004. The computer products distributor Ingram Micro is Orange County's number one public company, and the Japanese computer and telecommunications company, Toshiba, is the county's number one foreign-owned company. Rapid improvements in technology and processing capabilities in the computer industry will sustain a high rate of growth into the future.

The Los Angeles to San Diego corridor is quickly becoming the center of broadband and wireless communications, with new companies sprouting up every day. Because of broadband innovations and capabilities, the next generation of Internet will be dominated by audio, video, and 2-way interactivity, rather than predominately 1-way text and graphics. Orange County is positioned to be a world center of the broadband revolution, having two of the major players in that high-growth segment, Broadcom and Conexant. The presence of two industry leaders in a cluster that is forecast to be the highest growth segment of high-tech manufacturing over the next decade has spawned a number of smaller, emerging broadband companies such as Intersil, Entridia, and NewPort Communications. The future of this industry lies in the combining of cable-television systems and computer networks to offer interactive services such as multi-player games and broadcast-quality video over Internet or cable.

The biomedical cluster remains an important presence in Orange County. There are between 600 to 800 medical device manufacturers operating in Orange County, the

largest concentration in the world, including Allergan, ICN Pharmaceuticals, Beckman Coulter, B. Braun McGaw, Edwards Lifesciences, Medtronic, Mallinckrodt, Advanced Sterilization Products (Johnson & Johnson), and Alcon (Nestle). A concerted effort by the FDA to accelerate the pre-market approval process for pharmaceuticals and medical equipment will help the industry bring new products to market.

In recent years, textile and apparel manufacturing have been a source of growth for Orange County. Bucking the national trend of moving production to Mexico and overseas, the textile and apparel business in Orange County grew at a steady pace in the 1990's, even during the prolonged economic downturn of the early and mid 90's. Employment expanded by as much as 9% in 1992, 14% in 1995, and 11% in 1996. This performance is in marked contrast to the U.S. apparel manufacturing industry, which lost over 380,000 jobs in the 1990's, including accelerating losses in 1998 and 1999.

The results of the shift-share analysis for 2-digit SIC code manufacturing industries is shown below. Table 6 shows manufacturing industries in which Orange County has a competitive advantage or disadvantage, and Table 7 groups those industries into a matrix showing Orange County's competitive advantage or disadvantage and national growth trends.

Table 6: Orange County Competitive Advantage or Disadvantage, Manufacturing

Major Orange County Areas of Competitive ADVANTAGE – Manufacturing
Miscellaneous Manufacturing
Electronics & Electrical Components
Apparel and other Textile Products
Fabricated Metal Products
Orange County Areas of Competitive DISADVANTAGE – Manufacturing
Transportation Equipment
Rubber & Plastics
Industrial Machinery & Equipment

Table 7: Orange County Advantage and National Growth Trends, Manufacturing

	Industry Growing, Nationwide	Industry Declining, Nationwide
Orange County has competitive advantage	Miscellaneous Manufacturing Electronics & Electrical Components Fabricated Metal Product	Apparel and Other Textile Products
Orange County has competitive disadvantage	Transportation Equipment Rubber & Plastics	Industrial Machinery & Equipment

Source: OCBC analysis of County Business Patterns data, 1993 through 1998

The tables below show the wages in the top manufacturing growth industries in Orange County and the wages and initial public offerings (IPO's) in Orange County high-tech manufacturing industry clusters.

Table 8: Wages in Orange County Manufacturing Growth Industries

Top 5 Growth Occupations	Job Openings	Median Hourly Wage
Assemblers/Fabricators	2090	7.85
Electrical Engineers	1330	32.25
General Managers, Executives	1140	35.36
Computer Engineers	1130	28.15
Electronic Assemblers	1070	8.62

Table 9: Wages and IPO Activity in Significant Orange County Manufacturing Industry Clusters

	Firms	Employment	Average Wage	IPO's 1997-2000
Microelectronics	761	45,378	$51,941	10
Advanced and Precision Instruments	428	27,828	$49,958	2
Software	1920	23,457	$67,136	18
Defense/Aerospace	184	24,220	$55,693	0
Biomedical	688	15,209	$50,155	9
All High-Tech	9043	294,834	$50,098	69

Source: OCBC, California EDD

Wholesale Trade

The Wholesale Trade sector currently comprises about 8% of Orange County employment and is a sector experiencing a relatively high level of growth. This sector is expected to add 19,000 jobs between 1997 and 2004 for 20.3% growth. The Wholesale Trade sector includes occupations such as Scientific Product Salesperson, Shipping Receiving and Traffic Clerks, Computer Support Specialist, Electrical/Electronic Engineering Technologist & Technicians, Marketing Advertising Public Relations Managers. Firms in this sector include Baxter Cardiovascular Group, Ingram Micro, Xerox, Albertsons, Nutrilite Products, CVT Recycling and Toshiba.

According to the 2000 Orange County Executive Survey, the Wholesale Trade sector experienced the highest level of financial performance the year previous out of all the sectors in the Orange County economy. According to the survey, 78% of firms queried reported improved financial performance. Furthermore, 73% of firms expected improved sales throughout the coming year. Finally, 12% of firms expect decreasing operating costs for their business, which is higher than the average of all industries in the survey. Job growth and wages in top growth occupations, which are not confined to any one industrial sector, are shown below.

High Growth Occupations*	Jobs	Median Hourly Wage
Salesperson, Non-scientific	4,620	$10.75
Traffic Shipping Receiving Clerks	3,820	$10.08
Marketing Advertising Public Relations Managers	3,120	$18.01
Scientific Product Salesperson	2,870	$15.00
Electrical/Electronic Engineering Technologist & Technicians	2,120	$16.31

* Occupations listed are not solely in one single industrial sector.

While many of Orange County's manufacturers have suffered, the recent recovery in Asian economies should bolster demand for high-tech products. Similarly, the wholesale trade and transportation sectors should expand with increased trade. Already, the flood of imports through the ports of Los Angeles and Long Beach are fueling growth in warehouses and transportation in Orange County.

The areas of Orange County competitive advantage and disadvantage, with comparisons to national growth trends, are shown in Tables 10 and 11, below.

Table 10: Orange County Competitive Advantage or Disadvantage, Wholesale Trade

Major Orange County Areas of Competitive ADVANTAGE – Wholesale Trade

Wholesale Trade – Nondurables
Wholesale Trade -- Durables

Orange County Areas of Competitive DISADVANTAGE – Wholesale Trade
None

Table 11: Orange County Advantage and National Growth Trends, Wholesale Trade

	Industry Growing, Nationwide	Industry Declining, Nationwide
Orange County has competitive advantage	none	Wholesale Trade – nondurables Wholesale Trade – durables
Orange County has competitive disadvantage	none	None

Source: OCBC analysis of County Business Patterns data, 1993 through 1998

Agriculture and Mining

The Agriculture and Mining sectors are declining in Orange County, accounting for about 1% of employment in 2000. Orange County firms include Landscape West, Spectrum Care, O'Connell Landscape Maintenance and Valley Crest Inc. As Orange County has transformed from an agricultural area to a residential suburban and finally a post-suburban metropolis, the role of agriculture has steadily diminished as the landholders of Orange County have transformed their properties to higher value usage.

In addition, the history of Orange County is replete with stories of the emergence of Huntington Beach and Brea as oil production locations. However, as the Orange County economy continues to transform into a high technology and service economy, land uses will increasingly become urbanized and the former agricultural and mining uses of Orange County property are expected to diminish.

Construction

The Construction sector currently accounts for approximately 5% of Orange County employment. The Construction sector in the Orange County economy

continues to dramatically expand. Between 1993 and 1998, 16,520 Construction jobs were added to the Orange County economy. By 2004, another 13,200 jobs are expected to be added according to EDD projections. The Construction sector currently amounts to approximately 5% of Orange County employment. The Construction sector includes occupations such as Carpenters, Boilermakers, Maintenance Workers and Laborers. Firms in this sector include J & J Builders, Wesseln Construction Company, Can-Am Construction Company and Lambco Engineering.

With the passage of Measure M funding initiatives for transportation funding, freeway construction throughout Orange County has provided many jobs. Furthermore, since the recovery from recession in the early 1990s, prosperity has increased profits and incomes thus spurring businesses and residential construction. Wages for construction occupations in Orange County and construction industries in which Orange County has a competitive advantage or disadvantage are shown below.

Table 12: Wages in High Growth Construction Industry Occupations

High Growth Occupations*	Jobs	Median Hourly Wage
Carpenter	2,540	$15.18
Laborer/Helpers	7,940	$6.75

* Occupations listed are not solely in one single industrial sector.

Table 13: Orange County Competitive Advantage or Disadvantage, Construction

Major Orange County Areas of Competitive ADVANTAGE – Construction
Special Trade Contractors (overall industry growing)
Orange County Areas of Competitive DISADVANTAGE – Construction
Heavy Construction (overall industry growing)

Transportation & Public Utilities

The Transportation and Public Utilities sector currently amounts to 4% of Orange County employment. Between 1997 and 2004, the EDD projected 8,200 jobs would be added to this sector. The Transportation and Public Utilities sector includes occupations such as Taxicab Drivers, Bus Drivers, Telemarketers and Light Truck Drivers. These sectors are also continuing to experience growth as airport usage at John Wayne airport continues to grow. Furthermore, the growth of telecommunications service providers has enabled this sector to increase as well. Firms in this sector include Sprint PCS, Cox Communications, Pittson Bax Group, Assured Transportation & Delivery, Lucky Supermarkets Warehouse, United Parcel Service, Krystal Koach, and Parker Hannifin.

Data and statistics represent that the Transportation and Public Utilities sector should continue to expand. Already, the flood of imports through the ports of Los Angeles and Long Beach are fueling growth in warehouses and transportation in Orange County. Between 1993 and 1998, Trucking and Warehousing employment grew by 23,708 jobs making it overall the second largest number of job increases over that four year time period. High growth occupations and areas of Orange County competitive advantage and disadvantage are shown below.

Table 14: Wages in High Growth TPU Industry Occupations

High Growth Occupations*	Jobs	Median Hourly Wage
Truck Driver, Light	4,530	$7.00
Telemarketer	2,500	$9.25

Table 15: Orange County Competitive Advantage or Disadvantage, Transportation and Public Utilities

Major Orange County Areas of Competitive ADVANTAGE – Transportation & Public Utilities
Communication (overall industry growing)
Orange County Areas of Competitive DISADVANTAGE – Transportation & Public Utilities
Trucking & Warehousing (overall industry declining)

Finance, Insurance, Real Estate (FIRE)

The Finance, Insurance, and Real Estate sector accounts for about 8% of Orange County's current employment. The EDD projects this sector to add 19,400 jobs between 1997 and 2004. Common occupations in this sector include Financial Managers and Credit Analysts. Orange County firms in this sector include First American Financial, Avco Financial Services, American Funds Distributors, Pacific Life Insurance, and Bank of America. This sector comprises old and new elements of the Orange County economy. As Orange County transformed from agricultural to residential usages over the last forty years, the real estate component of the Orange County economy increased in concert to address this need. However, as Orange County is filling out its usable land with urban uses, the real estate sector has stabilized while the finance sector has increased. As Orange County has become a global metropolis, the finance – particularly non-depository institution – sector has increased even in the light of the finance industry restructuring over the last dozen years.

These trends towards stabilization and growth promise to continue. According to the 2000 Orange County Executive Survey, the Finance, Insurance and Real Estate sector has the most optimistic expectations about the future with 80% expecting improved financial forecasts. Furthermore, 69% of surveyed firms expect to expand

their plant, equipment and/or employment. Sixty-two percent of executives consider Orange County an attractive place to do business. Tables 16 and 17 show wages and areas of competitive advantage and disadvantage in Orange County FIRE industries.

Table 16: Wages in High Growth FIRE Industry Occupations

High Growth Occupations*	Jobs	Median Hourly Wage
Teller	4,610	$8.38
Bill and Account Collector	3,140	$9.87
Financial Manager	2,800	$23.99

Table 17: Orange County Competitive Advantage or Disadvantage, FIRE

Major Orange County Areas of Competitive ADVANTAGE – FIRE
Nondepository Institutions (overall industry growing)
Orange County Areas of Competitive DISADVANTAGE – FIRE
Insurance Carriers (overall industry growing) Depository Institutions (overall industry declining) Insurance Agents, Brokers (overall industry stable)

Retail Trade

The retail trade sector accounts for 17% of total Orange County employment and is expected to grow substantially over the next several years, adding 24,000 jobs by 2004, an 11% increase. The Retail Trade sector includes occupations such as retail salesperson, retail buyers, cashier, food preparation workers, waiters/waitresses. Firms in this sector include the Disneyland Hotel, Wickes Furniture, Homebase, Nordstrom, and Target.

According to the Orange County to the 2000 Orange County Executive Survey 69% of firms in this sector expect to expand plant, equipment or employment in the near future. As Orange County continues to grow as a consumer market with over 2.6 million residents, and serve as a microcosm of the consumer market in the United States (as demonstrated by the growth of automobile designers and “surf” beach oriented leisure wear designers locating in Orange County), the importance of the Retail Trade sector is expected to grow in both numbers as well as importance. Wages and job openings in high growth retail sales occupations are shown below, followed by tables showing Orange County’s areas of competitive advantage and disadvantage.

Table 18: Wages in High Growth Retail Trade Industry Occupations

High Growth Occupations*	Jobs	Median Hourly Wage

Retail Salesperson	17,120	$8.22
Cashier	13,370	$7.11
Waiter & Waitress	11,780	$5.99
Combined Food Prep & Service	8,310	$6.12
Food Prep Workers	7,710	$6.61
Computer Support Specialists	2,530	$10.84

Table 19: Job Openings and Wages in Top Retail Trade Growth Occupations

Top 5 Growth Occupations	Job Openings	Median Hourly Wage
Retail Salesperson	5530	8.22
Cashiers	3010	7.11
Food Prep Workers	1900	6.61
Combined Food Prep & Service	1780	6.12
Waiters & Waitresses	1450	5.99

Table 20: Orange County Competitive Advantage or Disadvantage, Retail Trade

Major Orange County Areas of Competitive ADVANTAGE – Retail Trade

Automotive Dealers

Orange County Areas of Competitive DISADVANTAGE – Retail Trade

General Merchandise Stores
Food Stores
Eating & Drinking Places

Table 21: Orange County Advantage and National Growth Trends, Wholesale Trade

	Industry Growing, Nationwide	Industry Declining, Nationwide
Orange County has competitive advantage	none	Automotive Dealers
Orange County has competitive disadvantage	General Merchandise Stores Eating and Drinking Places	Food Stores

Source: OCBC analysis of County Business Patterns data, 1993 through 1998

Government

The Government sector currently employs about 10% of the Orange County workforce. The Government sector is projected by the EDD to add 15,300 jobs between 1997 and 2004 for 11.5% growth. With times of prosperity, the Government sector has expanded apace with the rest of the County with expanded tax rolls paying for the increase.

Table 22: Wages in High Growth Government Occupations

High Growth Occupations*	Jobs	Median Hourly Wage
General Office Clerks	8,020	$10.75
Accountants & Auditors	3,230	$16.62

Services

The service sector is the largest industry in the county, accounting for approximately 31% of total employment. Services is also the fastest growing segment of the Orange County economy, projected to add 96,400 jobs by 2004, a gain of 25.9%.

Telecommunication services is Orange County's largest tech industry in terms of value of production. In fact, Orange County high-tech services have grown much faster than high-tech manufacturing in the last 10 years. Telecommunications services have doubled in terms of industry output, and computer and data processing are up over 50% during the same time period (Milken Institute, 1999). Telecom, software, and the Internet are responsible for Orange County's march to a technology-services based knowledge economy. Orange County has been near the top of U.S. metro areas in growth of telecom services in recent years. Wireless services and ISPs are fueling this performance, resulting in the doubling of telecom services as a share of Orange County's economy in the last decade. Innovation in telecommunications wireless services has led to phenomenal growth in Orange County, outpacing both state and national growth. Last year, the county's largest telecommunications employers counted over 16,000 local employers. AT&T Wireless Services increased Orange County employees by 46%, which translates into a total AT&T OC employment increase of 34%. Even with this increase, it still remains the fourth largest telecommunications employer behind Verizon, Vodafone/AirTouch Cellular, and number one employer San Antonio based Pacific Bell.

A sample of prime-time television commercials is enough to prove we are experiencing an onslaught of emerging "dot com" businesses. Orange County has become a hotbed of Internet commerce activity. There have been fourteen new e-commerce company IPO's in the last two years. It is a natural development, as 90% of OC firms have Internet presence, 45 Internet access firms serve the county, and OC has the third highest adult Internet penetration rate in the U.S. Many e-commerce players, including autobytel.com, buy.com, ditech.com, shopping.com, and tickets.com, are headquartered in Orange County.

Software firms have been driven to success by tough competition, new technology, and the Internet. Software and New Media sectors have experienced the highest level of wage growth among high tech industries this decade. The number one software firm by revenue is Costa Mesa based FileNet Corp., with over $300 million in revenue in 1998. Epicor Software Corp. (formerly Platinum Software Corp.) of Irvine and Interplay Entertainment Corp. are runners-up, each with over $100 million of revenue in 1998. Quest Software Inc. experienced a 90% increase in Orange County revenue from 1997-1998. Together the top 15 firms generated $1.1 billion in revenue in 1998. Wages and job openings in top service occupations, and areas of Orange County competitive advantage and disadvantage in service industries, are shown in the Tables below.

Table 23: Wages in High Growth Services Occupations

Top 5 Growth Occupations	Job Openings	Median Hourly Wage
Guards and Watch Guards	4520	7.53
Janitors, Cleaners	4350	6.52
Landscaping/Groundskeeping	3350	7.28
General Managers, Executives	2460	35.36
Systems Analysts, Data Process	2400	23.49

Table 24: Orange County Competitive Advantage or Disadvantage, Services

Major Orange County Areas of Competitive ADVANTAGE – Services
Business Services
Amusement & Recreation
Orange County Areas of Competitive DISADVANTAGE – Services
Engineering & Management
Health Services
Hotels & Lodging
Membership Organizations

Table 25: Orange County Advantage and National Growth Trends, Services

	Industry Growing, Nationwide	Industry Declining, Nationwide
Orange County has	Business Services	Amusement and Recreation

competitive advantage		
Orange County has competitive disadvantage	Engineering and Management Health Services Hotels & Lodging	None

Source: OCBC analysis of County Business Patterns data, 1993 through 1998

Tourism

One of the more important drivers of the Orange County economy is the tourism industry. Tourism activity will increase over the next several years in the county. Orange County is the home to Disneyland, the largest employer in the County (13,000 employees). Currently, Disneyland is in the process of building a new $1.4 billion dollar investment called California Adventure, expected to open first quarter 2001. Estimates predict that the park will attract 7 to 8 million new visitors per year in addition to the 15 million visitors to Disneyland.

Disneyland's California Adventure, opening February 2001, will include an amusement park, expansion of the Disneyland Resort, a 750- room hotel, The Grand Californian, located within the park itself, and Downtown Disney, a new shopping and entertainment district. Because the site of the new resort is being built on Disneyland's old parking lot, the company is building the largest parking garage in the world to accommodate guests, with direct access from the nearby Santa Ana Freeway. Including the expansion, Disneyland is expected to employ approximately 8,500 additional workers over the next six months. Wages for the mostly part-time jobs will range from $6 to $7.50 per hour, with some employees at the hotel earning as much as $8.50 per hour.

Orange County's other tourist attractions include Knott's Berry Farm, Edison Field, South Coast Plaza, and beach areas such as Huntington Beach. Additionally, the newly expanded and renovated $169 million Anaheim Convention Center will drive tourism growth and have a major impact on both tourism and retail sales.

Tourism activities fall into both the retail trade and service sectors. In general, tourism activities in retail trade have been in competitive decline for the last 5 years, such as restaurant and general merchandise, while tourism activities in the service sector, such as amusement park and recreation employees, have been gaining competitively during the same time period.

WORKFORCE DEMAND:
TODAY'S INCREASINGLY COMPETITIVE WORKFORCE LANDSCAPE

This section describes workforce demand in Orange County. This includes (1) background information on sources of job growth, wage distribution, and literacy requirements for various occupations, (2) a shift-share analysis of Orange County industries to illuminate faster growing and declining sectors, (3) results of surveys of employer workforce needs done by ERISS corporation, and (4) results of focus group meetings.

Background: State And Local Workforce Demand Trends

Orange County's economy is impacted by larger secular trends going on at the state and national level.

California's Job Growth is Concentrated in Low-Wage Industries and Occupations

- By 1998, service industries accounted for more than 30 percent of both Orange County's and California's employment, up from 26 percent in 1989. Projections indicate that the service sector will account for 35 percent of the state's employment in 2005. Manufacturing dropped from 21 percent of the state's employment in 1979 to 14 percent in 1998. Forecasts predict that only 13 percent of the state's workforce will be employed in manufacturing in 2005.

- Six of the 10 occupations statewide and in Orange County projected to post the largest percentage growth between 1997 and 2004 are among the highest paid in our economy, with average hourly wages in excess of $20 per hour. However, the 10 occupations expected to post the largest percentage increase account for just 5 percent of California's total projected job growth between 1997 and 2004. In Orange County, the figure is less than 5 percent.

- The 10 fastest growing jobs in absolute terms account 19 percent of total projected job growth statewide (17% in Orange County) during the forecast period. Seven out of the top 10 fastest growing jobs pay, on average, less than $11 an hour statewide and less than $10 an hour in Orange County - equivalent to $22,880 a year for a full-time worker statewide, $20,800 per year in Orange County.

- The six high-percentage growth occupations paying in excess of $20 per hour require college degrees, while the seven low-wage, high absolute-growth occupations require minimal formal education and short on-the-job training.

- Overall, 39 percent of the state's projected employment growth between 1995 and 2002 is forecast to occur in occupations where the median 1997 hourly wage was less than $10 per hour. An additional 12 percent of the growth is projected for occupations paying less than $12.50 per hour. In contrast, only

28 percent of projected growth is forecast in occupations with a 1997 median wage of $20 per hour or more, equivalent to an annual income of $41,600 for a full-time worker.

- Hourly wages for men with less than a high school education averaged $8.96 in 1998, down 16 percent from 1989 and 34 percent from 1979, after adjusting for inflation. Women with less than a high school degree fared only slightly better, with their average hourly wages falling by 21 percent between 1979 and 1998.

- Over the past two decades, the gap between workers with a college degree and those without one has grown substantially. In 1979, men with a college degree earned, on average, 1.34 times the hourly wage earned by high school graduates. In 1998, male college graduates earned 1.85 times the average wage of a male high school graduate. The trend for women workers is similar. In 1979, hourly earnings of women with a college degree were 1.28 times those of women with a high school degree. In 1998, women with a college degree earned, on average, 1.75 times the average hourly wage of women with no more than a high school degree.

Table 2-1: 2 digit Census Occupation Categories having LOW Literacy Requirements

	% Jobs Low Literacy	% Jobs High Literacy
Farming/Fishing/Hunting (gardeners)	63	37
Cleaning Equipment Handler/Construction	63	37
Health Services (nursing aids)	65	35
Fabricator/Assembler/Operator	61	39
Transport (truck, bus drivers)	57	43
Misc. Services—cooks, janitors, maids	56	44
Construction (carpenters, electricians)	49	51
Manager/operators, agriculture	49	51
Personal Service—hairdressers, child care	46	54
Misc. Crafts—mechanics, butchers	43	57
Misc. Sales—retail sales, cashiers	41	59

Source: National Center for the Study of Adult Learning and Literacy

Table 2-2: 2 digit Census Occupation Categories having HIGH Literacy Requirements

	% Jobs Low Literacy	% Jobs High Literacy
Math/Computer Scientists	2	98
Misc.Health-related—pharmacists, therapists	3	97
Accountants/Auditors	3	97
Natural Scientists	4	96
Architects/Surveyors	4	96
Health—physicians, dentists, vets	5	95
Engineers	10	90
Teachers—university, secondary, elementary	10	90
Registered Nurses	11	89
Misc. Management—financial, management	12	88
Misc. Technicians—computer programmers	14	86

Source: National Center for the Study of Adult Learning and Literacy

For the purposes of this study, Orange County total employment is assumed to grow at an annual rate of 40,000. Of course, annual growth will not be exactly 40,000 in each year during the next few years, but 40,000 is a defensible estimate of Orange County employment growth over the next 5 years.

	Employment Growth
2000 (so far)	38,000
Jan. 1999 – January 2000	39,000
Jan. 1998 – January 1999	38,000
Jan. 1997 – January 1998	70,000
Jan. 1996 – January 1997	42,000

Source: EDD

An employment growth rate of 40,000 per year over the next 5 years assumes a compound annual growth rate of less than 2.5% per year. If the actual growth rate should exceed this rate, Orange County will face greater shortages of workers and need to attract workers either domestically or internationally. If the growth rate should be below this rate, there are three potential consequences; Orange County's unemployment rate may rise; international migration may slow down; domestic migration will see a net outflow.

Projected Education, Training, and Experience Level	Annual Openings	% of new jobs
First Professional Degree	500	1
Doctoral Degree	500	1
Masters Degree	500	1
B.A. + and work experience	3000	8
Bachelors Degree	7000	18
Associates Degree	1500	4
Post-Secondary Vocational Educ.	1000	2
Work Experience	2500	5
Long-term on the Job Training	3000	8
Moderate on the Job Training	4500	11
Short-term on the Job Training	16000	42
	40,000	

Source: EDD, OCBC analysis

What is an Adequate Wage for Orange County?

Recently, the California Budget Project (CBP) estimated the income needed to support a family at what is considered a basic standard of living. To meet that standard at the statewide level, each parent in a two-parent family with two children would need to work full-time for an hourly wage of $10.79. For Orange County, this figure is $11.46 per hour. The standard of living assumed in CBP's basic family budget is a two-bedroom apartment for a family of four without extras such as vacations or college savings.

If only one parent works outside the home, he or she needs a full-time hourly wage of $15.08 statewide ($15.51 in Orange County), while a single parent with two children needs to earn $17.71 statewide ($19.02 in Orange County). A single-parent family needs to earn almost as much as a two-parent family on an annual basis due to the high cost of child care. A family where one parent stays home needs significantly less, since the cost of child care is born by the parent staying home.

Job Growth Concentrated in Low-Wage Industries and Occupations

While California's economic recovery has been broad-based, employment growth has been concentrated in the service sector, which added 865,000 jobs during the 1990s. By 1998, service industries accounted for more than 30 percent of California's employment, up from only 26 percent in 1989. Other sectors have also added jobs during the economic expansion, though none as many as the service sector.

The composition of California's job growth is significant. Nationally, hourly earnings in the service sector averaged $12.84 in 1998, lower than manufacturing's $13.49 and construction's $16.56, but higher than retail trade's $8.75. Service workers are less likely to be covered by job-based health coverage and are less likely to participate in a pension or other retirement plan. Less than half (49 percent) of service

workers are covered by an employer-provided health plan, as compared to 58 percent of the total private sector workforce.

Fast Growth in High-Wage Jobs, Large Growth in Low-Wage Jobs

News media regularly report on the rapid growth and shortage of skilled workers in certain high-wage, high-tech occupations. In fact, the four occupations expected to post the fastest percentage growth between 1996 and 2002 form the backbone of California's technology sectors. Many of these occupations are among the highest paid in our economy, with average hourly wages in excess of $20 per hour.

This list, however, can be misleading. Most of the 10 fastest percentage growth occupations start from a very low base and account for just 5 percent of Orange County's and California's projected job growth during 1997-2004. Another list, that of the 10 fastest growing jobs in absolute terms, will be much more important to the employment prospects of job seekers. These 10 occupations account for nearly four times as many jobs as in the high percentage category and 19 percent of total projected job growth during the forecast period. These occupations come from the opposite end of the wage scale. Fully seven out of the 10 jobs pay, on average, less than $11 an hour - equivalent to $22,880 a year for a full-time worker.

In short, the occupations posting the largest percentage growth are concentrated at the top of the wage distribution, while those posting the largest absolute growth are concentrated at the bottom.

California Wage Distribution

More telling is the fact that the large absolute growth occupations paying less than the median hourly wage account for one out of every seven jobs (14 percent) that forecasters predict will be added to the California economy. Moreover, the difference in the qualifications required to obtain these jobs is striking. All six high-wage, high-percentage growth occupations require college degrees, while all seven of the low-wage, high absolute growth occupations require little formal education and only minimal on the job training.

Low-wage jobs constitute the largest share of the state's projected job growth. Overall, 38.5 percent of the state's projected employment growth between 1995 and 2002 is forecast to occur in occupations where the 1997 median hourly wage was less than $10 per hour. An additional 11.8 percent of the growth is projected for occupations paying less than $12.50 per hour. In contrast, only 27.6 percent of projected growth is forecast in occupations with a 1997 median wage of $20 per hour or more, equivalent to an annual income of $41,600 a year for a full-time worker.

Orange County Industry Cluster Analysis – Shift Share Analysis

Shift Share Analysis is an analysis of the growth or shrinkage of employment levels for particular industries relative to national economic trends, trends within the industry, and geographic advantages particular to the region. The shift share analysis

was performed at three levels—one digit SIC code which describes general economic trends, two digit SIC code which is more specific, and three digit SIC code level which is very specific.

The shift share analysis was conducted utilizing data from the US Census Bureau County Business Patterns database for Orange County. Although the most recent data is 1998, the transition through the 1990s, from the middle of the recession 1993 era to the post recession growth in 1997 demonstrates the a key shift in the composition of the Orange County Economy after the defense industry downsizing of the Cold War's end and the 1994 Orange County Bankruptcy.

Two Digit SIC Level

At the two-digit level, the fastest GROWING Orange County industries are:

1)	Business Services	32,732
2)	Trucking and warehousing	5,094
3)	Amusement and recreation services	4,767
4)	Electronic and other electronic equipment	4,710
5)	Nondepository institutions	4,269
6)	Services Administrative and Auxiliary and Other	4,117

The fastest SHRINKING industries are:

1)	Instruments & Related Products	-8,064
2)	Transportation Equipment	-7,893
3)	Depository Institutions	-7,460
4)	Insurance Carriers	-7,130
5)	Auxiliary, Administrative FIRE components	-3,458
6)	Retail Administrative and Auxiliary	-2,432
7)	Holding and other investment offices	-1,848
8)	Heavy construction, except building	-1,794
9)	Health services	-1,765
10)	General merchandise stores	-1,597

Three Digit SIC Level

At the three digit level, the fastest GROWING industries are:

1)	Personnel Supply Services	15,953
2)	Computer & Data Processing Services	9,604
3)	Trucking & Courier Services (except air)	5,094
4)	Miscellaneous Business Services	4,921
5)	Nursing & Personal Care Facilities	4,395
6)	Religious organizations	4,304
7)	Misc. amusement, recreation services	4,058
8)	Electronic components and accessories	3,774
9)	Services Administrative and auxiliary	3,383

10) Paper and paper products 3,015

the fastest SHRINKING industries are:

1) Aircraft & Parts -8,988
2) Search & Navigation Equipment -7,507
3) Administrative & Auxiliary components, Retail Trade -6,658
4) Fire Marine & Casualty Insurance -4,627
5) Commercial Banks -4,243
6) Hospitals -3,656
7) Savings institutions -3,221
8) Offices and clinics of medical doctors -3,024
9) Heavy construction, except highway -2,641
10) Computer and office equipment -2,246

Interpretation

The shift-share analysis reveals the following patterns:

1) Orange County has a **high degree of dependence upon the national economy** for its economic health. The shift share analysis shows that the primary component of Orange County employment growth is the strength of employment growth on the nationwide scale. The competitive component of Orange County's economic growth shows a high degree of declining employment in many sectors relative to other regions in the country except in Transportation & Public Utilities and Wholesale Trade. For a detailed analysis of the competitive mix component of Orange County's employment growth, see Appendix 1.

2) The **trucking and courier service industry growth is noteworthy**. Trucking and Courier Services are a reflection of the growth of the "just-in-time" economy. Businesses are less inclined to have a large inventory of materials onsite, but rely on accessibility to necessary resources on an as-needed basis to take care of their demands. As the growth of this sector shows, fast transportation linkages both locally, but inevitably nationally and internationally are key to the "new" economy's growth. Just as Personal Services, Computer & Data Processing Services and Nursing Care are recognized facets of macroeconomic changes that policymakers respond to, the Trucking and Courier Service growth is reflective of economic changes that policy makers must respond to as well.

3) The **ten fastest growing sectors (at the Three digit SIC Code level) comprised 79% of the sum total of job growth between 1993 and 1997**. The Personnel Supply Services sector comprised 18% of total growth alone. This narrow range of sectors experiencing phenomenal levels of growth are a double-edged sword. The specificity of areas points to a small number of fields that government service providers need to train job seekers for to get the most bang for the buck. However,

this dependence on such a small number of sectors leaves the economy vulnerable to reverses in those sectors that can have drastic impacts.

ERISS Surveys Of Orange County Labor Market Demand

A survey of businesses in Orange County was conducted by the ERISS Corporation to identify particular patterns of hiring relative to key questions of public agencies in growing the economy and providing for residents. Data were collected for 1999 and 2000 through a telephone survey of businesses in Orange County. This project surveyed approximately 40,000 Orange County employers (those firms with 5 or more employers). The survey data provides data on approximately 250 occupations in Orange County.

Below we describe the results of a three-part analysis of the ERISS surveys. Part 1 summarizes the demand for non-experienced and experienced workers. Part 2 summarizes the demand for workers of different education levels and workers having special circumstances. Part 3 compares the 1999 and 2000 survey results.

For all parts of the survey analysis conducted to date for the Workforce Assessment, the following steps were necessary. First, data results were checked for accuracy, validity, and internal consistency. Survey results were then divided according to three digit SIC code into industry fields for comparison across industries. Valid results by industry demand a sample size of at least fifteen respondents per industry field. Not all respondent categories had the requisite number of valid results due to low response rates. Out of all the SIC codes represented by the survey, the average percentage of businesses that responded to a survey is 18.57% in 1999. The survey size in 1999 was 5,151 business establishments. In 2000, the response rate was 28.4%. The survey size in 2000 was 11,508 business establishments. For the first two parts of the analysis, the survey response percentages were weighted according to the number of establishments that have that SIC code in Orange County. The survey answers to each subject area per SIC code are relative to the actual number of businesses in Orange County that could be expected to answer the question the same way based on the survey sample. For the third part of the analysis, straight percentage answers were reported for answers to the survey questions.

Overview of Analysis

The 1999 and 2000 ERISS surveys reveal helpful data in analyzing the growing sectors in the Orange County economy. The survey data reveal a significant tightening of the market between 1999 and 2000 where in 2000 the same sectors are more frequently represented in the survey outcomes. Orange County faces an overall labor shortage, with an unemployment rate of less than 3 percent. In 1999, there was a greater diversity of sectors indicating that depending on the need (part time employees, temporary employees, etc.), different industries had different demands. By 2000, more commonality indicates that regardless of the need, certain industries desired employees.

In addition, the weighted values reveal significant demand and willingness to hire special population workers in the service sector, while the highest actual percentage responses tend to be in the retail trade sector. This difference is due to the fact that although the retail trade sector frequently hires employees, the service sector in the Orange County economy is significantly larger.

Furthermore, the data reveal that this pattern is not as solid in the demand for experienced employees. Although the service sector continues to dominate in the weighted demand data, the actual percentages include demand for manufacturing and construction sector employees. The survey questions regarding special needs populations are reflective of the demand for non-experienced employees, while the demand for experienced employees reflects different requirements.

In performing an analysis of percentages weighted to the number of firms in a particular sector, the assumption was made that the number of firms in a sector is reflective of its size in the Orange County economy and the number of job opportunities that sector could provide. However, this assumption is not necessarily true. But in doing this, the unit of analysis for the survey—a particular firm—is enabled to be cross-referenced with other data sets such as County Business Patterns in order to make deductions beyond solely the ERISS data set. This ability to make deductions beyond the ERISS data set allows for cross referencing to confirm the validity of the data obtained. Comparing the ERISS data and County Business Patterns reveals substantial overlap in the results obtained from the two methodologies and data sets. In the strategy portion of this document, a recommendation will be made about how to coordinate these two efforts in a cost effective manner.

Part 1: Demand for Non-Experienced Workers

Detailed tables showing sources of workforce demand for non-experienced and experienced workers are in Appendix 2. Overall, the results of an analysis of the tables in Appendix 3 suggest the following:

1) Service industries dominate the weighted survey demand for experienced and non-experienced workers for particular industries. Given this dominance by the service sector in both its size in the Orange County economy and in survey results indicating substantial demand by these employers, workforce development efforts should focus on training people who will be employed by these fields.

2) The demand for non-experienced employees has remained relatively stable from 1999 to 2000. The same top nine sectors are represented both in 1999 and 2000, with only minor variation in the ranking of these fields.

3) The labor market in 2000 appears to have tightened in comparison to 1999. In 2000, the same sectors topped the list of fields with high demand for non-experienced and experienced workers. In 1999, there tended to be different sectors

topping the lists of fields for demand for experienced and non-experienced employees. For example, top sectors with demand for non-experienced employees were “Eating and Drinking Places”, “Offices and Clinics of Medical Doctors” and “Legal Services”, while in the top sectors with demand for experienced employees were “Eating and Drinking Places,” “Elementary and secondary schools” and “Child day care services.” This demonstrates that while in 1999, different fields had high demand for experienced and inexperienced employees, in 2000, the same fields had high demand for both experienced and inexperienced employees, meaning that these same top fields desire employees, period, regardless of their experience level.

4) Cross-referencing the demand statistics with a Shift-Share Analysis performed on the 1993 and 1997 County Business Patterns data reveals that the highest results from the ERISS survey are frequently duplicated in the Shift-Share Analysis as sectors that grew substantially (over 1,000 jobs) between 1993 and 1997. In 1999, all the sectors listed as highest demand for experienced or non-experienced employees grew substantially according to the Shift Share Analysis except for “Elementary and Secondary Schools”, “Child Care Services”, “Industrial Machinery, n.e.c”, “Automotive Repair Shops”, and “Offices of Clinics of Dentists.” In 2000, all of the sectors listed as highest demand for experienced or non-experienced employees grew substantially except for “Offices and Clinics of Dentists”, “Offices of Other Health Practitioners”, “Real Estate Operators and Lessors”, and “Automotive Repair Shops.” Shift-share analysis seems to represent a more cost effective solution to researching and selecting industry areas that are in highest demand.

Part 2: Education Demands and Willingness to Hire Special Circumstances Workers

Appendix 3 has detailed tables showing the education demands and willingness to hire welfare recipients, high school workers, part time workers, temporary workers, bilingual workers, seasonal workers, and other “special circumstances” categories of workers. Overall results show that the following:

1) Service industries dominate the top 10 lists of employers willing to hire employees under special circumstances. The fact that the service sector dominates the special circumstances lists as well as the demand lists demonstrates a tight labor market where employers are willing to adjust their hiring practices to obtain a workforce with special circumstances.

2) Sectors that repeatedly top the special circumstances lists are:
    - Eating and Drinking Places
    - Offices and Clinics of Medical Doctors
    - Miscellaneous Shopping Goods Stores
    - Computer and Data Processing Services

3) There is an increasing demand for employees with special circumstances in the Management and Public Relations Fields.

Part 3: Comparisons of the 1999 and 2000 ERISS Survey Results

Detailed comparisons of the 1999 and 2000 ERISS survey results are shown in Appendix 4. Overall, the comparisons across the two surveys suggest the following:

1) In 2000, the "Miscellaneous Equipment Rental and Leasing" sector had the highest demand for both experienced and non-experienced employees.

2) In 2000, the "Miscellaneous Equipment Rental and Leasing", "Veterinary Services" and "Miscellaneous Repair Shops" sectors were in the Top Ten for demand of both experienced and non-experienced employees. In 1999, "Automotive Repair Shops" was in the Top Ten for demand of both experienced and non-experienced employees.

3) Two Year Trends

Following are the sectors that were in the Top Ten for each survey category for both 1999 and 2000:

	SIC
Demand for Experienced Employees--	074 "Veterinary Services"
	501 "Motor Vehicles Parts and Supplies"
Demand for Non-experienced Employees--	721 "Laundry, Cleaning and Garment Services"
	525 "Hardware Stores"
	531 "Department Stores"
Willingness to Hire Temporary Employees--	731 "Advertising"
	173 "Electrical Work"
	729 "Miscellaneous Personal Services"
Willingness to Hire Part-time Employees--	541 "Grocery Stores"
	729 "Miscellaneous Shopping Goods"
	799 "Miscellaneous Amusement, Rec. Services"
Willingness to Hire High School Students--	546 "Retail Bakeries"
	531 "Department Stores"
	594 "Miscellaneous Shopping Goods"
	591 "Drug Stores and Proprietary Stores"

Willingness to Hire Former Welfare Recipients—	531 “Department Stores” 554 “Gasoline and Services Stations”
Lowest Educational Demands--	581 “Eating and Drinking Places” 721 “Laundry, Cleaning, and Garment Services”

OCBC Focus Groups – Key Findings

The Information Technology Association of America (ITAA), an IT trade group, says the South and the Midwest combined are home to more than 6 million IT jobs--more than the Northeast and the West Coast, which combined have less than 4 million.

Regardless of geography, the majority of IT jobs don't come from technology companies, but rather from user companies, says ITAA president Harris Miller. There are about nine IT-related jobs at user companies for every IT-related job at a technology company, according to an ITAA research report released in April and titled "Bridging The Gap: Information Technology Skills For A New Millennium." That translates into about 1 million IT jobs at U.S. technology companies and more than 9 million IT jobs at non-tech companies. In each location, the number of IT jobs in non-high-tech firms is far greater than those in high-tech firms. Those figures also don't include government IT jobs or IT jobs at nonprofit or small entrepreneurial firms, according to the ITAA.

When considered by region, the disbursement of IT jobs across the United States is notable. The South has 3.45 million IT jobs, more than any other region, according to the ITAA. Surprisingly, there are more IT jobs at technology companies in the South than there are on the West Coast, which has Silicon Valley, San Francisco's Multimedia Gulch, and the Los Angeles media factories. The West Coast, in fact, has the second-fewest number of overall IT jobs: 2.2 million.

The second-largest number of IT jobs--2.87 million--reside in the Midwest, according to the ITAA. That's because the Midwest has a high concentration of nontechnology companies, particularly large manufacturers such as automaker and steel manufacturers, says Harris. Among the differences in the regional mix of IT talent: The Midwest uses more programmers and software engineers than any other region, while Web developers and administrators are used slightly more in the West, the ITAA's findings show.

Although the Northeast is home to Boston's famous Route 128, the high-tech regions around Washington, and New York's advertising and multimedia firms, that region has the smallest number of IT jobs, about 1.5 million. It also has the smallest gap between demand and job vacancy. The ITAA estimates there's a demand to fill 277,079 IT jobs in the Northeast, but a "skills gap"--or shortfall—of 145,272 IT workers.

Talented IT workers gravitate to the "hot technology" sectors of the country suchas Boston, New York, San Francisco, Seattle, and Silicon Valley. Part of the reason for this is the changing nature of the workforce, and part of it is a changing value system. Location has become increasingly important to today's workforce because many workers in the IT sector look past the current offer to their next career move.

On the other hand, a pre-IPO dot-com in Silicon Valley may wave a fistful of stock options, but not every IT worker is willing to sit in traffic for three hours every day for a chance at hitting the IPO lottery. Good schools and ample recreational amenities, combined with challenging work and a competitive local salary, are sometimes what keeps talented IT workers in seemingly less-glamorous regions.

The productivity gains and job growth fueled by the “new Economy” and internet/eCommerce that have given the U.S. economy a boost may be only just beginning, according to a recent survey prepared by the University of Texas. The study found that efficiency and productivity soar as companies start incorporating the Web into their day-to-day operations. Revenue associated with Internet-related employees jumped 19 percent from 1998 to 1999 and is expected to keep climbing as business figure out how to use the internet properly. Companies integrating the Internet into their operations were 2 ½ times more likely to see productivity gains and more than 2 ½ times more likely to see market share growth than companies that have not started using the Internet.

According to the same report, the Internet industry created 650,000 jobs and increased revenues by 62 percent. In total, the internet economy – companies or parts of companies that generate revenue directly from Internet-related activities – accounted for nearly 2.5 million jobs and $524 billion in revenues in 1999. 2000 growth is supposed to match 1999’s – 62% -- and revenues could reach $850 billion in 2000. Although that was just a fraction of the nations 129 million member workforce and its $9.3 trillion economy, it means that the internet economy employs more people than the insurance or public utilities industries and twice as many as the airline industry. This growth is also a sign that an industry that barely existed a few years ago is growing at a virtually unprecedented rate.

The U.S. Commerce Department said in a report released in June 2000 that although the high-tech industry is projected to account for only 8.3 percent of the economy’s total output in 2000, it has contributed nearly a third of real U.S. economic growth since 1995.

Orange County’s economic future rests on the availability of highly skilled information technology and high-tech workers.

- Situation Most Severe at Upper Levels of Staffing
- In the "War for Talent", Orange County's Image is the Issue
- Local and National Workforce Pipeline Trends not Reassuring
- Competition Increasing from the Start-up/Dotcom World

In general, OCBC's industry cluster focus groups found that Orange County companies face an increasingly competitive economic and workforce development environment. Orange County technology related companies currently compete with each other for technical employees and in nearly all cases find Dotcom companies to be their strongest recruiting and retention competitors. The sheer lack of numbers of qualified incoming employees, both local and recruited from outside Orange County, has begun to bid up salaries and overall compensation in the region. Current general industry cluster needs are outlined below.

OC Cluster	General Workforce Need
Microelectronics	needs a highly skilled plentiful labor pool of M.S. and Ph.D. research engineers from UC level schools for R&D
Biomedical	Needs plentiful, diverse, trained and talented workers/labor pool for predominantly manufacturing operations
Advanced Instruments	Need trained high-school graduates for manufacturing & production
Software	Heavy-duty workforce needs at all levels, 75%: B.A. grads in specific fields, 73%: Masters, PhDs
Design	Need skilled labor pool at all levels, especially occupationally trained AA level workers

Although workforce recruitment and retention are not yet significant enough problems to drive business away from Orange County yet, some circumstances unique to Orange County are exacerbating the situation and must be addressed in short order to keep the problem from escalating going forward. Specific examples include affordable housing, and Orange County's image – i.e, the lack of awareness that Orange County is a hotbed of technology activity and employment opportunity. Workforce development initiatives aimed at building Orange County's capacity in specific skill and occupation areas (outlined below) are another example of immediate action opportunities. Qualified employees with the following skills are currently in short supply (as mentioned by more than one industry cluster during the focus group process).

Skills In Highest Demand In Orange County's Fastest Growing Clusters

- IT/Software/Computer Science professionals (mentioned in almost every focus group)

- Analog Design Engineers
- Software Developers with C++, Visual Basic, and Java programming skills
- Clinical Research Associates
- Technical Sales personnel

As recruiting on-line over the Internet is becoming the preferred method of connecting with qualified applicants, workforce development materials and assets should be continually migrated over to internet-based platforms. Going forward, the internet will be the preferred method for employers and employees for gathering information and making contacts.

WORKFORCE SUPPLY

This section analyzes the supply of workers at different educational levels in Orange County. First, we use a comprehensive data base of Orange County workforce training providers to compare existing training classes to high growth occupations. We then examine education levels for both the internally-generated (Orange County resident) and externally-generated (in-migrants to Orange County) labor force. We then examine workforce retention issues in the context of housing costs of other cost of living factors in Orange County. We also discuss the results of a training supply survey and offers from specific workforce trainers to partner in skills development programs.

Training Suppliers in Orange County

There are nearly 300 active occupations in Orange County distributed by nine major and nearly seven hundred detailed industry groups. Matching up workforce supply to the demands of each industry and occupation is a complex issue. This section highlights the classes and programs available in Orange County for the most high growth and high demand occupations, plus survey data on degrees and training completion of the Orange County workforce.

While there are other databases describing the classes that are available in Orange County for those who are out of work or desiring a career change, the OCBC occupational training supply survey and catalog were created with interest in the employers' point of view. How many people were getting trained to work in what fields in Orange County? What number of those people were completing the program and subsequently working in Orange County?

The answers to these questions can not only help employers find qualified employees, but help initiate public and private partnerships with training providers. This is especially relevant to training providers that are training employees for positions that are in high demand.

Comparing Training Classes to High Growth Occupations

The top five demand occupations by absolute growth for 1997-2004 are Managers, Sales, Guards, Janitors, and Landscaping/Groundskeeping. The top four demand occupations by percent increase are Computer scientists, Systems analyst, Computer engineers, and Computer support specialists.

The California Training and Education Providers (CTEP) database contains a listing for 2,071 programs with JTPA/WIA contracts or classifications. Using Occupational Employment Statistics (OES) Dictionary of Occupations definitions, 204 classes (9.85%) were found to be closely related to training for these 9 top OC Occupations by actual and percent growth.

Demand Occupation OES Title	number of programs/classes
Computers (scientists, analysts, engineers, and support)	121
Laborers, Landscaping and Groundskeeping	8
Janitors and Cleaners, except maids and housekeeping cleaners	9
Guards and Watch Guards	18
Salesperson, Retail	7
General Managers and Top Execs	41

Source: CTEP database

Training Supply Database

In July OCBC completed a Training Supply Database, a comprehensive database of training providers in Orange County - inclusive of small schools offering classes only in cosmetology or computers to the large schools including UC Irvine, Chapman and Cal State Fullerton. The database identifies 333 training providers located in Orange County, serving our residents and workforce, but also offering classes to commuters from other counties, and online or by mail courses to students all over the world. Together they represent thousands of classes and training programs, both regulated and unregulated, with a focus on the type of training they provide.

This database, including many schools that have been recognized on one list but not others, provides a unified, simple comprehensive listing of workforce preparation programs in Orange County. The California Training and Education Providers (CTEP), I-train, and O-train lists primarily cover schools and programs that are recognized or involved in their respective funding programs or fit strict program criteria. This database draws on many sources, including private databases, in an attempt to provide a more comprehensive list that will be more useful to WIA clients.

Orange County Workforce Investment Board (OCWIB) directories: Orangeworks, I-Train, California Training and Education Providers (CTEP, used for the Enhanced State Training Inventory (ESTI)) and other sources were combined and harmonized, linking the data to gain an understanding about Orange County's current workforce supply. Combined, these databases are tools to better understanding the labor market and workforce supply.

The combined, amplified, and simplified database more broadly answers questions about current capacity and future supply of Orange County's workforce training system. Other database benefits include 90 schools not included in the CTEP database, 60 new website addresses, and numerous address and phone contact updates. There was no qualifying criteria for listing in the database beyond requiring a viable address or phone number in Orange County. Because it includes previously unrecognized schools, the database may be used to seek out in-demand programs for possible funding or partnerships.

Levels of Education and Training of the Entering Workforce (Internally Generated)

The Orange County Business Council compiled data from Orange County schools to create a comprehensive look at the entering workforce for the year 2000: analyzing data to find the numbers of students completing each level of education (high school and/or college and above) in the County in the last one to two years.

To create the Educational Levels chart, we used statistics from our own Training Supply Survey, the University of California and Cal State system-wide databases, the Orange County Department of Education, UC Irvine, Cal State Fullerton, Chapman, and the Four Orange County Community College Districts: Coast, North Orange County, South Orange County, and Rancho Santiago.

Based on several statistics, (including the dropout and transfer rates for UC Irvine) we considered the number of students who dropped out of four-year colleges in Orange County to be equivalent to the number the same colleges gained through community college transfers. The tradeoff of students leaving the county for college, and students entering the county for college was also considered equivalent.

Education Levels	Number Entering Workforce
HS Dropout 9-12 grade, 98-99	**2,711**
OC HS Grad ONLY, 98-99 OC	**2,818**
OC HS Grads(25,965) - (AA, BA etc.)	
OC HS Grad w/ UC/CSU req. courses	
98-99 OC	**10,157**
UC/CSU frosh enrolled in OC	**6,177**
UC Irvine 98/99	3,176
Cal State Fullerton F99	2,376
Chapman est. 99	625
College Dropouts = CC to Univ. Tansfers	**1,743**
estimate based on Irvine 29.4% rate	
includes CSUF and Chapman at 29.4%	
Training Provider - completed pgms 99	**367,924**
Enrolled 2000 est.	1,235,350
Grad Rate per year (based on survey)	30.6%
Community College Graduates (AA)	**13,376**
(Soph.HS grads in CC - (Transfers to UC/CSU))	
UC/CSU graduates in OC S98/F99	**7,729**

	UC Irvine	3,167
	Cal State Fullerton	4,121
	Chapman	441
Masters		**1,574**
	Irvine98-99	511
	Fullerton 98-99	763
	Chapman est	300
Doctoral		**200**
	Irvine 98-99	200
	Fullerton 98-99	n/a
	Chapman	n/a
Professional		**190**
	Irvine Medical 98	90
	Chapman Law 99 est	100

Sources: Training Database Survey, UC, CSU, Chapman, OC Community College Districts, OCDE and OCBC analysis

In 1999, 28,676 Orange County students finished their high school education in Orange County, either by graduating or dropping out, and entered into the workforce and began degree programs or another level of training. High School dropouts accounted for 2,711 (9.5% of the entering workforce) and the number of High School graduates expected to have no further training (based on the expected number of AA, BA degrees and training graduates) was 2,818 (9.8%.)

The estimated number of students completing an Associate's degree at one of the three community college districts in Orange County (Coast, South Orange County and Rancho Santiago) is 13,376 (46.6%.) In 1999, 27% of the workforce (7,729) earned a bachelor's degree at UC Irvine, CSU Fullerton or Chapman University. 1,547 went on to earn a master's (5.5%) and 200 (0.7%) earned a Doctorate at an Orange County university. Irvine Medical School (90) and Chapman's Law school (100) produce about 190 graduates (0.7%.)

Education Levels/Supply Compared to Experience Levels Needed/Projected Annual Demand

The education level data was matched to the experience levels for jobs listed by growth on the EDD/LMID list of Orange County Occupations. The column on the following chart titled “New Jobs 1997-2004” is from the EDD OC Occupations list. The “Projected annual Demand” is from OCBC analysis.

Orange County Internally Generated Workforce

Education Levels	Number Entering Workforce	Projected Annual Demand	New Jobs 1997-2004	Experience Levels Needed for New Jobs
HS Dropout 9-12 grade, 98-99	**2,711**	16,000	94,330	SHORT-TERM ON-THE-JOB TRAINING
OC HS Grad ONLY, 98-99 OC	**2,818**	4,500	25,741	MODERATE-TERM ON-THE-JOB TRAINING
OC HS Grads(25,965) - (AA, BA etc.)		3,000	18,911	LONG-TERM ON-THE-JOB TRAINING
OC HS Grad w/ UC/CSU req. courses				
98-99 OC	**10,157**			
UC/CSU frosh enrolled in OC	**6,177**	2,500	10,419	WORK EXPERIENCE
UC Irvine 98/99	3,176			
Cal State Fullerton F99	2,376			
Chapman est. 99	625			
College Dropouts = CC to Univ. Tansfers	**1,743**			
estimate based on Irvine 29.4% rate				
includes CSUF and Chapman at 29.4%				
Training Provider - completed pgms 99	**367,924**	1,000	4,998	POST-SECONDARY VOCATIONAL EDUCATION
Enrolled 2000 est.	1,235,350			
Grad Rate per year (based on survey)	30.6%			
Community College Graduates (AA)	**13,376**	1,500	8,848	ASSOCIATE DEGREE
(Soph.HS grads - (Transfers to UC/CSU))				
UC/CSU graduates in OC	**7,729**	7,000	39,881	BACHELOR'S DEGREE
UC Irvine 98/99	3,167	3,000	17,906	WORK EXPERIENCE, + A BACHELOR'S OR HIGHER
Cal State Fullerton	4,121			
Chapman	441			
Masters	**1,574**	500	1,719	MASTER'S DEGREE
Irvine98-99	511			
Fullerton 98-99	763			
Chapman est	300			
Doctoral	**200**	500	1,526	DOCTORAL DEGREE
Irvine 98-99	200			
Fullerton 98-99	n/a			
Chapman	n/a			
Professional	**190**	500	1,324	FIRST PROFESSIONAL DEGREE
Irvine Medical 98	90			
Chapman Law 99 est	100			

Sources: EDD/LMID OC Occupations; UC, CSU, Chapman, Community College District and OCDE websites. OCBC analysis.

The supply of Worker's with Master's Degrees (1,574) is over three times the projected annual demand for jobs requiring a Master's degree (500). This indicates that those with master's degrees will be most likely hired into positions not reqiring the experience level of a Master's degree. But this may not be all bad, considering the average salary for the job requiring a Master's degree is $8,000 less than the average salary requiring a Bachelor's Degree and Work Experience. Is this showing us that employers value hands-on experience more than formal education? Jobs requiring Long-Term-on-the-Job-Training pay on average $2,800 more than jobs requiring Post-Secondary Vocational Education.

Levels of Education and Training of the Entering Workforce (Externally Generated)

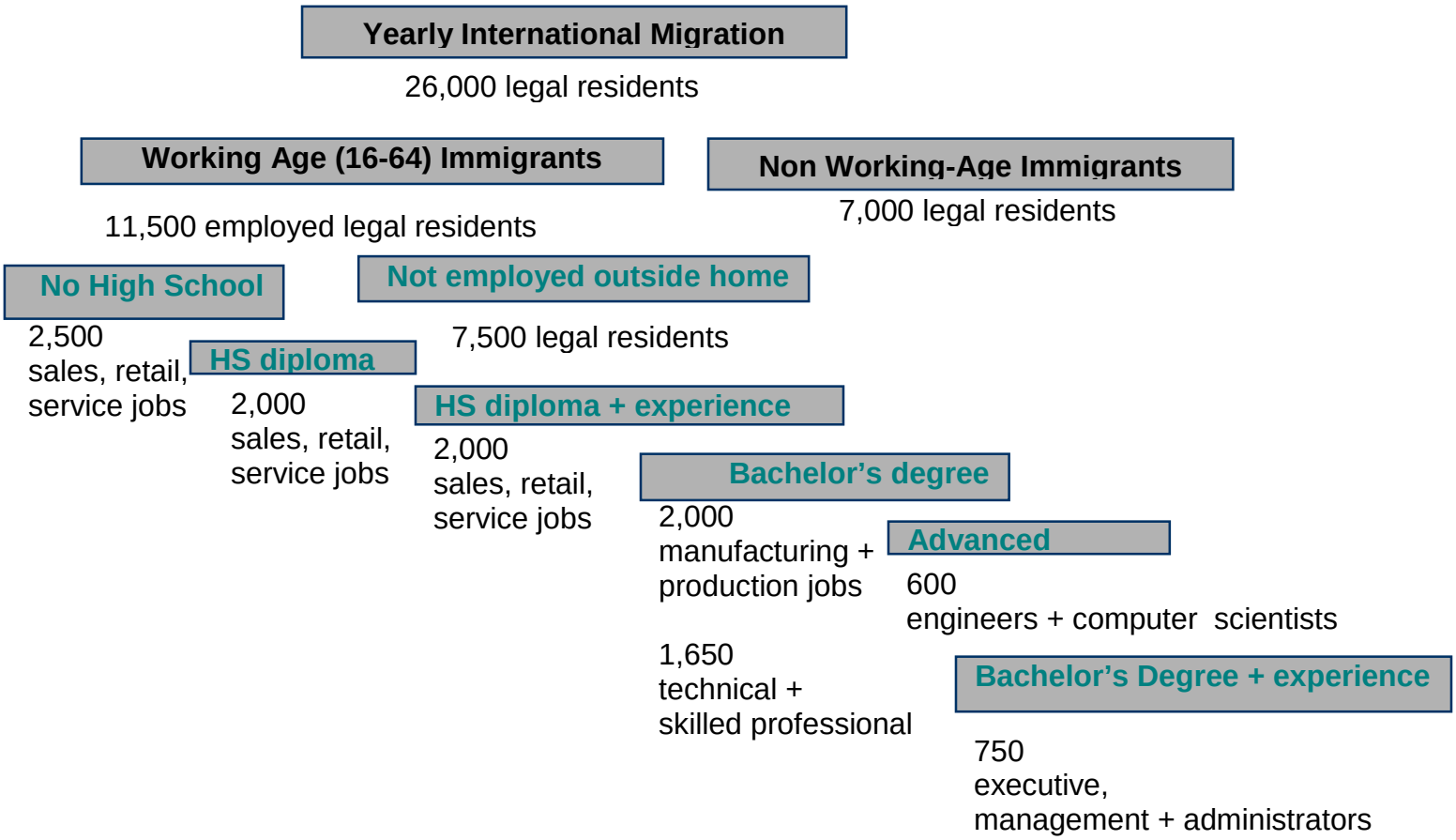
Domestic and International Migration

Levels of International migration to the county have been consistent throughout the last decade. Domestic migration has been slightly more sporadic, and had a negative effect on the population, in all years in the last decade besides 1997 and 1998. More Americans are leaving Orange County than are arriving.

Orange County Migration	International	Domestic
1991	21,881	-30,419
1992	27,017	-26,643
1993	27,709	-34,065
1994	23,961	-30,873
1995	24,055	-27,339
1996	23,457	-21,813
1997	26,896	830
1998	26,297	1,568
1999	25,886	-18,912
Net Migration 1990-1999	233,168	-196,018

Source: U.S. Census Dept.

Education Levels – International Migration



Retaining the Workforce Supply: Wages and Housing Affordability

A living wage in Orange County is attainable by families with two working parents, on average, by all experience level workers except those who hold jobs demanding only Short-term-on-the-job-training. The education and experience needed increases for families with one of two parents working, and single parent households. No average salary for any experience level is enough to purchase a median priced home ($292,000) in Orange County.

Experience Levels Needed for New Jobs	Average Yearly Salary	Housing Affordability Gap	Adequate Family Wage
SHORT-TERM ON-THE-JOB TRAINING	$21,038	($228,886)	
			Both Parents Working $23,837
⇩			
MODERATE-TERM ON-THE-JOB TRAINING	$27,523	($209,431)	
POST-SECONDARY VOCATIONAL EDUCATION	$31,192	($198,424)	
			One of Two Parents Working $32,261
⇩			
LONG-TERM ON-THE-JOB TRAINING	$33,991	($190,027)	
ASSOCIATE DEGREE	$37,000	($181,000)	
WORK EXPERIENCE	$37,623	($179,131)	
			Single Parent Household $39,686
BACHELOR'S DEGREE	$47,429	($149,713)	
MASTER'S DEGREE	$51,019	($138,943)	
⇩ WORK EXPERIENCE, + A BACHELOR'S OR HIGHER	$58,986	($115,042)	
DOCTORAL DEGREE	$59,418	($113,746)	
FIRST PROFESSIONAL DEGREE	$69,010	($84,970)	
			Income Needed to Qualify for Median Priced Home $97,334
⇩			

Orange County median home price of $292,000.
Job data source: EDD/LMID OC Occupations

Training Supply Survey

The OCBC subsequently completed a Training Supply Survey. The survey presents detailed information on the large variety of training providers, to determine how many students complete a training class or program designed to prepare one for jobs in Orange County, specifically high growth jobs that demand a some level of training.

SURVEY DATA BY INDUSTRY CLUSTER

	Programs*	Enrolled**	% of total	Graduates***	% of total
Banking, Finance and Insurance	10	85	0.24%	1,111	5.36%
Biomedical and Health	34	5,747	16.34%	3,556	17.16%
Construction and Real Estate	6	1,554	4.42%	751	3.62%
Consumer and Public Service	32	7,369	20.95%	4,945	23.87%
Entertainment and Tourism	8	7,734	21.99%	1,340	6.47%
Art, Media and Communications	8	3,930	11.18%	2,169	10.47%
Science and Technology	30	7,561	21.50%	4,684	22.61%
Manufacturing and Distribution	9	1,186	3.37%	2,162	10.44%
TOTAL (these clusters)	137	35,166	100.00%	20,718	100.00%

Specified vs. unspecified responses

TOTAL (these clusters)	137	35,166	20.33%	20,718	39.10%
TOTAL (all responses)	213	172,949	100%	52,981	100%

*Programs listed
**Students currently enrolled
***Students who completed course: latest year avail. (98/99, 99, 99/00)

Most of the training providers responding offer certificate programs that required hours or days to complete. Several providers offered combinations of degrees, usually grouped as: Certificate and Diploma (for trade schools); Associates and Certificates (for community colleges) and Bachelor's, Masters and Doctorate (for colleges and universities.)

Degree	Percent of respondents
Diploma	37%
Certificate	92%
Associate	29%
Bachelor's	10%
Master's	8%
Doctorate	8%

Though the surveys indicate that 73% of respondents require exit surveys or other data of their graduates and certificate holders about jobs accepted after graduation, a smaller percent keep track of the information pertaining to subsequent employment. Several survey respondents indicated that although they try to gather the data; "accurate records were not kept" (a university) or they had a 50% response rate on exit surveys (a nursing program) or some program participants at a location were

tracked while others in another program at the same location were not. But of the training providers that kept records, 88.25% of their students accepted jobs after graduation, and 72% accepted jobs in Orange County. The students accepted positions in industries and job titles directly corresponding to field of study. No notable aberration of cross-industry training and employment was submitted.

Partnerships

Twelve percent of the schools responding to the survey contacted us to express an interest in workforce development and assessment. They offered to develop or reinstate programs if there was a demand or need for them, and some schools were interested in participating in more research to determine workforce supply/demand. It is useful to know training providers desire to work with the county and private industry, and that training providers are even willing to tailor their programs to fit demand. There is opportunity to create new partnerships between businesses and schools targeting highly demanded occupations.

The following schools are highlighted because they either contacted us with relevant information, or have a special program that illustrates public/private partnerships.

California Career Schools in Anaheim works with employers on programs and recruitment. Director Chuck Emanuele notes that Los Angeles has more customized programs relating training providers and employers than Orange County. He would like to see more communication between WIB and JTPA (now WIA) programs. Emanuele is interested in helping with programs or focus groups. Contact: Chuck Emanuele (714) 635-6585 ext. 205.

Cal State University, Fullerton Extended Education Programs for Writers includes a Certificate in Technical Writing program offers five courses in Fullerton and Garden Grove. The involvement of Orange County businesses on the technical writing advisory board is what makes it stand out. The board includes individuals from Beckman Coultier Inc., FileNet Corp., Unysis Corp., and Parker Hannifin Corp.

Sierra Learning Center of Santa Ana is listed in the CTEP as offering Custodial Services classes. This program is not currently in operation, according to director Ray Gomes, but they have the facilities and are excited to restart the program if the demand exists. In addition, they have joint ventures with child care providers to bring child care to their students, as well as externships with businesses. Gomes has extended an invitation to interested WIA parties to come for a visit and tour the facilities. Contact: Ray Gomes (714) 835-6695.

Central County Regional Occupational Program (CCROP) in Santa Ana has partnerships with more than 1,000 businesses in OC that serve as internship sites, and 500 business leaders who serve on ROP advisory boards to review course offerings

and labor market trends. Contact: Keri Gee Barnett, Community Relations Manager, (714) 541-5537 ext. 20.

Gerontology Training Institute of Westminster would like to continue offering home service worker classes and start a nursing program, but is currently struggling for funding. Contact: Pat Messinger (714) 893-3050.

UC Irvine Extension offers Corporate Contract Training: custom education programs instructed by industry experts at your site, UCI facilities, or other sites. The program offers certificates, academic credit or professional continuing education units. Contact: Deborah Buchanan Nielson (Business and Mgmt.) (949) 824-1639; Mario Vidalon (Engineering and IT) (949) 824-7129; Catherine Condon (ESL) (949) 824-6978. www.unex.uci.edu

School of Continuing Education (NOCCCD) provides students with the option of enrolling in internet-based courses. A variety of services are offered at all three campus locations (Yorba Linda, Cypress, and Fullerton) to help students with career counseling, assessment, matriculation into 4-year colleges and for those with special disabled student needs. The training development institute (TDI) serves over 1800 businesses annually with specialized training and education programs. TDI services include the Workplace Learning Resource Center, Contract Education, Center for Applied Competitive Technologies, Regional Environmental Business Resource Assistance Center and the Orange County Multimedia Center. Contact: 714-779-8279; www.sce.cc.ca.us

WORKFORCE RECONCILIATION AND STRATEGIC ASSESSMENT

Reconciliation

The goal of this research project is to establish workforce training priorities and next steps based on an analysis of Orange County's economy and labor market. This will provide a solid foundation for Orange County's workforce development efforts. This analysis allows the OCWIB and County of Orange to address many of the key findings and strategies of the October 1999 Economic Development Assessment, including developing strategies to harmonize all workforce development programs, including Welfare to Work, with the particular needs of Orange County employers. Optimization of Workforce Investment Act implementation will be a driving force in improving Orange County's economic development efforts across the board.

While income for much of the nation has recovered since the recession of the early 1990's, more California workers earn poverty-level wages now than a decade ago, according to a September 2000 study released by the California Budget Project. A review of state incomes reveals a growing gap between California and the rest of the nation. Adjusted for inflation, the median income of a four-person family declined $1,069 since 1989, while the figure rose $2,477 nationally. After being consistently 5-15% above the nation for the last 30 years, in 1998 California's median income for a family of four fell below that of the nation. The main factor that explains the difference between California and the rest of the country is that California had a deeper and much longer recession than the rest of the nation. While California has had tremendous growth in the number of jobs, wage growth has not advanced as rapidly. Home prices and an overall high cost of living keeps California workers from being able to prosper to the extent that workers do in other locations. "California jobs are more dead-end jobs than anywhere else," according to Bob Gnaizda, policy director of the Greenlining Institute, "Minimum-wage workers of 20 years ago remain minimum-wage workers today. You can't move up."

While unemployment rates are at their lowest point in decades, lower-paying retail and service jobs account for the majority of job growth during the last decade. Since 1989, median hourly wages rose in the Bay Area, but declined in Los Angeles and the state as a whole. While the Bay Area saw an increase in computer-related jobs (often high-wage positions), Southern California lost manufacturing, generally related to a decline in defense contracting jobs.

When it comes to the widening gap between rich and poor within the state, California also bucks the trend the rest of the nation is seeing. In most states, the growing gap is due to growth at the high end of the income scale. In

California, the gap comes from an increase in low-income families and stagnating incomes in the middle class, according to the California Budget Project report.

This section strategically assesses the convergence/nexus of Orange County's labor market demand and current occupational training supply. Important current or looming gaps or mismatches between training supply and employer demand are identified, highlighted, and analyzed. This effort focuses on industry clusters and segments with the largest projected employment growth. The main findings are summarized below, followed by a more detailed description of the findings. A more detailed gap analysis is also presented in Appendix 5.

Gap Analysis

How Do Orange County's Future Jobs Match the Skills of Those Looking for Work?

- EDD projects that forty-five percent of California's projected job growth, and 46% of Orange County's projected job growth, will occur in occupations requiring only short or moderate on-the-job training.

- A similar analysis of job openings - new jobs plus openings due to separations - finds a slightly heavier concentration of openings (55% in Orange County) in occupations requiring relatively less experience or education.

- The most significant mismatch between jobs and job seekers is the shortage of seekers with at least a college degree. Over a quarter (29 percent, or 11500 workers) of projected openings will require at least a college degree. While projected annual new workforce supply totals nearly 14,000, this does not take into account the potential domestic migration losses that Orange County has been experiencing for most of the last decade.

- Overall, the number of job seekers exceeds the number of available jobs, but just barely, in Orange County. California's "job gap" - the gap between the number of projected job openings and the number of job seekers - is 2.6-to-1, while Orange County's is less than 1.1-to-1. If job seekers are assumed to compete only for new jobs, there will be 2.7 job seekers for each available job in Orange County, compared to 5.4 statewide.

- Potential areas of workforce shortage include those occupations needing doctoral degrees, professional degrees, and bachelor's degrees with work experience.

- Potential areas of workforce oversupply include those occupations needing a master's degree and those needing an AA degree.

Fewer than One Out of Ten Job Openings Pays the Basic Family Wage to Entry-Level Workers

- The good news is that over half of the projected job openings pay at least the basic family wage needed by a family headed by two full-time working parents ($10.79 per hour statewide, $11.46 in Orange County).

- However, only one out of 10 of the state's projected job openings that pays enough to support a two-working-parent family in an entry-level job requires short to moderate on-the-job training.

- In contrast, many (44 percent) of the EDD-projected job openings paying at least the basic family wage for a two-working-parent family - 29 percent of all job openings - require at least a college degree.

- The situation confronting single parent families is even tougher. Just one out of five in Orange County (20%) and one out of four statewide (27 percent) of the state's EDD-projected job openings pay at least the basic family wage for a single parent family ($19.02 Orange County, $17.71 statewide). Virtually none (1 percent) of the projected openings are entry-level jobs paying enough to support a single parent and two children.

- Only 15.5% in Orange County, and 19 percent statewide, of EDD-projected job openings that require only short or moderate on-the-job training pay at least CBP's basic family wage for a two-parent family.

- Occupations requiring more education are much more likely to pay at least the basic family wage: 81 percent of EDD-projected openings requiring long-term training or vocational education and 94 percent of openings requiring college degrees pay at least the basic family wage for a two-working-parent family.

How Many Jobs Will Be Available?

In order to assess the "fit" between job growth and those seeking to work, this report compares projected employment growth to the number of individuals seeking to work. Additional analysis examines whether the characteristics of job seekers matches those required by the job opportunities that are likely to become available. A third comparison assesses whether the jobs that are likely to become available provide sufficient income to support a family.

Despite the current strength of the state's economy, the number of job seekers statewide exceeds available jobs. While some level of unemployment is to be expected, there is a significant gap between the number of available jobs

and the number of Californians who want and need to work. Orange County is in a somewhat better position than the state. The official occupational employment projections estimate that 23,323 new jobs will be created per year in Orange County between 1995 and 2002 (264,698 statewide). In addition to these newly created jobs, 27,398 (290,193 statewide) positions will become available in Orange County when current jobholders retire, move to other occupations, or otherwise leave their occupations. If both sorts of openings will be available to job seekers, 50,721 jobs will be available to the 57,099 seekers, versus 554,891 job openings and 1,437,014 job seekers statewide. This suggests that jobs will be available for less than half of those seeking work statewide, while almost at parity in Orange County. Put another way, the California "job gap" is 2.6-to-1 (on average, 2.6 job seekers will be competing for each job opening), while only 1.1-to-1 in Orange County. If the 1.4 million job seekers are assumed to compete only for new jobs, there will be 5.4 job seekers for each available job statewide, 2.7 job seekers for each available job in Orange County.

However, state projections have regularly underestimated Orange County job growth in the last decade. OCBC projects that Orange County will generate an average of approximately 40,000 jobs annually for the foreseeable future. In addition, this report assumes that because of the emerging IT nature of jobs in the New Economy, there will be a small but persistent upward bias to the job skills needed to fulfill employer needs in Orange County

Do the Skills of Those Looking for Work Match Those of the Available Jobs?

Labor market analysts categorize occupations by the type of education and training generally required to obtain employment. The requirements for some occupations are easily defined. Physicians, for example, must have a medical degree and are assigned to the "professional degree" category. Requirements for other occupations are less precise. While employers may not always require that office clerks have a high school degree, applicants will typically need reading, writing and arithmetic skills that meet or exceed those of a typical high school graduate. Moreover, the qualifications may vary depending on the scarcity or availability of skilled labor. When unemployment is high, employers may use a high school or college degree as a screening tool, while in a tight labor market, they may be more willing to substitute on-the-job training for formal qualifications. Thus, while our categorization is somewhat imprecise, it provides a good guideline about the skills and education needed for each occupation.

Nearly half (46 percent) of Orange County's (45% statewide) EDD-projected job growth will occur in occupations requiring only short or moderate on-the-job training. Twenty percent will be available to new workers with vocational training, a community college degree or long-term on-the-job training;16 percent will require a four-year degree, and 2 percent will require a graduate degree. The remaining 16 percent require significant work experience, and thus will not be available to persons entering the workforce for the first time.

A similar analysis of job openings - new jobs plus openings due to separations - shows a slightly heavier concentration of openings (55% for Orange County) in occupations requiring relatively less experience or education.

Moreover, despite the concentration of job growth in lower skilled occupations, the supply of workers with relatively low levels of education exceeds the number of available jobs. At the statewide level, the number of job seekers lacking a college degree exceeds the number of job openings that do not require a degree by more than 3-to-1. In Orange County, the situation is much more balanced, with projected employer demand for low-skilled jobs actually exceeding new supply. Going forward, approximately 26,000 of the 40,000 new annual workforce entrants in Orange County will lack a college degree, and approximately 28,000 jobs will be available at this education and training level.

Some analysts argue that a shortage of well-educated workers threatens the future vitality of the state's economy. While the number of openings for college educated workers modestly exceeds the supply of job seekers with a college degree, the data suggest that a more significant problem is a deficit of specific skills, rather than a shortage of college educated job seekers per se. In other words, there may be too many liberal arts majors and not enough engineers. Phase II of this research project will take a more in-depth look at this issue.

Fewer than One Out of Ten Job Openings Pays the Basic Family Wage to Entry-Level Workers

Comparing occupational projections with the basic family wage paints a sobering picture of the California labor market. The good news is that half of the state's projected job openings pay at least the basic family wage needed by a family headed by two full-time working parents. However, fewer than one out of five (19 percent) of these jobs - 9 percent of all projected job growth - are entry-level jobs requiring short or moderate on-the-job training.

More than half (51 percent) of the job openings paying at least the basic family wage - 25 percent of all jobs - require at least a college degree. The situation confronting single-parent families is even tougher. Only 20 percent of projected job openings in Orange County (and 27% statewide) pay at least the basic family wage for single parent family. Just 1 percent of projected openings pays at least the basic family wage for a single parent and require only short or moderate on-the-job training.

An analysis of job growth looks similar. Only 56 percent of California's projected new jobs pay the basic family wage needed by a family with two working parents. Nearly half (47 percent) require a college or graduate degree, and just 16 percent require only short or moderate training.

Not surprisingly, occupations that require a college degree pay, on average, substantially more than those that do not. The average 1997 wage for occupations requiring only short or moderate on-the-job training was $10.33 per hour, as compared to $31.18 for occupations requiring a bachelor's degree plus work experience. Fully 81 percent of job openings requiring only short or moderate on-the-job training pay below the basic family wage for a two-working-parent family. Occupations requiring more education are much more likely to pay at least the basic family wage. Eighty-one percent of openings requiring long-term training or vocational education job and 94 percent of openings requiring college degrees pay at least the basic family wage.

ANALYSIS AND STRATEGY FOR OCWIB

The following recommendations outline a program and strategy designed to address the multiple issues involved in studying the Orange County workforce, especially the role of the Orange County Workforce Investment Board in promoting workforce training excellence. These conclusions can be used as tools in making decisions about what labor market information and workforce analysis projects should be funded in future years, as well suggesting which programs may yield significant returns on investment. Because of the myriad of labor market information and workforce data sources, projects, consultants, and methodologies currently in use, priority has been given to producing a simplified, understandable, yet robust set of strategies so the OCWIB can move forward in future years to invest and concentrate on areas of high demand and high return on invested dollars, time, and resources.

Orange County Economic Foundations

Emphasis and resources need to be invested in better understanding Orange County's economy, clusters, and competitive advantages (and disadvantages), especially workforce development's role. The projections in this report should be refined and improved in future years. Going forward, workforce studies should be conducted on a Countywide basis, rather than on a sub-regional or municipal level, as Orange County is best understood as one labor market.

Both the Cal State Fullerton and Chapman economic forecasts provide reliable, high-quality economic information on Orange County, both historically and projected into future years. EDD provides good baseline, uniform data that can be tracked over a number of years to analyze trends. OCBC focuses on cluster analysis, especially of Orange County's high-growth opportunity areas. In addition, both Cal State Fullerton and Chapman University provide solid contract research opportunities on an ongoing basis. A useful part of future OCWIB study of Orange County Economic Foundations will include pulling together a comprehensive yet integrated report from all these data sources that can be used by the OCWIB Board, Committee members, and OCWIB staff. Such a report

would provide a baseline for funding decisions regarding future investments in economic and business climate studies.

Missing from our current arsenal of economic and cluster tools is what can be termed an "Innovative Early Warning System", a tool to better predict, anticipate, and more quickly respond to significant upside potentials such as the current explosive demand for computer networking and website development work due to the innovations such as the internet. Such a system, if well designed and implemented, could follow "leading economic indicator" models to predict movements at the industry cluster level, allowing a window of time for the OCWIB and other education and training organizations to react proactively with changes in curriculum and training modules. Good recent examples of the need to understand leading workforce trends are Kingston Technology's new $105 million chip plant in Fountain Valley that will employ 250 workers and Broadcom and Conexant's need for broadband hardware designers and production workers.

Included in an "early warning system" would be a component that would identify significant potential downside labor market demand factors such as plant closures, mass layoffs, and industry retrenchments. The early warning system will help target potential economic development interventions, potential incumbent and dislocated worker retraining programs. Such a system, organized by a Countywide organization such as OCBC, provides increased linkages between workforce development efforts and ongoing local economic development efforts regarding business attraction and retention activities. We outline below the elements of a workforce "early warning system".

Workforce "Early Warning System"

In thinking about leading indicators of Orange County workforce demand, note that changes in Orange County employment are broadly driven by two factors – national economic trends and unique competitive advantages and disadvantages within Orange County. The first trend is similar to econometric growth forecasts that, for Orange County, have been refined by Cal State Fullerton and Chapman University. Importantly, this is only half of the picture. Orange County needs to understand how emerging industries and major economic trends will disproportionately affect the County. While some of that information can be captured in an econometric model, some factors, such as the broad explosion in internet and IT employment, are more difficult to predict. For that reason, OCBC proposes a two-pronged strategy for early warning systems.

The first prong is data analysis, and will include ongoing summaries of the results and selected raw data from the Cal State Fullerton economic forecasts. This would be supplemented by data on employment changes and projections from the EDD and more "leading" data such as, when available, information on traditional and venture capital investments, initial public offerings, and attitudes toward expansion among Orange County firms and executives. Data on

construction permits, especially for office and manufacturing sites, would also be useful. The relationship between such "leading indicators", and more traditional economic indicators such as construction employment and consumer spending, can be tracked to understand how to better predict changes in the industrial and occupational distribution of the County's employment growth.

Such data analysis should be supplemented by ongoing analysis of employment clusters and sources of competitive advantage and disadvantage in the Orange County economy. Such an analysis is vital both because it can inform how national economic trends will influence Orange County and because it identifies key sources of workforce demand at an industry and occupation level.

The second element of an early warning system should be regular meetings with County business, training, academic, and government leaders. These meetings would be similar to focus groups, although the composition of the group might be a standing committee that will meet regularly. Ideally, this group of business leaders and experts will have available summaries of the most recent "early warning" data, and the group will be asked to offer their own interpretations and conclusions. Because some data, such as initial public offerings and venture capital, can be extremely volatile, it will be vital to consult with local business leaders to understand which trends are important and which might be mere glitches.

Overall, the early warning system can be formalized as, for example, a quarterly meeting of the group of local experts, who are briefed beforehand on relevant County, state, national, and even world wide data and trends. These experts would then add their judgment and interpretations to shape the county's workforce assessment. The major meetings might be annual, with quarterly meetings intended to fine-tune annual findings and to catch surprise developments that might occur during the course of the year.

Such early warning and forecasting of fundamental changes in the structure of the Orange County economy, whether positive or negative, will allow a more strategic and reasoned workforce response to future events. Constructing such a system would give the OCWIB another proprietary tool to forecast future workforce demand on a local basis.

Workforce Demand

The raw material with which to conduct workforce demand analysis has been well-documented in the last two years by a combination of research projects, including EDD forecasts, ERISS Corporation surveys, and the Orange County Executive Survey.

EDD forecasts of job growth by occupation is an ongoing effort that provides reliable data that can be used as a baseline for predictions. EDD has

tended to underforecast job growth in Orange County for the last 5 years. Analysis and reporting of industry trends and projections needs to be accomplished on a more accurate, regular, and timely basis than now available to supply workforce training organizations, workforce clients, and Orange County's K-12 youth with accurate data about future employment opportunities.

Under contract to the OCPIC and now the OCWIB for the last two years, ERISS Corporation has conducted two large scale telephone surveys, of Orange County employers with 10+ employees in 1999 and Orange County employers with 5+ employees in 2000.

Analysis done on the two surveys reveals a tremendous similarity in the information garnered, suggesting that annual surveys on such a large scale are not justified by the amount of data variation that is revealed. In addition, there were not tremendous differences in data gathered by moving the bottom threshold of the survey down from 10+ employee firms to 5+ employee firms. From the data gathered and analysis of differences in results, the major investment required by such a survey can be justified every 3 years or so with a survey population of firms with ten or more employees. Because the shift-share analysis accomplished much the same result at substantially lower cost, shift-share analysis can be done in the intervening two years between ERISS surveys.

In addition, the CCOIS – the 2000 Orange County California Cooperative Occupational Information System (CCOIS) -- is a cooperative program administered by the California Employment Development Department (EDD), currently cosponsored by the OCWIB and performed by Cal State Fullerton. The CCOIS survey is standardized statewide, but the occupations surveyed are selected locally to provide relevance to local labor market conditions. Using a randomized, scientifically selected and stratified sample of over 1,000 firms by industry and size, the demand for 25 locally selected Orange County occupations is estimated and reported. This project should be continued as it provides timely, useful information on Orange County's promising occupations.

The Orange County Executive Survey done by UC Irvine provides excellent annual information for the OCWIB on sales and financial forecasts, expansion and downsizing forecasts, local executive's expectations about relocating outside Orange County, and employment forecasts including hiring difficulties by employment category. Such information, available annually, can be used to supplement the ERISS-type surveys done every 3 years. In addition, both Chapman and Cal State Fullerton provide survey research capabilities that are professional and reliable.

In addition, more extensive study and analysis of the ERISS datasets in interim years between telephone surveys will allow the OCWIB to obtain additional data analysis that can inform OCWIB Board members and staff in

questions about how OCWIB strategy, tactics, and programs address Orange County employer workforce demand needs.

An additional supplement in interim years can be provided by focus groups in key industry clusters. As outlined earlier in this report, OCBC performed such focus groups in 2000 in high-growth industry clusters which had poor response rates in the ERISS survey. This research tool provides the opportunity to probe executives and workforce professionals about their specific needs at a much greater level of depth than a telephone survey. As an adjunct to the cluster-based focus groups, regular semi-annual meetings with the largest local employers (such as the County of Orange, Disney, Boeing, UCI) should be conducted to gather strategic information about current and projected workforce needs.

Workforce Supply

An effort to catalog and assess workforce training supply is mandated by WIA legislation. OCWIB will catalog Workforce Training Supply. As part of the Workforce Assessment, OCBC cataloged Orange County workforce supply as outlined in a previous section of the report. One commonly heard feedback from the training community is that there is a need to create more channels for input from training providers.

While the internal Orange County training supply and international migration supply are fairly well described by existing data sources, a future effort should be undertaken aimed at understanding the dynamics of domestic migration. Additionally, the role of economic development in influencing domestic migration dynamics should be looked at in light of Orange County employers' short-term needs, especially in cases of dramatic fundamental changes in the structure of the Orange County economy, whether positive or negative, such as the defense downsizing of the early 1990's or the current expansion of demand for IT workers.

On a related issue, another important dynamic to understand is the retention of students educated at Cal State Fullerton, UC Irvine, Chapman, and other Orange County educational institutions. The degree to which Orange County retains talented students produced by Orange County educational institutions is crucial to understanding and building upon Orange County's competitive advantages. Changes and investments made to increase capacity at Orange County education and training institutions are moot if the region ultimately loses these talented future workers to other regions in the "War for Talent". Orange County employers have told us that Orange County currently competes for workers with places such as Silicon Valley, Austin, Boston, Research Triangle, and Seattle. Better understanding the decision-making process that current and future crops of Orange County students will face is a key to ensuring a workforce supply. Additionally, understanding the dynamics

between students graduating, students we ultimately retain, and students we ultimately lose to other regions are important. Such a project would involve collaboration between Cal State Fullerton, UC Irvine, Chapman, and others to better understand and retain key talent.

Workforce Strategic Assessment

Orange County is currently facing one of its most compelling public policy, economic, and social issues – workforce development. To benchmark and assess Orange County's current position in areas such as workforce demand and supply, the Orange County Workforce Investment Board and the County of Orange have undertaken development of this report. It provides a useful starting point for examining the issue, promoting further discussion, and measuring the resulting long-term progress of Orange County's education, training, and workforce investment system.

A Gaps/Mismatches report such as this should be done annually to insure that OCWIB staff and Board members have the tools necessary with which to base sometimes complicated funding decisions about programs, research, and strategic direction. Collecting, analyzing, and reconciling local workforce demand with local training supply is crucial to implementing the spirit of the new WIA legislative mandate. Doing so on a timely basis in an innovative way will make sure that the OCWIB maintains its position as a cutting edge workforce development program.

This first report is a start and includes some newly developed measures by which the OCWIB staff and Board can measure whether workforce investment dollars are being directed to the areas offering a reasonable return. After much consideration and data analysis, one conclusion that this report reaches is that OCWIB programs under WIA should be viewed as ***"investments"*** in the future Orange County workforce. As such, models and measures which analyze whether such investments are being made strategically, and whether these investments will generate reasonable returns to both individual clients and to the Orange County economy as a whole, must remain foremost in both research efforts and program decision-making processes.

Other Conclusions and Recommendations

Labor market information is an essential cornerstone of WIA mandates to focus training resources on areas where high future labor demand is demonstrable in the local economic and labor markets. OCWIB current spending patterns for labor market information should be corroborated on a continuing basis with innovative, cost-efficient tools for assessing this labor market demand on a timely basis.

Education and training alone will not address completely all of Orange County's workforce needs, especially in the short-term. A comprehensive and effective response to Orange County's overall workforce situation demands attention and strategies common to all Orange County education and training partners. A singular focus on education and training will not - at least in the near term - change the fact that the majority of new jobs created in Orange County require minimal education and training and pay relatively low wages. As a long-term strategy, creative workforce development policies can help attract high-wage jobs. In the meantime, other policies are needed to support Orange County's workforce development and economic development.

1) Promote access to high-skilled, high-wage jobs that do exist

Education remains the best guarantee of higher earnings and improved job prospects for individual job seekers. Increasing the number of Californians who graduate from college will help alleviate the mismatch between the number of entry-level jobs and job seekers by increasing the number of persons who are qualified for jobs requiring at least a college degree.

Public policies should be aimed at improving access to higher education. They should be designed to equalize opportunity for higher education through tools such as expanded student aid, community college transfer programs, and early outreach aimed at ensuring that high school graduates are equipped to enter college if they desire to do so. Policymakers must develop creative strategies to insure that the state's historically under-represented racial and ethic groups have equal access to higher education and the employment opportunities available to those with additional education.

Workforce investment policies should boost upward mobility. Investing in training programs to help those already in the workforce achieve upward mobility can ease competition for entry-level jobs and help workers achieve higher earnings over the course of their careers. A "move-up" strategy can help address skill shortages, while freeing up positions for those not yet ready for more highly skilled occupations. Targeting training to the existing workforce can also help avert competition between the already working but poor and those leaving welfare for work by increasing wages for the former group while improving opportunity for the latter.

Welfare recipients should be encouraged to continue their education and training. As former welfare recipients enter the workforce, competition for entry-level jobs will increase. Wages in these jobs are already low, and the addition of hundreds of thousands of new competitors for low-skill jobs has the potential to drive them lower. Encouraging welfare recipients to pursue an education will reduce competition at the low end of the labor market and increase the odds that individuals leaving assistance for employment will earn enough to become self-sufficient.

2) Address short-term labor shortages innovatively with local industry

Addressing shortages in high-skill, high-wage jobs is critical to Orange County's future economic growth. If local companies cannot find or attract key talent, they will almost certainly move to locations where they can. Given current trends, it will be difficult – at least in the near-term – for Orange County to meet local companies' pressing needs for highly skilled labor in specific occupations and skill sets. While the number of openings for college- educated workers exceeds the supply of jobs seekers with a college degree, the data suggest that a more significant problem is a deficit in specific skills, rather than a simple shortage of college educated job seekers. In other words, there may be too many liberal arts majors and not enough engineers. By recognition that Orange County's economic future rests on the availability of high skilled workers fluent in information technology, Orange County must develop more engineering and high-tech talent if the Orange County high-tech sector is to reach its potential.

Keeping skills training current, much less state of the art, requires that the Orange County education and training community move to the next level in providing the most current basic and continuing education for Orange County residents. Such efforts may involve partnerships between institutions as well as innovative uses of communications and computing technology. An example is UC San Diego Extension's online CDMA courses, aimed at engineers and technicians looking to switch careers into the burgeoning wireless communications industry. Creating this sequence of courses required partnerships with leading wireless communications technology and training companies.

Over the long term, increasing the number of college graduates and technically skilled workers may encourage an expansion in the number of locally filled high-skilled jobs. In the short-term, Orange County may have to consider strategies to attract and recruit key talent from outside of Orange County to fill positions that would otherwise go unfilled locally. This becomes necessary to keep and Orange County competitive as a high-tech location and in turn Orange County firms competitive.

An example of an innovative partnership is the recent collaboration between Chapman and UC Irvine. The five-year program offers an opportunity to get two bachelors degrees – one in engineering and one in mathematics or chemistry – and to go to two different institutions, one public, one private. Students would begin their career at Chapman and finish at UC Irvine.

It is important to link the missions of education and training more closely to that of the business world. Because of global competition and technological change, the needs of business change ever more rapidly, as do their specific demands for occupational and skill training. Building a flexible system that can change to meet industry's specific training needs while maintaining a broader perspective and emphasis regarding employability skills is truly a challenge.

An example of an innovative partnership with industry is Cisco Systems high school certification classes in designing, building, and maintaining Cisco computer networks. When the students graduate after two years of the certificate program, they will have similar skills as community college graduates and should land jobs that pay from $35,000 to $50,000 per year. The program was designed to help ease a shortage of high-tech workers in Colorado and involves a partnership between Cisco, the local public school district, and a local community college.

Private education and training providers such as Learning Tree University, National University, and University of Phoenix have taken a market-driven approach to designing overall curriculum, educational courses, and training programs. These education providers build an overall curriculum around areas such as Business & Management, Information Technology, and other program areas that are experiencing high levels of demand. These providers offer educational and training selections at convenient times and in a very targeted, concentrated fashion that can best meet customer needs.

Additionally, as technical workers are for the most part self-taught, formal training programs can be supplemented by other programs such as internships. The best training programs tend to place students in internship programs, where they gain experience from real-world exercises and problem-solving.

3) Target economic development to high-wage sectors

Policymakers should target economic development programs and policies to firms and industries that demonstrate the greatest potential to create high-paying jobs. Working in tandem with Orange County cities, subregional economic development partnerships, and Countywide efforts, economic development programs should target assistance to those firms and industries that show the greatest promise of creating high-wage jobs. Although this will not eliminate the job gap overnight, it will ensure that public resources are devoted to bringing and keeping high-wage jobs in California.

4) Harmonize public and private efforts to close the gaps

Rather than persist at cross purposes, public and private leaders need to coordinate efforts to form a community “call for action” – a collaboration rather than competition.

The Orange County Workforce Partnership currently includes the following stakeholders:

Adult Schools
Cal State University Fullerton
Community Colleges
County Executive Office

Department of Rehabilitation
Employment Development Department
Orange County Business Council
Orange County Coalition – Vision 2020
Orange County Department of Education
Regional Occupational Programs
Small Business Administration
Social Services Agency
University of California, Irvine
Workforce Investment Boards

Lacking is an increased connection and input from business and industry. Each partner has separate defined duties, responsibilities, and opportunities in the workforce development, yet all are pieces of a puzzle that, unified, could form a true collaboration that advances an agenda for workforce development excellence. As stated earlier, Orange County as a whole is one labor market and regional economy. As such, we need regional strategies to address this issue. One immediate goal would be coordination that reduces or avoids any duplication of effort that may exist in the work programs of partners.

The Orange County Workforce Partnership and a shared research program are best first steps to promoting an overall level of increased cooperation, coordination, and ultimately, true collaboration between the partners. Leading the effort to coordination and leverage with other WIBs and other OC organizations would position OCWIB as being the leader and on the cutting edge. This will foster better communication with business and industry, which is seeking such a unified solution. Better articulation of the issues and problems of the education and training community will in turn allow a more focused and action oriented approach by business and industry.

SOURCES

California Community College Districts - website: www.misweb.cccco.edu

California Dept. of Ed. Demographics - website: www.cde.ca.gov

California State University - website: www.calstate.edu

Chapman University - website: www.chapman.edu

CTEP California Training and Education Providers - CD-ROM 2000, Employment Development Department's Labor Market Information Division (LMID)

ESTI, Enhanced State Training Inventory - www.soicc.ca.gov, 1999
Individual Training Provider directors, educators and employees

Milken Institute, 1999. America's High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas, by Ross DeVol, Perrry Wong, John Catapano, and Greg Robitshek. http://www.milkeninstitute.org/mod30/ross_report.pdf.

Milken Institute, 2000. Blueprint for a High-Tech Cluster: The Case of the Microsystems Industry in the Southwest, by Ross DeVol. http://www.milkeninstitute.org/pdf/pbriefs/blueprnt.pdf.

OC Metro - published 2/24/2000

Orangeworks.org – website: www.orangeworks.org

OC Occupational Outlook -published 1999, Orange County Workforce Investment Board (former Private Industry Council), includes some O-train references.

OCBC Training Provider Database and Survey – July 2000

OCBJ Book of Lists 2000, MBA Schools Directory
Occupational Employment Statistics (OES) Dictionary of Occupations (Modified for California Usage) 1997

"Occupational Employment, Wage and Educational Data," Orange Metropolitan Statistical Area (1997-2004 EDD/LMID occupational projections tables)

PTVD Private Training Vendor Directory – website: www.i-train.org

RTVD Regional Training Vendor Directory – website: www.i-train.org

University of California office of the President - website: www.ucop.edu

APPENDIX

Appendix 1: Shift-Share Analysis of Competitive Mix Component of Orange County Employment Growth, 1993-1998

Ranking of Sectors by Total Growth

At the two digit SIC level the businesses with the fastest growing share of employment are:

SIC	Industry Description	Competitive Mix	Total
73	Business services	-2263.41	32732
17	Special trade contractors	-780.486	8240
50	Wholesale trade - durable goods	-424.04	7383
58	Eating and drinking places	-2659.37	7318
51	Wholesale trade - nondurable goods	4133.865	5855
42	Trucking and warehousing	2657.19	5094
79	Amusement and recreation services	-452.432	4767
36	Electronic and other electronic equipment	2414.525	4710
61	Nondepository institutions	2037.529	4269
89	Services Administrative & Auxiliary & Other	1395.953	4117

At the three digit SIC level the businesses with the fastest growing share of employment are:

SIC	Industry Description	Competitive Mix	Total
736	Personnel supply services	-4,953.94	15,953.00
737	Computer and data processing services	5,683.25	9,604.00
421	Trucking and courier services, except air	5,531.79	5,094.00
738	Miscellaneous business services	4,921.00	4,921.00
805	Nursing and personal care facilities	2,853.99	4,395.00
866	Religious organizations	-147.21	4,304.00
799	Misc. amusement, recreation services	340.48	4,058.00
367	Electronic components and accessories	1,624.28	3,774.00
899	Services Administrative and auxiliary	1,476.49	3,383.00
511	Paper and paper products	1,127.26	3,015.00
151	General building contractors	-70.56	2,832.00
874	Management and public relations	-470.25	2,764.00
653	Real estate agents and managers	-2,204.76	2,745.00
580	Eating and Drinking Places	-12,334.56	2,683.00

As these data indicate, even among the fastest growing employment sectors, the competitive component of the shift share analysis which reflects Orange County's

unique competitive advantage relative to others areas show is often small or even negative.

Ranking of Sectors by Competitive Mix Growth

At the two digit SIC code level the sectors of the Orange County economy which have the highest competitive component in the shift share analysis are:

SIC	Industry Description	Competitive Mix	Total
23	Apparel and other textile products	4,985.57	3,730.00
51	Wholesale trade - nondurable goods	4,133.87	5,855.00
86	Membership organizations	2,753.61	4,054.00
42	Trucking and warehousing	2,657.19	5,094.00
36	Electronic and other electronic eqpment	2,414.53	4,710.00
61	Nondepository institutions	2,037.53	4,269.00
48	Communication	1,679.57	2,758.00
22	Textile mill products	1,636.01	1,390.00
39	Miscellaneous manufacturing industries	1,493.74	1,746.00
34	Fabricated metal products	1,201.64	3,491.00
75	Auto repair, services, and parking	1,114.12	3,472.00

At the three digit SIC code level the sectors of the Orange County economy that have the highest competitive component of the shift share analysis are:

SIC	Industry Description	Competitive Mix	Total
805	Nursing and personal care facilities	2,873.85	4,395.00
421	Trucking and courier services, except air	2,864.00	5,094.00
376	Guided missiles, space vehicles, parts	2,617.10	17.00
385	Ophthalmic goods	2,375.89	2,366.00
866	Religious organizations	2,332.62	4,304.00
233	Women's and misses' outerwear	2,070.16	1,120.00
495	Sanitary services	2,026.96	2,000.00
511	Paper and paper products	1,776.37	3,015.00
481	Telephone communication	1,643.88	2,172.00
810	Legal Services	1,636.92	1,736.00

Appendix 2: Sources of Demand for Non-Experienced and Experienced Workers

At the three digit SIC code level of analysis, the sectors with the highest demand for non-experienced workers are the following (in rank order):

SIC	1999	#	SIC	2000	#
581	Eating and drinking places	527	581	Eating and drinking places	1014
801	Offices and clinics of medical doctors	33	801	Offices and clinics of medical doctors	216
811	Legal services	19	811	Legal services	165
653	Real estate agents and managers	22	653	Real estate agents and managers	98
738	Miscellaneous business services	37	737	Computer and data processing services	128
874	Management and public relations	31	874	Management and public relations	103
737	Computer and data processing services	26	802	Offices and clinics of dentists	113
753	Automotive repair shops	19	753	Automotive repair shops	242
802	Offices and clinics of dentists	3	738	Miscellaneous business services	143
594	Miscellaneous shopping goods stores	63	871	Engineering and architectural services	188

At the three digit SIC code level of analysis, the sectors with the highest demand for experienced workers are the following (in rank order):

SIC	1999	#	SIC	2000	#
581	Eating Drinking Places	583	581	Eating and drinking places	1021
821	Elementary and secondary schools	382	801	Offices and clinics of medical doctors	209
835	Child day care services	126	811	Legal services	166
871	Engineering and architectural services	87	653	Real estate agents and managers	91
573	Radio, television, and computer stores	77	874	Management and public relations	103
701	Hotels and motels	80	802	Offices and clinics of dentists	109
799	Misc. amusement, recreation services	75	737	Computer and data processing services	131
594	Miscellaneous shopping goods stores	75	804	Offices of other health practitioners	65
359	Industrial machinery, n.e.c.	61	738	Miscellaneous business services	134
801	Offices and clinics of medical doctors	70	651	Real estate operators and lessors	173

Appendix 3: Education Demands and Willingness to Hire Special Circumstances Workers

At the three digit SIC code level of analysis, the sectors with the lowest overall education demands:

SIC	1999	#		2000	#
581	Eating and drinking places	568	581	Eating and drinking places	1011
801	Offices and clinics of medical doctors	70	801	Offices and clinics of medical doctors	217
753	Automotive repair shops	39	753	Automotive repair shops	239
811	Legal services	54	737	Computer and data processing services	137
738	Miscellaneous business services	56	802	Offices and clinics of dentists	112
653	Real estate agents and managers	39	594	Miscellaneous shopping goods stores	290
594	Miscellaneous shopping goods stores	73	874	Management and public relations	111
802	Offices and clinics of dentists	7	653	Real estate agents and managers	105
874	Management and public relations	25	811	Legal services	765
651	Real estate operators and lessors	40	738	Miscellaneous business services	143

Willingness to Hire Welfare Recipients

At the three digit SIC code level of analysis, the sectors with the highest percentage of willingness to hire workers who were on welfare are the following (in rank order):

SIC	1999	#	SIC	2000	#
581	Eating and drinking places	526	581	Eating and drinking places	987
801	Offices and clinics of medical doctors	56	801	Offices and clinics of medical doctors	212
753	Automotive repair shops	39	811	Legal services	161
738	Miscellaneous business services	36	737	Computer and data processing services	135
737	Computer and data processing services	23	653	Real estate agents and managers	97
874	Management and public relations	19	874	Management and public relations	107
811	Legal services	34	753	Automotive repair shops	226
594	Miscellaneous shopping goods stores	64	738	Miscellaneous business services	141
871	Engineering and architectural services	33	802	Offices and clinics of dentists	105
504	Professional and commercial equipment	26	594	Miscellaneous shopping goods stores	262

Willingness to Hire High School Workers

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire high school workers are the following (in rank order):

SIC	1999	#	SIC	2000	#
581	Eating and drinking places	515	581	Eating and drinking places	895
594	Miscellaneous shopping goods stores	50	801	Offices and clinics of medical doctors	98
562	Women's clothing stores	6	594	Miscellaneous shopping goods stores	214
566	Shoe stores	2	811	Legal services	12
554	Gasoline service stations	21	874	Management and public relations	16
864	Civic and social associations	1	599	Retail stores, n.e.c.	82
784	Video tape rental	5	653	Real estate agents and managers	28
799	Misc. amusement, recreation services	42	737	Computer and data processing services	40
573	Radio, television, and computer stores	27	802	Offices and clinics of dentists	75
599	Retail stores, n.e.c.	34	753	Automotive repair shops	231

Willingness to Hire Part-Time Workers

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire part-time workers are the following (in rank order):

SIC	1999	#	SIC	2000	#
581	Eating and drinking places	553	581	Eating and drinking places	1002
594	Miscellaneous shopping goods stores	58	801	Offices and clinics of medical doctors	142
802	Offices and clinics of dentists	7	874	Management and public relations	35
737	Computer and data processing services	16	594	Miscellaneous shopping goods stores	214
653	Real estate agents and managers	31	811	Legal services	77
541	Grocery stores	69	802	Offices and clinics of dentists	76
866	Religious organizations	23	653	Real estate agents and managers	28
723	Beauty shops	46	738	Miscellaneous business services	30
738	Miscellaneous business services	38	599	Retail stores, n.e.c.	84
801	Offices and clinics of medical doctors	61	737	Computer and data processing services	58

Willingness to Hire Temporary Workers

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire temporary workers are the following (in rank order):

SIC	1999	#	SIC	2000	#
581	Eating and drinking places	525	581	Eating and drinking places	998
594	Miscellaneous shopping goods stores	55	801	Offices and clinics of medical doctors	141
811	Legal services	42	811	Legal services	76

736 Personnel supply services	20	737 Computer and data processing services	58
653 Real estate agents and managers	18	653 Real estate agents and managers	28
729 Miscellaneous personal services	17	802 Offices and clinics of dentists	77
737 Computer and data processing services	20	594 Miscellaneous shopping goods stores	212
734 Services to buildings	16	871 Engineering and architectural services	89
172 Painting and paper hanging	9	738 Miscellaneous business services	70
651 Real estate operators and lessors	32	874 Management and public relations	35

Willingness to Hire Workers Under the Age of Twenty-One

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire workers under the age of twenty-one are the following (in rank order):

1999 Only

SIC	#
581 Eating and drinking places	511
801 Offices and clinics of medical doctors	42
594 Miscellaneous shopping goods stores	51
738 Miscellaneous business services	33
653 Real estate agents and managers	12
874 Management and public relations	8
737 Computer and data processing services	13
599 Retail stores, n.e.c.	33
541 Grocery stores	66
804 Offices of other health practitioners	7

Willingness to Hire Workers as Interns

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire workers as interns are the following (in rank order):

1999 Only

SIC	#
581 Eating and drinking places	525
801 Offices and clinics of medical doctors	69
653 Real estate agents and managers	34
737 Computer and data processing services	46
753 Automotive repair shops	39
871 Engineering and architectural services	74
738 Miscellaneous business services	45

874	Management and public relations	25
651	Real estate operators and lessors	39
804	Offices of other health practitioners	12

Willingness to Hire Workers on a Seasonal Basis

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire workers on a seasonal basis are the following (in rank order):

2000 Only

SIC		**#**
581	Eating and drinking places	1043
801	Offices and clinics of medical doctors	227
811	Legal services	176
737	Computer and data processing services	138
874	Management and public relations	115
753	Automotive repair shops	250
653	Real estate agents and managers	109
738	Miscellaneous business services	148
871	Engineering and architectural services	203
802	Offices and clinics of dentists	118

Willingness to Hire Workers who are Bilingual

At the three digit SIC code level of analysis, the sectors with the highest percentage of frequency to hire workers who are bilingual speaking are the following (in rank order):

2000 Only

SIC		**#**
581	Eating and drinking places	984
801	Offices and clinics of medical doctors	211
811	Legal services	151
653	Real estate agents and managers	91
802	Offices and clinics of dentists	111
753	Automotive repair shops	226
738	Miscellaneous business services	135
874	Management and public relations	101
594	Miscellaneous shopping goods stores	276
508	Machinery, equipment, and supplies	120

Appendix 4: Comparisons of the 1999 and 2000 ERISS Survey Results

Percentage results of highest demand occupations for non-experienced employees:

SIC		Number	Great	Some	None	Never Hire
735	Misc. equipment rental and leasing	39	53.33%	8.00%	20.00%	18.67%
721	Laundry, cleaning, and garment services	42	21.43%	13.66%	59.62%	5.28%
525	Hardware stores	22	13.64%	31.82%	45.45%	9.09%
569	Misc. apparel and accessory stores	28	7.14%	35.71%	42.86%	14.29%
74	Veterinary services	55	16.36%	23.64%	36.36%	23.64%
603	Savings institutions	18	3.23%	40.86%	39.78%	16.13%
531	Department stores	92	8.70%	17.39%	66.30%	7.61%
769	Miscellaneous repair shops	27	10.71%	33.33%	27.38%	28.57%
784	Video tape rental	41	7.32%	19.51%	63.41%	9.76%
593	Used merchandise stores	17	5.88%	29.41%	47.06%	17.65%

1999

Percentage results of highest demand occupations for non-experienced employees:

SIC	Industry Description	Number	Great	Some	None	Never Hire
754	Automotive services, except repair	31	9.35%	34.43%	46.87%	6.27%
549	Miscellaneous food stores	22	20.82%	12.51%	58.36%	0.00%
734	Services to buildings	31	15.18%	18.18%	60.54%	0.00%
525	Hardware stores	15	6.71%	13.31%	73.27%	6.71%
581	Eating and drinking places	527	5.83%	23.13%	59.47%	2.46%
721	Laundry, cleaning, and garment services	18	9.51%	19.02%	57.16%	0.00%
553	Auto and home supply stores	28	3.08%	39.34%	36.37%	6.04%
591	Drug stores and proprietary stores	29	3.15%	25.00%	50.00%	12.50%
531	Department stores	42	9.44%	26.45%	39.63%	3.73%
546	Retail bakeries	19	9.10%	9.10%	68.20%	0.00%

Experienced -- 2000

Percentage results of highest demand occupations for experienced employees:

SIC		Number	Great	Some	None	Never Hire
735	Misc. equipment rental and leasing	33	68.00%	10.67%	12.00%	9.33%
359	Industrial machinery, n.e.c.	106	61.54%	15.38%	17.95%	5.13%
74	Veterinary services	57	49.09%	29.09%	21.82%	0.00%
769	Miscellaneous repair shops	27	38.10%	41.67%	20.24%	0.00%
762	Electrical repair shops	16	53.54%	8.08%	38.38%	0.00%
555	Boat dealers	20	50.00%	20.00%	25.00%	5.00%
864	Civic and social associations	16	33.33%	55.56%	0.00%	11.11%
501	Motor vehicles, parts, and supplies	46	37.40%	33.03%	28.49%	1.08%

723	Beauty shops	117	41.03%	25.64%	31.62%	1.71%
871	Engineering and architectural services	196	40.79%	23.31%	33.83%	2.07%

1999

Percentage results of highest demand occupations for experienced employees:

SIC	Industry Description	Number	Great	Some	None	Never Hire
175	Carpentry and floor work	19	58.77%	17.65%	23.58%	11.73%
872	Accounting, auditing, and bookkeeping	20	40.00%	45.00%	15.00%	0.00%
501	Motor vehicles, parts, and supplies	18	33.30%	55.60%	11.10%	0.00%
762	Electrical repair shops	14	42.83%	42.83%	7.17%	7.17%
176	Roofing, siding, and sheet metal work	19	27.77%	55.54%	16.68%	5.60%
357	Computer and office equipment	23	26.10%	56.50%	17.40%	0.00%
753	Automotive repair shops	39	47.53%	22.50%	22.50%	5.05%
272	Periodicals	15	33.30%	40.00%	26.70%	0.00%
74	Veterinary services	22	22.72%	54.55%	22.72%	0.00%
354	Metalworking machinery	16	50.00%	22.20%	16.70%	0.00%

Temporary Employees -- 2000

Percentage results of highest demand occupations for temporary employees:

SIC	Industry Description	Number	Never	Rarely	Sometimes	Frequently
561	Men's and boys' clothing stores	35	42.86%	17.14%	20.00%	20.00%
161	Highway and street construction	21	42.86%	14.29%	28.57%	14.29%
737	Computer and data processing services	58	48.74%	8.10%	27.17%	15.99%
733	Mailing, reproduction, stenographic	46	50.21%	14.36%	13.22%	22.21%
653	Real estate agents and managers	28	35.71%	25.00%	35.71%	3.57%
731	Advertising	21	30.61%	33.16%	36.22%	0.00%
173	Electrical work	25	48.00%	20.00%	12.00%	20.00%
729	Miscellaneous personal services	23	51.72%	3.45%	34.98%	9.85%
174	Masonry, stonework, and plastering	38	42.12%	13.22%	44.66%	0.00%
531	Department stores	82	48.78%	18.29%	20.73%	12.20%

1999

Percentage results of highest demand occupations for temporary employees:

SIC	Industry Description	Number	Never	Rarely	Sometimes	Frequently
729	Miscellaneous personal services	17	35.26%	11.79%	5.89%	47.05%
736	Personnel supply services	20	25.00%	15.00%	25.00%	35.00%
367	Electronic components and accessories	22	4.50%	31.80%	18.20%	45.50%
734	Services to buildings	16	12.49%	24.98%	6.29%	56.24%
799	Misc. amusement, recreation services	60	20.00%	10.00%	10.00%	60.00%
594	Miscellaneous shopping goods	55	16.40%	9.10%	20.00%	54.50%

	stores					
308	Miscellaneous plastics products, n.e.c.	35	8.56%	25.69%	5.71%	60.04%
173	Electrical work	21	14.30%	14.30%	9.50%	61.90%
731	Advertising	20	5.00%	30.00%	5.00%	60.00%
74	Veterinary services	21	9.51%	19.02%	9.51%	61.96%

Part-time Employees

2000

Percentage results of highest demand occupations for part-time employees:

SIC	Industry Description	Number	Never	Rarely	Sometimes	Frequently
784	Video tape rental	27	0.00%	0.00%	7.41%	92.59%
603	Savings institutions	15	0.00%	3.57%	10.71%	85.71%
562	Women's clothing stores	60	5.00%	0.00%	16.67%	78.33%
525	Hardware stores	17	11.76%	0.00%	11.76%	76.47%
531	Department stores	83	9.64%	3.61%	12.05%	74.70%
566	Shoe stores	34	2.94%	11.76%	17.65%	67.65%
541	Grocery stores	141	10.64%	3.55%	14.89%	70.92%
594	Miscellaneous shopping goods stores	214	8.14%	9.80%	15.23%	66.83%
549	Miscellaneous food stores	32	12.50%	3.13%	18.75%	65.63%
799	Misc. amusement, recreation services	93	14.39%	2.10%	22.22%	61.29%

1999

Percentage results of highest demand occupations for part-time employees:

SIC	Industry Description	Number	Never	Rarely	Sometimes	Frequently
549	Miscellaneous food stores	16	81.22%	6.29%	12.49%	0.00%
799	Misc. amusement, recreation services	54	61.04%	12.99%	5.59%	20.38%
581	Eating and drinking places	553	51.16%	24.07%	12.08%	12.69%
729	Miscellaneous personal services	15	53.35%	20.02%	13.31%	13.31%
541	Grocery stores	69	52.18%	24.67%	5.79%	17.36%
591	Drug stores and proprietary stores	21	52.40%	14.30%	19.00%	14.30%
866	Religious organizations	23	52.20%	17.40%	8.70%	21.70%
835	Child day care services	111	44.14%	27.03%	11.71%	17.12%
723	Beauty shops	46	47.80%	21.70%	10.90%	19.60%
594	Miscellaneous shopping goods stores	58	51.70%	15.50%	6.90%	25.90%

High School Students – 2000

Percentage results of highest demand occupations for high school students as employees:

SIC		Number	Never	Rarely	Sometimes	Frequently
784	Video tape rental	26	0.00%	15.38%	34.62%	50.00%
525	Hardware stores	17	11.76%	5.88%	29.41%	52.94%
566	Shoe stores	34	8.82%	8.82%	41.18%	41.18%
599	Retail stores, n.e.c.	82	33.77%	6.41%	16.52%	43.30%
546	Retail bakeries	59	28.81%	13.56%	27.12%	30.51%
531	Department stores	82	29.27%	18.29%	23.17%	29.27%
561	Men's and boys' clothing stores	35	34.29%	17.14%	14.29%	34.29%
594	Miscellaneous shopping goods stores	214	28.36%	25.82%	19.79%	26.04%
591	Drug stores and proprietary stores	44	31.82%	18.18%	31.82%	18.18%
74	Veterinary services	24	33.33%	16.67%	33.33%	16.67%

1999

Percentage results of highest demand occupations for high school students as employees:

SIC		Number	Never	Rarely	Sometimes	Frequently
549	Miscellaneous food stores	15	40.00%	26.70%	20.00%	13.30%
581	Eating and drinking places	515	31.43%	21.99%	10.44%	36.14%
754	Automotive services, except repair	29	17.22%	31.03%	17.22%	34.53%
594	Miscellaneous shopping goods stores	50	20.02%	20.02%	25.95%	34.00%
799	Misc. amusement, recreation services	42	23.85%	21.39%	7.16%	47.59%
573	Radio, television, and computer stores	27	7.41%	37.04%	14.81%	40.74%
554	Gasoline service stations	21	19.02%	19.02%	14.31%	47.65%
546	Retail bakeries	22	27.30%	4.50%	18.20%	50.00%
591	Drug stores and proprietary stores	17	17.69%	11.76%	23.52%	47.03%
531	Department stores	37	21.60%	13.50%	5.40%	59.50%

Welfare

2000

Percentage results of highest willingness to hire former welfare recipients as employees:

SIC		Number	Yes	No
175	Carpentry and floor work	27	100.00 %	0.00%
74	Veterinary services	57	97.14%	2.86%
784	Video tape rental	38	96.88%	3.13%
531	Department stores	91	95.24%	4.76%
546	Retail bakeries	61	95.00%	5.00%
554	Gasoline service stations	108	94.68%	5.32%
833	Job training and related services	22	94.12%	5.88%
603	Savings institutions	19	93.75%	6.25%
754	Automotive services, except repair	69	93.62%	6.38%
566	Shoe stores	54	93.33%	6.67%

1999

Percentage results of highest willingness to hire former welfare recipients as employees:

SIC		Number	Yes	No
734	Services to buildings	29	100.00%	0.00%
554	Gasoline service stations	22	100.00%	0.00%
525	Hardware stores	16	100.00%	0.00%
531	Department stores	47	97.85%	2.15%
347	Metal services, n.e.c.	22	95.50%	4.50%
723	Beauty shops	41	95.17%	4.83%
602	Commercial banks	20	95.05%	4.95%
367	Electronic components and accessories	20	95.05%	4.95%
591	Drug stores and proprietary stores	20	94.96%	5.04%
839	Social services, n.e.c.	18	94.41%	5.59%

Education

2000

SIC		#	None	High School	Training	Vocational School	Some College	Associate	Bachelors	Graduate
356	General industrial machinery	27	22.80%	27.46%	26.42%	53.89%	9.33%	0.00%	13.99%	0.00%
175	Carpentry and floor work	29	40.00%	60.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%
501	Motor	45	31.35%	60.29%	1.35%	20.87%	5.67%	0.00%	0.00%	1.35%

	vehicles, parts, and supplies									
177	Concrete work	24	33.33%	50.00%	11.11%	16.67%	5.56%	0.00%	0.00%	0.00%
753	Automotive repair shops	239	28.54%	32.86%	30.59%	18.27%	6.72%	1.12%	0.00%	0.16%
171	Plumbing, heating, air-conditioning	102	20.25%	50.63%	10.13%	22.78%	12.66%	2.53%	3.80%	0.00%
344	Fabricated structural metal products	17	68.75%	12.50%	6.25%	6.25%	12.50%	0.00%	0.00%	0.00%
581	Eating and drinking places	1011	45.98%	44.59%	0.48%	7.61%	8.36%	0.37%	0.16%	0.05%
723	Beauty shops	110	16.67%	30.00%	47.78%	20.00%	4.44%	1.11%	0.00%	0.00%
721	Laundry, cleaning, and garment services	40	58.15%	37.19%	1.61%	0.00%	2.24%	0.00%	0.00%	0.81%

1999

SIC		#	None	High School	Vocational School	Some College	Associate	Bachelors	Graduate
721	Laundry, cleaning, and garment services	20	59.98%	40.02%	0.00%	0.00%	0.00%	0.00%	0.00%
581	Eating and drinking places	568	65.92%	30.11%	1.02%	1.02%	0.92%	1.02%	0.00%
754	Automotive services, except repair	33	66.70%	30.31%	0.00%	0.00%	0.00%	2.99%	0.00%
549	Miscellaneous food stores	22	54.55%	45.45%	0.00%	0.00%	0.00%	0.00%	0.00%
546	Retail bakeries	22	54.55%	40.94%	0.00%	4.50%	0.00%	0.00%	0.00%
553	Auto and home supply stores	31	51.64%	45.18%	0.00%	0.00%	3.18%	0.00%	0.00%
554	Gasoline service stations	23	43.50%	52.20%	0.00%	4.30%	0.00%	0.00%	0.00%
525	Hardware stores	11	46.13%	46.13%	0.00%	7.75%	0.00%	0.00%	0.00%
57	Furniture and	47	46.80%	40.40%	6.40%	6.40%	0.00%	0.00%	0.00%

1 homefurnishings stores								
54 Grocery stores 1	80	44.98%	44.98%	6.28%	1.22%	0.00%	2.53%	0.00%

Bilingual Speakers

Percentage results of highest willingness to hire bilingual speakers as employees:

2000

SIC	Number	Yes	No
8230 Libraries	37	78.38%	21.62%
8060 Hospitals	107	77.07%	22.93%
5130 Apparel, piece goods, and notions	16	73.91%	26.09%
3440 Fabricated structural metal products	16	68.57%	31.43%
5250 Hardware stores	22	68.18%	31.82%
7010 Hotels and motels	219	66.67%	33.33%
5080 Machinery, equipment, and supplies	120	64.81%	35.19%
3470 Metal services, n.e.c.	32	64.55%	35.45%
7620 Electrical repair shops	15	64.42%	35.58%
5070 Hardware, plumbing and heating equipment	44	63.76%	36.24%

Seasonal Workers

Percentage results of highest willingness to hire seasonal workers as employees:

2000

SIC	Number	Yes	No
175 Carpentry and floor work	31	100.00%	0.00%
308 Miscellaneous plastics products, n.e.c.	52	97.53%	2.47%
74 Veterinary services	57	97.14%	2.86%
784 Video tape rental	42	96.88%	3.13%
603 Savings institutions	19	96.55%	3.45%
531 Department stores	94	95.24%	4.76%
546 Retail bakeries	66	95.00%	5.00%
513 Apparel, piece goods, and notions	17	95.00%	5.00%
554 Gasoline service stations	111	94.68%	5.32%
833 Job training and related services	24	94.12%	5.88%

Interns

1999

SIC	Number	Yes	No
345 Screw machine products, bolts, etc.	16	81.22%	18.78%
836 Residential care	16	81.22%	18.78%
525 Hardware stores	15	73.35%	26.65%
554 Gasoline service stations	22	72.70%	27.30%
173 Electrical work	23	69.57%	30.43%
591 Drug stores and proprietary stores	21	66.67%	33.33%
74 Veterinary services	20	65.02%	34.98%
839 Social services, n.e.c.	20	65.02%	34.98%
832 Individual and family services	36	63.90%	36.10%
501 Motor vehicles, parts, and supplies	13	61.55%	38.45%

Under Twenty-one

1999

SIC	Number	Frequently	Sometimes	Rarely	Never
549 Miscellaneous food stores	15	66.70%	33.30%	0.00%	0.00%
581 Eating and drinking places	511	45.05%	30.71%	11.72%	12.53%
594 Miscellaneous shopping goods stores	51	49.01%	21.60%	11.73%	17.65%
531 Department stores	35	34.29%	42.86%	8.57%	14.29%
541 Grocery stores	66	36.36%	36.36%	12.12%	15.15%
602 Commercial banks	15	33.33%	46.64%	0.00%	20.02%
799 Misc. amusement, recreation services	43	37.20%	34.90%	11.60%	16.30%
554 Gasoline service stations	21	38.10%	28.60%	19.00%	14.30%
591 Drug stores and proprietary stores	16	37.50%	37.50%	0.00%	25.00%
553 Auto and home supply stores	25	32.00%	32.00%	12.00%	24.00%

Appendix 5: Gap Analysis

Orange County faces a potential gap/mismatch at two crucial points along with education/experience/training skill ladder that could be exacerbated by domestic migration population losses. For example, according to projected demand, Orange County faces a gap of 100 workers annually at the doctoral and professional degree levels. An additional 100 potential workers that are produced in Orange County in each category could be lost to domestic migration under the following domestic migration loss estimation scenario (50% retention capture of UCI Masters and Ph.D.'s, 75% retention capture of Cal State Fullerton and Chapman Masters).

While Orange County internally generated workforce supply and international migration to Orange County are stable and predictable over time, Orange County domestic migration varies greatly over time and is affected by such diverse economic development factors as economic climate, housing prices, and competition with other U.S. metropolitan locations. Domestic migration retention issues also affect Masters degree and Bachelors degree level supply and demand outlooks in large part.

Orange County
International and Domestic Migration

Orange County Migration	International	Domestic
1991	21,881	-30,419
1992	27,017	-26,643
1993	27,709	-34,065
1994	23,961	-30,873
1995	24,055	-27,339
1996	23,457	-21,813
1997	26,896	830
1998	26,297	1,568
1999	25,886	-18,912
Net Migration 1990-1999	233,168	-196,018

Source: U.S. Census Dept.

At the Doctoral degree level, Orange County is projected to run a deficit of at least 100 workers each year, which could escalate to 200 workers per year if we are losing new Ph.D.'s to other domestic locations. The Professional degree category mirrors these numbers exactly, so under the best scenario Orange County has a deficit of 200 workers annually at the upper levels of employer needs, and a conservative estimate of domestic migration movement patterns

puts the deficit at 400 per year. These upper-end occupations are the highest paid jobs in Orange County.

At the Masters degree level, Orange County produces an oversupply for what the projected local needs are. Some of these Masters degree level workers may be pressed into service taking jobs that would otherwise be filled by Professional level and Doctoral level workers, but the majority probably accept positions lower on the skill level ladder. This is indicated by the fact that Masters degree positions pay significantly less than Bachelors degree positions with work experience. Orange County also faces a deficit of Bachelors degree with work experience level workers. At the Bachelor's level, Orange County produces more than the annual demand requires, but potentially loses much of the surplus through domestic migration loss (at current projected capture rates). Much of the surplus is also absorbed by Bachelor degree workers moving up to Bachelors degree plus experience positions.

Orange County produces approximately 14,000 community college graduates per year, significantly more than projected annual demand for this skill level. AA degree workers fill positions at the Post-secondary Vocational Education, Work Experience, and long- and moderate-term on the job training level, as there is a short supply of this level of worker. There is also a shortage of Orange County workers to fill the short-term on the job training level jobs, and these are in all likelihood filled by workers with a higher level of training.

High Competitive Advantage	Manufacturing Wholesale Trade	Construction Services
Low Competitive Advantage	Agriculture Mining Transport & Public Utilities Retail Trade FIRE	None
	Low Cluster Growth Rate	**High Cluster Growth Rate**

At a more MICRO LEVEL, Orange County's industry sectors are broken out by growth and Orange County's competitive position in the next matrix.

High Competitive Advantage	Amusement & Recreation Apparel Auto Dealers Wholesale Trade • Durable • Non durable	Business Services Communications Electronics Fabricated Metal Products Nondepository Institutions Special Trade Contractors
Low Competitive Advantage	Depository Institutions Food Stores Industrial Machinery Trucking & Warehousing	Engineering & Management General Retail Health Services Heavy Construction Hotels & Lodging Insurance Carriers Membership Organizations Restaurants Rubber & Plastics Transport Equipment
	Low Cluster Growth Rate	**High Cluster Growth Rate**

For example, in order to better understand the wealth creation potential of the patterns of job growth in the Orange County economy, an analysis was performed linking the occupations that exist in particular fast growing industries with the wages for Experienced and Non-Experienced employees in each of these sectors. This tools provides a way for the OCWIB Board and staff to make better judgments can be made about how to and which fields to invest employment training resources in where wage increases due to experience are maximized.

Following is a table of the job growth, wages for the top nine sectors, wealth created and ratio of wage increase due to experience. Data was collected from County Business Patterns for Orange County in 1993 and 1997 at the three digit SIC code level. The top nine sectors comprised 63% of the job growth in Orange County between 1993 and 1997.

The Value of Training & Experience on Wages in Orange County's Fastest Growing Industries

SIC	Top 9 Three Digit SIC job growth 1993-1997	Job Growth	Starting Wage Inexperienced	Starting Wage Experienced	Ratio of Wealth Increase Due to Experience
736	Personnel Supply Services	15,953	$10.51	$14.17	1.35
737	Computer and Data Processing Services	9,604	$12.82	$20.33	**1.59**
427	Trucking and Courier Services (except air)	5,094	$9.52	$12.97	1.36
738	Misc. Business Services	4,921	$9.73	$13.67	**1.41**
805	Nursing and Personal Care Facilities	4,395	$9.38	$11.59	1.24
866	Religious Organizations	4,304	$10.39	$12.48	1.20
799	Misc. Amusement Recreation Services	4,058	$6.92	$8.66	1.25
367	Electronic Components and Accessories	3,774	$11.28	$17.15	**1.52**
511	Paper and Paper Products	3,015	$8.80	$11.96	1.36
	TOTAL, AVERAGE	55,118	$9.93	$13.66	1.36

This table reveals that the high technology (Computer & Data Processing Services and Electronic Components and Accessories) sectors pay the highest wage differential due to experience. Miscellaneous Business Services is also above average for these high growth sectors. Due to the high growth and high wage differential for experience, policy makers should invest in trainers that create internships that provide experience for prospective workers because in high technology fields and business services on-the-job experience matters greatly for starting wages. Assuming that training is a substitute for experience, and that the demonstrated differential between wage levels for experienced and inexperienced workers expresses the need (or return on investment) for training, the OCWIB should concentrate resources on those occupations and skillsets where there is a demonstrated higher than average return. During the next phase of the Workforce Assessment, all industry clusters will be examined to select those demonstrating high training returns on investment.

SIC	Top 9 Three Digit SIC job growth 93-97	Total Wealth Inexperienced	Total Wealth Experienced
736	Personnel Supply Services	$348,745,342.40	$470,159,158.56
737	Computer and Data Processing Services	$256,007,638.76	$406,110,595.07
427	Trucking and Courier Services (except air)	$190,210,886.98	$259,026,282.67
738	Misc. Business Services	$99,545,924.80	$139,873,979.09
805	Nursing and Personal Care Facilities	$85,739,897.45	$105,920,672.00
866	Religious Organizations	$93,044,445.87	$111,731,840.00
799	Misc. Amusement Recreation Services	$58,392,347.52	$73,067,806.93
367	Electronic Components and Accessories	$88,580,740.11	$134,661,809.45
511	Paper and Paper Products	$55,193,528.00	$74,984,738.40

This chart demonstrates the potential economic and wealth creation effects of focusing workforce training efforts at occupational clusters that exhibit need for trained, experienced workers. For example, training approximately 10,000 computer and data processing service employees will result in a wealth creation effect of approximately $150 million in increased worker compensation.

In general, labor market information and any gaps/mismatches found in the course of the Workforce Assessment needs to be highly integrated with the strategic planning efforts undertaken by the OCWIB. In future annual strategic assessment efforts, the process should be conducted by the OCBC on a more collaborative basis with the OCWIB Labor Market Information Committee, OCWIB staff, and the full OCWIB Board. Such a collaborative atmosphere would insure that the data, analyses, reports, and conclusions would form a solid fact-based foundation from which the OCWIB can make future funding decisions, and a road map for future OCWIB strategic planning efforts.

In addition, as described in a subsequent recommendation item, Orange County as a whole needs a facilitated workforce development strategy plan incorporating the OCWIB, ROP's, community colleges, etc. Current discussions between workforce development parties have not reached the necessary level of integration to foster the true partnership that is necessary to optimize workforce efforts and resource investments.

Such a strategic plan would build upon the Workforce Assessment to assess the role of each party and an implementation plan addressing such issues as:

Technology – recognizing advances and innovations for delivery of training and education programs and information, technology assessment is needed for Orange County workforce institutions and organizations to be effective and for Orange County youth and workers to be effective. Additionally, the feasibility/acceptance of distance/eLearning opportunities should be researched and assessed

Markets – Orange County's population is changing. To address ethnic and cultural diversity opportunities, this section needs to address the changing

workplace and shifts in the geography, age, and composition of Orange County's workforce

Nexus/Leverage with Economic Development efforts – aggressive steps need to be taken to expand the relationship between workforce development efforts and economic development efforts. Only when there is overlap between the ED and WD missions and promotion will Orange County's future economic image and well-being be ensured and optimized. Such efforts should be built around Orange County's dynamic clusters – information technology, broadband and communications hardware equipment, biomedical, and other high-tech manufacturing

Coordination/Administration – Success will not be achievable unless there is strong leadership aimed at coordinating workforce efforts on a county-wide basis. The strategic plan should outline a process and leadership structure that will support and facilitate cooperation and collaboration.