Section I

Economic Base and Workforce Conditions of Los Angeles County 1982-2003: Major Industries in Focus

Economic Base and Workforce Conditions of Los Angeles County 1982-2003: Major Industries in Focus

Methodology

One of the most significant demographic shifts in Los Angeles County over the past two decades is the influx of people from different ethnic backgrounds and countries. This population growth took place in the context of continuing regional economic shifts. Traditional blue-collar manufacturing establishments that employed many urban workers succumbed to cheaper labor oversees. And with the end of the Cold War came cutbacks in defense spending that hit Los Angeles County particularly hard.

Our analysis uncovered a growing divide between the low-skill and high-skill business base and workforce. Los Angeles County developed technology-driven industry clusters, while at the same time, growing in businesses engaged in apparel, dining and low-end services. The need for a more detailed understanding of the economic and demographic processes, and wage and housing expense differentials, is evident from our analysis.

Los Angeles is a multi-dimensional, considerably complex mix of global cultures, industries and perceptions. At a time when some economists were warning that the Los Angeles County economy had entered a period of sustained decline, one noted, ''The economy of Los Angeles reinvented itself. There is enough of an upward tug being exerted by some of the 'new' Los Angeles industries, to compensate for the remaining nongrowth contributing sectors.''[1] Another said, ''Writings on Los Angeles highlight the city as a flashpoint for theoretical and empirical research on post-modernism, post-Fordism, globalization, urban spatial development, cultural heterogeneity, and symbolic mediation.''[2] It was observed that Los Angeles is ''indisputably the largest high-technology industrial region in the world.''[3] One RAND senior researcher viewed Los Angeles as a place on the edge with many new faces. ''At its best, L.A.'s vision of tomorrow is of a middle class – Asian, Anglo and Latino – that is almost entirely unconscious of race... At its worst, what Los Angeles offers is the specter of a growing immigrant underclass – with neither enough jobs nor skills to advance into the middle classes.''[4] Lastly it was noted that ''myths depict Los Angeles as a violent land, an entertainment mecca – anything but a real place where people are in constant need of better living conditions.''[5]

These findings naturally lead to the following questions: What are Los Angeles County's major industries that contribute significantly to its local employment growth? How do the wage distributions vary by industry and compare to local and national trends? Is Los Angeles County facing a growing wage gap between skilled and unskilled workers? Is there a growing ''ethnic economy'' not linked to upward social mobility?[6] Looking at globalization and the current labor market for highly educated workers, is there evidence that Los Angeles County is highly affected by offshoring of skilled white-collar jobs?

Understanding long-term patterns of employment and wage growth by industry and occupation, especially the rewards associated with knowledge-related occupations, may help policymakers improve workplace opportunities for less-educated workers and better define the options that the city government could pursue to ensure growth and economic competitiveness.

Our analysis looks at the impact to the economy of Los Angeles County's recent period of dynamic change and today's situation one decade after the downturn of the 1990s. The economic environment in which Los Angeles County operates has changed considerably over the last 20 years with highly internationalized capital, electronic information networks, mobile management and production resources that decentralized labor processes and markets.

The statistical analysis that follows profiles employment and workforce trends in Los Angeles County from 1982 to 2003 and presents key findings regarding the effects of the economic recession, restructuring and transition from a manufacturing-dominated economy to a services-oriented, knowledge economy.

By focusing on in-depth labor market research, we address three general issues:

1. We investigate Los Angeles County's regional labor market conditions, which varied substantially over the business cycle, and structural changes of the past 20 years. Different industry sectors have been progressing and growing at different rates, signaling important changes in specialization. Where manufacturing once played an important role in Los Angeles County's economic stability, that sector is declining while the service sector experienced rapid growth, placing new demands on a highly educated workforce. Among the questions addressed are: What are the industries in Los Angeles County with the best growth prospects? What industry sectors encountered turbulence and job losses? Is Los Angeles County becoming overly dependent upon a few sectors to drive its economic expansion? Is the long-run trend of employment growth outpacing wage growth, creating widening earning gaps, or is there a balanced growth? Wage gaps provide insight as to how well segments of the labor force are performing as market circumstances and economic trends change over time, with education and worker training playing an important role in the determination of wages. We measure trends in wage gaps in Los Angeles County over the last two decades by comparing average annual wages in 1982, 1992 and 2003.

2. A comprehensive comparison of our analyzed data set and industry profile of Los Angeles County to Orange County, Ventura County and the U.S. within this analytical framework highlights Los Angeles County's distinctive economic development and the change of its core economic base, identifies multiple forces that have caused job losses in recent years and examines challenges to future growth.

3. Los Angeles County is well known for its emphasis on developing new products and supporting entrepreneurial ventures. We identify the relationships between human capital formation, technology and economic growth, with a particular focus on how technology contributes to the transition of Los Angeles County's economy and its impact on the labor market and wage structure. Is there an increasing fraction of workers in Los Angeles County that consists of scientists and engineers who are engaged in research and development (R&D)? How does Los Angeles County rank in its increases in R&D intensity or in the time spent accumulating skills as compared to the local region, California and to the United States?

As the task of identifying the changes in the workforce and the forces that have driven those economic changes are the major challenges addressed in this first section, it is useful to start with an outline of the employment trends for 1982 and 2003. Comparing the top 20 industry lists over a 20-year history effectively illuminates the changes in relative importance and comparative advantages among industry sectors in Los Angeles County, the surrounding regions, California and the U.S.

Labor Market Analysis of Two Decades by Region and Industry

Los Angeles County's Top 20 Industries Ranked by Employment, 1982

Los Angeles County has a diverse economic base. In 1982, the county was a center of manufacturing, aerospace industry and finance. Table 1 below shows the relationship between Los Angeles County's major industry sectors in 1982 and 2003, measured as a percent share of total employment.

Next to government and retail trade, the manufacturing industry clearly occupied a special place in Los Angeles County's economy in 1982, serving as a driving force for its economic growth and representing 23.7 percent of total employment. By 2003, the manufacturing sector accounted for only 12.5 percent of total county employment.

Another core sector at that time was the financial sector with a 6.6 percent share of total employment, which declined to 6.0 percent of total employment in 2003. At that time, major banks and financial institutions dominated Los Angeles County's business landscape, and business services occupied the third-largest industry sector in terms of employment. Over the past 21 years, this sector has emerged as the second-largest industry sector in the county, with a job count of 568,500 in 2003. The leisure and hospitality industry, which saw employment rise by 61 percent or 137,550 jobs over the 1982-2003 period, has also played an important role in the county's economic development.

Table 1-I

Los Angeles County - Employment

		1982		2003		1982-2003	
Sector	NAICS	Emp.	% of Total	Emp.	% of Total	Net Job Creation	% Emp. Growth
Educational Services	61	69,840	2.0	96,420	2.4	26,580	38
Health Care & Social Assistance	62	256,550	7.2	363,840	9.1	107,290	42
Financial Activities	FI	234,440	6.6	239,800	6.0	5,360	2
Government	GV	470,200	13.2	599,160	15.0	128,960	27
Leisure & Hospitality	LH	225,910	6.4	363,460	9.1	137,550	61
Manufacturing	MF	844,670	23.7	500,040	12.5	-344,630	-41
Professional & Business Services	PS	359,330	10.1	568,500	14.2	209,170	58
Natural Resources & Mining	RM	15,200	0.4	3,760	0.1	-11,440	-75
Retail Trade	RT	356,470	10.0	399,500	10.0	43,030	12
Transportation, Warehousing & Utilities	TU	131,520	3.7	163,250	4.1	31,730	24
Construction	23	111,740	3.1	133,480	3.3	21,740	19
Wholesale Trade	42	196,870	5.5	214,370	5.4	17,500	9
Information	51	164,430	4.6	198,830	5.0	34,400	21
Other Services (except Public Administration)	81	119,480	3.4	145,800	3.7	26,320	22
Total		3,556,650	100	3,990,210	100	433,560	12

Sources: Economy.com, Milken Institute

Food services and drinking places ranked second among the top 20 largest industries in terms of employment with average annual wages per employee in the range of $6,044 to $10,848.

Table 2-I

Los Angeles County - Top 20 Largest Industries
Ranked by Employment, 1982

Industry	NAICS	Employment 1982	Employment 1992	Employment 2003	% Emp. Growth 82-92	% Emp. Growth 92-03	% Emp. Growth 82-03	Net Job Creation 82-03
Local Government	GVL	351,950	402,020	462,960	14	15	32	111,010
Food Services & Drinking Places	722	160,440	211,070	258,220	32	22	61	97,780
Transportation Equipment Manufacturing	336	152,680	129,360	54,590	-15	-58	-64	-98,090
Computer & Electronic Product Manufacturing	334	148,870	96,480	59,980	-35	-38	-60	-88,890
Professional, Scientific & Technical Services	541	144,460	218,690	233,630	51	7	62	89,170
Administrative & Support Services	561	136,810	181,770	248,350	33	37	82	111,540
Merchant Wholesalers, Durable Goods	423	112,240	116,490	111,680	4	-4	0	-560
Ambulatory Health Care Services	621	102,340	117,880	146,820	15	25	43	44,480
Credit Intermediation & Related Activities	522	100,520	95,500	80,630	-5	-16	-20	-19,890
Hospitals	622	90,230	99,920	103,100	11	3	14	12,870
Fabricated Metal Product Manufacturing	332	88,010	61,460	49,910	-30	-19	-43	-38,100
Food & Beverage Stores	445	74,300	76,030	82,910	2	9	12	8,610
Management of Companies & Enterprises	551	72,880	84,370	78,370	16	-7	8	5,490
Apparel Manufacturing	315	70,670	89,930	68,250	27	-24	-3	-2,420
General Merchandise Stores	452	70,450	62,550	58,910	-11	-6	-16	-11,540
Educational Services	611	69,840	65,670	96,420	-6	47	38	26,580
Federal Government	GVF	67,560	69,100	55,490	2	-20	-18	-12,070
Specialty Trade Contractors	238	66,220	68,690	88,060	4	28	33	21,840
Insurance Carriers & Related Activities	524	63,370	60,900	57,490	-4	-6	-9	-5,880
Merchant Wholesalers, Nondurable Goods	424	59,540	70,240	82,020	18	17	38	22,480

Sources: Economy.com, Milken Institute

To best understand the structural transformation of Los Angeles' manufacturing sector, it is necessary to take a close look at its driving forces. Between 1982 and 1987, Los Angeles County was powered by military spending and government contracts in the defense-aerospace industry. Occupations in aerospace and defense-dominated manufacturing ranked third among the top 20 leading industries. Computer and electronic product manufacturing related to the defense industry, which ranked fourth, was also experiencing sustained growth in 1982. Professional, scientific and technical services ranked fifth, comprising a 4 percent share of Los Angeles County's total employment that year. A comprehensive review of the transportation equipment manufacturing industry group reveals that in 1982, aerospace product parts manufacturing accounted for 76 percent of the total employment in this classification.

Table 3-I

Los Angeles County - Employment

Transportation Equipment Manufacturing 336	NAICS	1982	1987	2003
Motor Vehicle Manufacturing	3361	2,620	2,360	1,230
Motor Vehicle Body & Trailer Manufacturing	3362	4,930	4,600	2,220
Motor Vehicle Parts Manufacturing	3363	20,200	20,450	9,450
Aerospace Product & Parts Manufacturing	3364	115,430	132,260	39,970
Railroad Rolling Stock Manufacturing	3365	0	0	0
Ship & Boat Building	3366	8,120	4,390	820
Other Transportation Equipment Manufacturing	3369	1,380	1,210	900
Total		152,680	165,270	54,590

Sources: Economy.com, Milken Institute

The vast majority of Los Angeles County's export-driven manufacturing establishments experienced a decline in employment due to interactions with the global economy. The textile mills industry was the only industry group to exhibit employment growth in all observed decades. The apparel manufacturing industry posted the highest level of employment in 2003. Despite higher levels of employment in apparel manufacturing, computer and electronic product manufacturing and transportation equipment manufacturing in 2003, these industries experienced substantial declines in employment base primarily due to outsourcing.

Table 4-I

Los Angeles County - Export-Driven Manufacturing Industries

Industry	NAICS	Employment 1982	Employment 1992	Employment 2003	% Emp. Growth 82-92	% Emp. Growth 92-03	% Emp. Growth 82-03	Net Job Creation 82-03
Food Manufacturing	311	51,720	45,660	44,820	-12	-2	-13	-6,900
Beverage & Tobacco Product Manufacturing	312	6,690	5,580	4,440	-17	-20	-34	-2,250
Textile Mills	313	5,810	9,280	10,330	60	11	78	4,520
Textile Product Mills	314	6,710	9,580	8,240	43	-14	23	1,530
Apparel Manufacturing	315	70,670	89,930	68,250	27	-24	-3	-2,420
Leather & Allied Product Manufacturing	316	8,040	3,880	2,390	-52	-38	-70	-5,650
Wood Product Manufacturing	321	4,800	4,570	5,480	-5	20	14	680
Paper Manufacturing	322	14,550	14,470	11,040	-1	-24	-24	-3,510
Printing & Related Support Activities	323	31,880	33,140	24,640	4	-26	-23	-7,240
Petroleum & Coal Products Manufacturing	324	13,160	9,220	5,040	-30	-45	-62	-8,120
Chemical Manufacturing	325	24,560	24,980	22,800	2	-9	-7	-1,760
Plastics & Rubber Products Manufacturing	326	27,640	27,700	20,670	0	-25	-25	-6,970
Nonmetallic Mineral Product Manufacturing	327	18,730	14,010	10,220	-25	-27	-45	-8,510
Primary Metal Manufacturing	331	18,070	12,720	10,240	-30	-19	-43	-7,830
Fabricated Metal Product Manufacturing	332	88,010	61,460	49,910	-30	-19	-43	-38,100
Machinery Manufacturing	333	52,440	32,740	22,870	-38	-30	-56	-29,570
Computer & Electronic Product Manufacturing	334	148,870	96,480	59,980	-35	-38	-60	-88,890
Electrical Equipment, Appliance & Component Mfg	335	25,440	16,710	12,210	-34	-27	-52	-13,230
Transportation Equipment Manufacturing	336	152,680	129,360	54,590	-15	-58	-64	-98,090
Furniture & Related Product Manufacturing	337	38,220	27,620	27,380	-28	-1	-28	-10,840
Miscellaneous Manufacturing	339	35,980	27,300	24,490	-24	-10	-32	-11,490
Total		844,670	696,390	500,030	-18%	-28%	-41%	-344,640

Sources: Economy.com, Milken Institute

Los Angeles County's Top 20 Industries Ranked by Employment, 2003

From 1982 to 2003, Los Angeles County's economy, especially its manufacturing sector, underwent a significant transformation. The 1990-1994 recession initiated a shift from aerospace manufacturing to services. Table 5 reveals the declining importance of aerospace-related manufacturing and the rising importance of apparel manufacturing. Aerospace products and parts manufacturing accounted for 13.7 percent of the county's manufacturing employment in 1982 and declined to 8 percent in 2003. The apparel manufacturing industry went in the opposite direction. In 2000, Los Angeles was the apparel manufacturing center of the United States.[7] Yet some saw "the garment industry as a throwback to the earliest phases of the industrial revolution,"[8] since it replaced high wage aerospace manufacturing jobs with a low-wage structure. Annual average wages per employee were $21,042 in 2003.

Los Angeles County has since transformed from a garment manufacturing hub to a garment manufacturing and fashion production center. Accelerated by globalization and the NAFTA agreement, offshore production became responsible for most of the blue-collar, low-wage manufacturing job losses. However, these same forces contributed to the creation of more skilled jobs in such knowledge-based occupations as management, supervision, quality control, designers, import-export specialists, etc. One factor that has helped ease the manufacturing job drain to countries with lower production costs has been the rapid change in fashion and the need for quick turn times, which require close contact with the product design team and the manufacturing base.

Table 5-I

Los Angeles County - Top 5 Growing Manufacturing Occupations Ranked by Employment, 2003

Industry	NAICS	% of Total Mfg. Emp. 1982	2003
Cut & Sew Apparel Manufacturing	3152	8.0	12.8
Aerospace Product & Parts Manufacturing	3364	13.7	8.0
Navigational, Measuring, Electromedical & Control Inst Mfg	3345	10.6	7.8
Printing & Related Support Activities	3231	3.8	4.9
Household & Institutional Furniture & Kitchen Cabinet Mfg	3371	2.8	3.7

Sources: Economy.com, Milken Institute

The recession of the early 1990s was also particularly hard on computer and electronic product manufacturing, showing a decline of 35 percent between 1982 and 1992. For those working in steel and metal related manufacturing, more than 25,000 jobs were lost over that decade. As a consequence, fabricated metal product manufacturing vanished from the list of Los Angeles County's top 20 industries in 2003. Employment in that industry group declined 30 percent overall.

In 2003, Los Angeles County's largest employers were local government, food services and drinking places, administrative and support services and professional, scientific and technical services, providing more than 30 percent of all employment. This data is summarized in Table 6. The third largest employment gains in Los Angeles County that year were in the food services and drinking places where 61 percent growth added 97,780 net jobs between 1982 and 2003. Despite continued declines, manufacturing remained an important industry, providing over 12.5 percent of all employment in 2003.

The economic expansion and diversification underway in Los Angeles County from 1982 to 2003 is also manifested in the steep rise of the entertainment industry. Los Angeles County has become famous for being the motion picture and movie capital of the world. The industry is dominated by many major studios with digital technology and computer-generated imaging transforming the industry. Ranked by employment, the motion picture and sound recording industries broke into the top 20 list of Los Angeles County's largest industries in 2003, accounting for about 59 percent of the information sector.

Table 6-I

Los Angeles County - Top 20 Largest Industries
Ranked by Employment, 2003

Industry	NAICS	Employment 1982	Employment 1992	Employment 2003	% Emp. Growth 82-92	% Emp. Growth 92-03	% Emp. Growth 82-03	Net Job Creation 82-03
Local Government	GVL	351,950	402,020	462,960	14	15	32	111,010
Food Services & Drinking Places	722	160,440	211,070	258,220	32	22	61	97,780
Administrative & Support Services	561	136,810	181,770	248,350	33	37	82	111,540
Professional, Scientific & Technical Services	541	144,460	218,690	233,630	51	7	62	89,170
Ambulatory Health Care Services	621	102,340	117,880	146,820	15	25	43	44,480
Motion Picture & Sound Recording Industries	512	58,010	89,210	116,750	54	31	101	58,740
Merchant Wholesalers, Durable Goods	423	112,240	116,490	111,680	4	-4	0	-560
Hospitals	622	90,230	99,920	103,100	11	3	14	12,870
Educational Services	611	69,840	65,670	96,420	-6	47	38	26,580
Specialty Trade Contractors	238	66,220	68,690	88,060	4	28	33	21,840
Food & Beverage Stores	445	74,300	76,030	82,910	2	9	12	8,610
Merchant Wholesalers, Nondurable Goods	424	59,540	70,240	82,020	18	17	38	22,480
State Government	GVS	50,690	68,280	80,710	35	18	59	30,020
Credit Intermediation & Related Activities	522	100,520	95,500	80,630	-5	-16	-20	-19,890
Management of Companies & Enterprises	551	72,880	84,370	78,370	16	-7	8	5,490
Apparel Manufacturing	315	70,670	89,930	68,250	27	-24	-3	-2,420
Nursing & Residential Care Facilities	623	40,820	47,810	64,400	17	35	58	23,580
Computer & Electronic Product Manufacturing	334	148,870	96,480	59,980	-35	-38	-60	-88,890
General Merchandise Stores	452	70,450	62,550	58,910	-11	-6	-16	-11,540
Religious, Grantmaking, Civic, Professional & Similar Orgs	813	47,970	52,820	57,680	10	9	20	9,710

Sources: Economy.com, Milken Institute

Table 7 lists Los Angeles County's top 20 industries ranked by manufacturing employment in 2003 and the relevant 4-digit NAICS code. Headed by cut-and-sew apparel manufacturing, only two of the top 20 manufacturing industry groups experienced employment growth between 1982 and 2003.

A second way to gain perspective on the evolution of Los Angeles County's manufacturing industry is to sort the industry groups by net job gain between 1982 and 2003. The star performer over the entire period was textile and fabric finishing and fabric coating mills which experienced employment growth of 172 percent between 1982 and 2003, though it realized only 25 percent growth in wages per employee. Average annual wages per employee were $29,538 in 2003. Over the same period, employment in that industry declined in the U.S. by 36 percent, whereas wages per employee posted a gain of 159 percent.

As a broad generalization, these industry groups – not including pharmaceutical and medicine manufacturing – rely on inflows of low-paid and less-educated workers, especially immigrants. The long-run trend in those industries is that employment growth outpaced wage growth.

Table 7-I

Los Angeles County - Top 20 Manufacturing Employment Industries
Ranked by Employment, 2003

Industry	NAICS	Employment 1982	Employment 2003	Net Job Creation 82-03	% Emp. Growth 82-03	Avg. Wage/Emp.($) 1982	Avg. Wage/Emp.($) 2003	% Wage/Emp. Growth 82-03	U.S. % Growth Emp. 82-03	U.S. % Growth Wage/Emp. 82-03
Cut & Sew Apparel Manufacturing	3152	67,270	63,800	-3,470	-5	11,161	21,042	89	-72	227
Aerospace Product & Parts Manufacturing	3364	115,430	39,970	-75,460	-65	30,687	62,995	105	-34	106
Navigational, Measuring, Electromedical & Control Inst Mfg	3345	89,790	38,990	-50,800	-57	24,051	57,386	139	-35	187
Printing & Related Support Activities	3231	31,880	24,640	-7,240	-23	19,814	46,953	137	3	137
Household & Institutional Furniture & Kitchen Cab Mfg	3371	23,630	18,630	-5,000	-21	13,945	30,671	120	13	129
Plastics Product Manufacturing	3261	24,030	18,290	-5,740	-24	17,205	34,383	100	39	139
Bakeries & Tortilla Manufacturing	3118	21,510	17,520	-3,990	-19	13,449	25,526	90	0	81
Other Miscellaneous Manufacturing	3399	23,770	15,260	-8,510	-36	20,252	52,597	160	-18	98
Machine Shops, Turned Product & Screw, Nut & Bolt Mfg	3327	17,170	12,940	-4,230	-25	29,714	84,931	186	4	110
Converted Paper Product Manufacturing	3222	12,590	9,960	-2,630	-21	23,309	44,925	93	2	116
Motor Vehicle Parts Manufacturing	3363	20,200	9,450	-10,750	-53	19,623	50,880	159	21	110
Semiconductor & Other Electronic Component Mfg	3344	30,680	9,410	-21,270	-69	15,860	41,643	163	-15	189
Coating, Engraving, Heat Treating & Allied Activities	3328	13,540	9,270	-4,270	-32	17,561	44,198	152	22	115
Medical Equipment & Supplies Manufacturing	3391	12,210	9,240	-2,970	-24	28,070	38,721	38	30	121
Other Fabricated Metal Product Manufacturing	3329	16,380	8,780	-7,600	-46	22,353	58,944	164	-16	105
Architectural & Structural Metals Manufacturing	3323	15,690	8,010	-7,680	-49	23,192	57,542	148	0	85
Soap, Cleaning Compound & Toilet Preparation Mfg	3256	7,820	7,240	-580	-7	21,474	67,064	212	3	158
Textile & Fabric Finishing & Fabric Coating Mills	3133	2,310	6,280	3,970	172	23,675	29,538	25	-36	159
Pharmaceutical & Medicine Manufacturing	3254	3,750	6,110	2,360	63	30,517	83,807	175	76	165
Other General Purpose Machinery Manufacturing	3339	13,790	6,090	-7,700	-56	27,588	133,291	383	-28	142

Sources: Economy.com, Milken Institute

Looking at wage statistics and considering the fact that in 2001 per capita income in Los Angeles County was $30,611, it is striking that from 1982 to 2003, 39.4 percent of all jobs created (not including government) paid an annual wage per employee below $31,000 in 2003. Table 8 reveals that full-service restaurants – ranking first among the top five industry sectors in job creation that paid wages below $31,000 – bolstered the economy longer term.

Table 8-I

Los Angeles County - Top 5 Industries in Job Creation in the Wage/Emp. Structure Below $31,000 in 2003

Industry	NAICS	Employment 1982	1990	1993	2002	2003	% Emp. Growth 02-03	82-03	Avg. Wage/Emp. ($) 1982	2003	% Wage/Emp. Growth 82-03	Net Job Creation 82-03
Full-Service Restaurants	7221	71,910	92,080	90,690	118,160	120,820	2	68	8,945	15,159	69	48,910
Limited-Service Eating Places	7222	68,950	88,930	97,550	112,590	114,570	2	66	8,474	14,588	72	45,620
Investigation & Security Services	5616	19,650	37,420	33,110	45,550	44,650	-2	127	12,450	30,350	144	25,000
Building Finishing Contractors	2383	12,350	24,150	14,790	26,660	26,850	1	117	18,329	26,691	46	14,500
Grocery Stores	4451	56,410	63,900	59,160	65,780	68,230	4	21	17,272	28,433	65	11,820

Sources: Economy.com, Milken Institute

Table 9 summarizes the top five industries in net job creation over the 1982-2003 time period that offered a wage per employee above $31,000 in 2003. One was employment services, which accounted for 13 percent of total net job creation in this category, followed by the motion picture and video industries, which accounted for 12 percent combined.

Table 9-I

Los Angeles County - Top 5 Industries in Job Creation in the Wage/Emp. Structure Above $31,000 in 2003

Industry	NAICS	Employment 1982	1990	1993	2002	2003	% Emp. Growth 02-03	82-03	Avg. Wage/Emp. ($) 1982	2003	% Wage/Emp. Growth 82-03	Net Job Creation 82-03
Employment Services	5613	46,490	77,290	79,760	114,700	112,650	-2	142	15,934	52,202	228	66,160
Motion Picture & Video Industries	5121	52,130	81,700	86,270	115,340	111,980	-3	115	31,569	61,011	93	59,850
Legal Services	5411	29,000	53,170	52,060	49,010	50,200	2	73	31,846	68,724	116	21,200
Manag, Scientific &Techn Consulting Services	5416	11,970	22,140	17,850	25,300	27,900	10	133	21,640	71,766	232	15,930
Computer Systems Design & Related Services	5415	11,060	18,970	16,400	26,680	26,540	-1	140	20,216	76,520	279	15,480

Sources: Economy.com, Milken Institute

Table 10 provides Los Angeles County's top five industries with a wage per employee structure above $31,000 that suffered most of the job losses over this time frame. High on the list are industries in the high-tech sector.

Table 10-I

Los Angeles County - Top 5 Industries in Job Loss in the Wage/Emp. Structure Above $31,000 in 2003

Industry	NAICS	Employment 1982	1990	1993	2002	2003	% Emp. Growth 02-03	82-03	Avg. Wage/Emp. ($) 1982	2003	% Wage/Emp. Growth 82-03	Net Job Creation 82-03
Computer & Peripheral Equipment Manufacturing	3341	21,780	10,490	9,570	3,520	3,060	-13	-86	23,080	90,467	292	-18,720
Semiconductor & Other Electronic Comp Mfg	3344	30,680	26,090	16,020	11,140	9,410	-16	-69	15,860	41,643	163	-21,270
Depository Credit Intermediation	5221	79,730	83,210	71,820	49,630	49,890	1	-37	15,946	46,691	193	-29,840
Navigat, Measuring, Electromed & Contr Instr Mfg	3345	89,790	77,720	52,180	40,080	38,990	-3	-57	24,051	57,386	139	-50,800
Aerospace Product & Parts Manufacturing	3364	115,430	129,970	86,820	43,830	39,970	-9	-65	30,687	62,995	105	-75,460

Sources: Economy.com, Milken Institute

Table 11 displays the five industries that experienced the most job losses over the 1982-2003 time period with a wage structure per employee in 2003 that placed employees below $31,000 a year.

Table 11-I

Los Angeles County - Top 5 Industries in Job Loss in the Wage/Emp. Structure Below $31,000 in 2003

Industry	NAICS	Employment 1982	1990	1993	2002	2003	% Emp. Growth 02-03	82-03	Avg. Wage/Emp. ($) 1982	2003	% Wage/Emp. Growth 82-03	Net Job Creation 82-03
Satellite Telecommunications	5174	10,160	8,490	7,020	5,090	4,330	-15	-57	1,115	4,977	346	-5,830
Ship & Boat Building	3366	8,120	2,240	1,610	950	820	-14	-90	19,167	28,768	50	-7,300
Rail Transportation	4821	10,560	2,380	960	370	370	0	-96	9,514	11,081	16	-10,190
Department Stores	4521	55,450	48,520	43,790	41,660	40,230	-3	-27	9,137	15,579	71	-15,220
Telecommunications Resellers	5173	30,120	20,640	17,220	15,750	14,320	-9	-52	7,110	24,491	244	-15,800

Sources: Economy.com, Milken Institute

In sum, over the past two decades, Los Angeles County experienced a loss of 473,150 jobs and gained 906,760 jobs. It is noteworthy that almost 40 percent of the employment gain (not including government) took place in lower-paid (below $31,000 wage per employee) services, light industry and light manufacturing positions. Los Angeles County's great imperative is to educate and train its low-skilled and less-educated workforce, and strengthen community colleges and career centers, so that members of this work group can qualify for the higher wage jobs.

Los Angeles County Compared to the Local Region, California and to the United States

Although the top 20 largest industries ranked by employment in 2003 for Los Angeles County resemble Orange County, Ventura County, California and the United States, there are noteworthy differences and variations in the industrial structure.

Pharmaceutical and medicine manufacturing has become a powerful economic driver in Ventura County, while navigational, measuring, electromedical and control instruments manufacturing ranked first on Orange County's list of the top 20 industries ranked by manufacturing employment in 2003.

Aerospace and defense-related occupations were a substantial share of manufacturing employment in certain regions. However, this category was not a large share of nationwide employment: only 0.7 percent of U.S. employment was in this industry group even at its peak. In contrast, two decades ago the manufacturing sector of Los Angeles County was mainly driven by aerospace and defense manufacturing – almost 20 percent of the nation's aerospace employment was in Los Angeles County in 1982 – and this industry group still ranked second on Los Angeles County's top 20 manufacturing employment list in 2003. As shown in Table 12, employment trends in aerospace product and parts manufacturing varied widely over the past two decades.

Table 12-I

Aerospace Product & Parts Manufacturing

		Employment			% Emp. Growth		Employment			% Emp. Growth		
Area	NAICS	1982	1987	1997	82-87	87-97	1998	1999	2003	97-98	98-03	82-03
L.A. County	3364	115,430	132,260	61,520	15	-53	65,050	59,060	39,970	6	-39	-65
California	3364	180,620	216,670	100,630	20	-54	105,860	97,170	73,370	5	-31	-59
Orange County	3364	17,610	21,920	13,140	24	-40	13,840	13,840	10,630	5	-23	-40
Ventura County	3364	3,930	3,890	940	-1	-76	920	1,230	690	-2	-25	-82
United States	3364	665,750	819,130	554,880	23	-32	578,550	547,100	439,540	4	-24	-34

Sources: Economy.com, Milken Institute

In Los Angeles County, more than 75,400 workers in the aerospace product and parts manufacturing industry lost their jobs between 1982 and 2003. Table 13 which looks at this industry group as a share of total employment, illustrates its long-term decline from 3.3 percent in 1987 to 1.0 percent of the county's total employment in 2003. However, compared to the other regions listed in Table 13, its relative importance in 2003 is still higher in Los Angeles County than in the other regions.

Table 13-I
Aerospace Product & Parts Manufacturing
% Share of Total Employment

Area	NAICS	1982	1987	1997	1998	1999	2003
L.A. County	3364	3.2	3.3	1.6	1.6	1.5	1.0
California	3364	1.8	1.9	0.8	0.8	0.7	0.5
Orange County	3364	2.1	2.0	1.1	1.1	1.0	0.7
Ventura County	3364	2.4	1.9	0.4	0.4	0.5	0.2
United States	3364	0.7	0.8	0.5	0.5	0.4	0.3

Sources: Economy.com, Milken Institute

Other sectors, such as the full-service restaurant industry, experienced strong employment growth from 1982-2003, but not the commensurate wage growth aerospace workers earned. Reviewing wage statistics, though the latter industry lost 75,460 jobs, aerospace product and parts manufacturing workers experienced strong wage gains over the 1982-2003 period, averaging $62,995 per employee in 2003. The full-service restaurant industry gained 48, 910 jobs, but its workers earned an average annual wage of $15,159 in 2003. Wages in the aerospace industry were 4.2 times higher due to higher educational attainment and skill differences.

Table 14-I
Aerospace Product & Parts Manufacturing

		Avg. Wage/Emp. ($)			% Wage/Emp. Growth		Avg. Wage/Emp. ($)			% Wage/Emp. Growth		
Area	NAICS	1982	1987	1997	82-87	87-97	1998	1999	2003	97-98	98-03	82-03
L.A. County	3364	30,687	40,166	53,179	31	32	55,259	55,666	62,995	4	14	105
California	3364	28,461	36,668	52,264	29	43	53,892	55,349	59,274	3	10	108
Orange County	3364	23,704	31,592	44,395	33	41	42,858	45,433	57,579	-3	34	143
Ventura County	3364	31,425	40,542	56,117	29	38	58,174	55,585	52,710	4	-9	68
United States	3364	30,196	38,471	53,758	27	40	55,800	58,436	62,292	4	12	106

Sources: Economy.com, Milken Institute

The R&D industry group is a useful lens through which to view the ascendancy and economic impact of Los Angeles County's knowledge-based industries, as its long-term economic growth is highly dependent upon cultivating a vibrant technology community. "The new engine of regional economic prosperity is based upon how successful a given location is in attracting and expanding technology and science assets and leveraging them for economic development"[9]

One study stated, "Los Angeles came in first place for U.S. cities in R&D expenditures among the top 100 ranked universities."[10] The same study found that Los Angeles ranked number one among the top 20 cities in 2001 R&D expenditures. Where did Los Angeles County stand on R&D spending in relation to California, Orange County, Ventura County and the U.S. in 2003?

To assess Los Angeles County's long-term research needs and its ability to retain technology-based industries with a well-trained workforce, we compared Los Angeles County's R&D scene with the trends of the other regions. Between 1982 and 1990, R&D related services in Los Angeles County experienced a remarkable increase in employment base. Employment statistics show that Los Angeles County gained more than 5,600 net R&D-related jobs over the past two decades. The distinguishing feature of this industry group is that human capital is the major input. The individual industries of this subsector (NAICS 5417) are highly dependent upon the presence of a skilled workforce.

Table 15 displays which scientific research and development services had the most employment growth. While R&D employment grew a rapid 20 percent nationally from 1982-1990, Los Angeles County outpaced the U.S. at 41 percent. This appears especially dramatic against Orange County's negative growth rate of -14 percent, Ventura County's 2 percent and the state of California's 32 percent.

Table 15-I

Scientific Research & Development Services

		Employment			% Emp. Growth		Employment					% Emp. Growth	
Area	NAICS	1982	1990	1996	82-90	90-96	1997	2000	2001	2002	2003	01-03	96-03
L.A. County	5417	12,500	17,660	12,340	41	-30	13,110	13,460	13,360	15,020	18,150	36	47
California	5417	65,730	86,760	70,990	32	-18	75,280	89,110	92,410	93,880	95,100	3	34
Orange County	5417	6,800	5,860	2,770	-14	-53	3,250	3,910	4,020	3,880	3,860	-4	39
Ventura County	5417	830	850	1,400	2	65	1,580	730	750	860	880	17	-37
United States	5417	412,710	493,600	472,530	20	-4	479,510	515,030	532,100	537,590	542,380	2	15

Sources: Economy.com, Milken Institute

The 30 percent downturn in R&D employment between 1990 and 1996 was very severe in Los Angeles County compared to the 18 percent decline in California overall and 4 percent in the nation as a whole. Still, Los Angeles County's recovery in R&D from 1996 to 2003 was considerably more robust, whereas Ventura County only recently got back on a growth path. Employment growth in R&D-related occupations however, should be viewed in conjunction with other measures, such as share of R&D of total employment. As shown in Table 16, in 1982, Orange County's percent share of scientific research and development services was significantly higher than Los Angeles County's, demonstrating Orange County's success as a technology center. In 1982, R&D became a significant force in Orange County's economy.

Ventura County raised its share of total employment from 0.5 percent in 1982 to 0.7 percent in 1997 before falling off to 0.3 percent in 2000 where it remained in 2003. With 0.5 percent of the county's workforce engaged in this industry group in 2003, Los Angeles County surpassed the nation, though data shows that Los Angeles County's share of R&D has been consistently below California figures over the past 21 years. What is remarkable is that compared to the other regions, Los Angeles County was the only region to increase its share of R&D between 1982 and 2003. By 2003, Los Angeles County's share had risen to 0.5 percent, while Orange County's share fell from 0.8 percent in 1982 to 0.3 percent in 2003. California's share of R&D employment declined temporarily and then returned to its original value of 0.7 percent. These figures indicate that in 2003, the R&D sector in Los Angeles County had a stronger foothold than in Orange County, Ventura County and the nation.

Table 16-I

R&D as a % Share of Total Employment

Area	NAICS	1982	1990	1996	1997	2000	2001	2002	2003
L.A. County	5417	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.5
California	5417	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7
Orange County	5417	0.8	0.5	0.2	0.3	0.3	0.3	0.3	0.3
Ventura County	5417	0.5	0.4	0.6	0.7	0.3	0.3	0.3	0.3
United States	5417	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4

Sources: Economy.com, Milken Institute

From the wages perspective, Los Angeles County wages were above those of Orange County with average annual wages per employee of $77,226 in 2003.

Table 17-I

Scientific Research & Development Services

Area	NAICS	Avg. Wage/Emp. ($) 1982	1990	1996	% Wage/Emp. Growth 82-90	90-96	Avg. Wage/Emp. ($) 1997	2000	2001	2002	2003	% Wage/Emp. Growth 01-03	96-03
L.A. County	5417	31,918	49,326	59,408	55	20	61,413	78,727	65,071*	68,866*	77,226*	-29	-7
California	5417	21,530	33,423	50,165	55	50	51,515	56,985	54,610	50,877	51,441	-6	3
Orange County	5417	17,296	29,131	66,751	68	129	65,748	67,041	63,356	59,876	60,736	-4	-9
Ventura County	5417	44,253	81,729	71,364	85	-13	85,652	124,616	128,067	111,779	113,284	-12	59
United States	5417	18,466	32,085	42,765	74	33	44,974	51,396	51,171	51,161	52,489	3	23

*Figures taken directly from BLS data

Sources: Economy.com, Milken Institute

Science- and technology-driven industries are crucial to job and wealth creation with long-run economic growth highly dependent on funding and performing R&D activities. The data of our statistical analysis can be used to explain the growing labor needs of employers in R&D-related occupations and changing skill requirements of jobs in this industry group.

Los Angeles County's Top 20 Industries Ranked by Net Job Creation 1982-2003

Los Angeles County's top 20 industries ranked by net job creation from 1982 to 2003 provides an overview of workforce dynamics by looking at long-term wage and employment patterns for individual workers.

Table 18-I

Los Angeles County - Top 20 Largest Industries
Ranked by Net Job Creation, 1982-2003

Industry	NAICS	Employment 1982	1992	2003	% Emp. Growth 82-92	92-03	82-03	Net Job Creation 82-03
Administrative & Support Services	561	136,810	181,770	248,350	33	37	82	111,540
Local Government	GVL	351,950	402,020	462,960	14	15	32	111,010
Food Services & Drinking Places	722	160,440	211,070	258,220	32	22	61	97,780
Professional, Scientific & Technical Services	541	144,460	218,690	233,630	51	7	62	89,170
Motion Picture & Sound Recording Industries	512	58,010	89,210	116,750	54	31	101	58,740
Ambulatory Health Care Services	621	102,340	117,880	146,820	15	25	43	44,480
State Government	GVS	50,690	68,280	80,710	35	18	59	30,020
Educational Services	611	69,840	65,670	96,420	-6	47	38	26,580
Social Assistance	624	23,160	32,010	49,520	38	55	114	26,360
Nursing & Residential Care Facilities	623	40,820	47,810	64,400	17	35	58	23,580
Merchant Wholesalers, Nondurable Goods	424	59,540	70,240	82,020	18	17	38	22,480
Specialty Trade Contractors	238	66,220	68,690	88,060	4	28	33	21,840
Support Activities for Transportation	488	22,380	24,100	40,910	8	70	83	18,530
Amusement, Gambling & Recreation Industries	713	19,820	27,930	34,020	41	22	72	14,200
Hospitals	622	90,230	99,920	103,100	11	3	14	12,870
Performing Arts, Spectator Sports & Related Industries	711	17,750	24,680	30,270	39	23	71	12,520
Real Estate	531	39,070	52,520	51,200	34	-3	31	12,130
Truck Transportation	484	18,360	25,490	30,260	39	19	65	11,900
Accommodation	721	27,070	37,380	37,000	38	-1	37	9,930
Religious, Grantmaking, Civic, Professional & Similar Orgs	813	47,970	52,820	57,680	10	9	20	9,710

Sources: Economy.com, Milken Institute

The largest industry sector to contribute to net job creation between 1982 and 2003 was administrative and support services, which added 111,540 net jobs to Los Angeles County's economy. The next largest industry sector was government, followed by food services and drinking places.

Contrary to the common belief that Los Angeles County's economy is primarily export based, net job growth took place predominantly in the "local consumption" industries. This indicates that the economy is largely supported by catering to the needs of the growing population.

Looking at wages per employee among the top 20 leading industries in Los Angeles County (not including government employment) suggests that over the past two decades, a high share of jobs was generated in lower-paying occupations. Food services and drinking places gained 97,780 net, and ambulatory health care services gained 44,470 net, alongside the county's relatively robust employment growth in professional, scientific and technical services (89,170 net job gain) with increasing wages over time.

Table 19 addresses how the wage distribution varied within the administrative and support services industry. This industry sector, which ranked first among the top 20 leading industries by net job gains from 1982 to 2003, enjoyed substantial growth in higher-paying employment services which had a 66,160 net job gain. The lower-paying investigation and security services had a 25,000 net job gain.

Table 19-I
Los Angeles County

		Employment			Net Job Creation	Avg. Wage/Emp. ($)			% Wage/Emp. Growth		
Administrative & Support Services 561	NAICS	1982	1992	2003	82-03	1982	1992	2003	82-92	92-03	82-03
Office Administrative Services	5611	5,280	10,220	13,360	8,080	23,953	48,537	123,431	103	154	415
Facilities Support Services	5612	1,310	2,000	2,090	780	36,733	94,380	300,244	157	218	717
Employment Services	5613	46,490	64,540	112,650	66,160	15,934	27,709	52,202	74	88	228
Business Support Services	5614	10,680	16,250	17,550	6,870	27,776	43,450	70,753	56	63	155
Travel Arrangement & Reservation Services	5615	9,500	12,250	11,450	1,950	35,107	40,361	68,869	15	71	96
Investigation & Security Services	5616	19,650	33,890	44,650	25,000	12,450	23,297	30,350	87	30	144
Services to Buildings & Dwellings	5617	36,990	33,300	39,310	2,320	10,704	22,358	43,782	109	96	309
Other Support Services	5619	6,900	9,320	7,300	400	13,468	33,079	72,649	146	120	439
Total		136,800	181,770	248,360	111,560						

Sources: Economy.com, Milken Institute

The figures summarized in Table 20 are evidence that Los Angeles County's economy has been fueled by a rising level of low-wage services occupations.

Table 20-I
Los Angeles County

		Employment			Net Job Creation	Avg. Wage/Emp. ($)			% Wage/Emp. Growth		
Food Services & Drinking Places 722	NAICS	1982	1992	2003	82-03	1982	1992	2003	82-92	92-03	82-03
Full-Service Restaurants	7221	71,910	92,040	120,820	48,910	8,945	13,297	15,159	49	14	69
Limited-Service Eating Places	7222	68,950	96,570	114,570	45,620	8,474	11,483	14,588	36	27	72
Special Food Services	7223	13,550	15,540	15,940	2,390	6,044	10,031	14,619	66	46	142
Drinking Places (Alcoholic Beverages)	7224	6,040	6,920	6,900	860	10,848	18,020	27,017	66	50	149
Total		160,450	211,070	258,230	97,780						

Sources: Economy.com, Milken Institute

Also significant is that net job creation has been particularly weak in sectors associated with white-collar offshoring. This raises the issue of how much of Los Angeles County's economy is driven by knowledge-based industries in the high-tech sector and is affected by the offshoring phenomenon. As the price of information technology fell and the Internet exploded, outsourcing accelerated due to the ability to better communicate with workers overseas. More than 3.3 million U.S. jobs (about 2.5 percent of total U.S. employment) are projected to leave the country by 2015,[11] as the pay gap between skilled workers in the United States relative to those in offshoring targets is reported to be in the neighborhood of eight to one.[12] Employment in most of Los Angeles County's high-tech industries dropped dramatically from 2002 to 2003; in fact, employment losses in those

knowledge-based industries accounted for half of the job losses in manufacturing. Wages per employee in those industries did not translate into an upswing. As noted previously, only in scientific research and development services (NAICS 5417) was net job creation significant in 2002-2003.

Los Angeles County has a large amount of biomedical research activity among its universities as well as private research institutions, such as Cedars Sinai Medical Center, the City of Hope National Medical Center and Huntington Medical Research Institute. A profile of Los Angeles County's base of biomedical and biotechnology reveals that in 2003 more than 6,100 employees worked in pharmaceutical and medicine manufacturing. However, relative to the state of California (0.3 percent), Orange County (0.4 percent), Ventura County (2.1 percent) and the United States (0.2 percent), Los Angeles County (0.2 percent) ranked last by share of employment in pharmaceutical and medicine manufacturing as a share of total employment in 2003.

Table 21-I

Los Angeles County - Knowledge-Based Industries*

Industry	NAICS	Employment 1982	Employment 2002	Employment 2003	Net Job Creation 02-03	% Emp. Growth 02-03	% Emp. Growth 82-03	Avg. Wage/Emp. ($) 1982	Avg. Wage/Emp. ($) 2002	Avg. Wage/Emp. ($) 2003	% Wage/Emp. Growth 82-03
Pharmaceutical & Medicine Manufacturing	3254	3,750	7,020	6,110	-910	-13	63	30,517	69,798	83,807	175
Commercial & Service Industry Machinery Mfg	3333	14,320	6,050	5,610	-440	-7	-61	12,901	43,754	47,633	269
Computer & Peripheral Equipment Manufacturing	3341	21,780	3,520	3,060	-460	-13	-86	23,080	84,707	90,467	292
Communications Equipment Manufacturing	3342	2,770	5,040	4,460	-580	-12	61	18,397	34,685	46,574	153
Audio & Video Equipment Manufacturing	3343	2,330	2,020	1,710	-310	-15	-27	20,807	28,406	36,444	75
Semiconductor & Other Electronic Component Mfg	3344	30,680	11,140	9,410	-1,730	-16	-69	15,860	31,441	41,643	163
Navigational, Measuring, Electromedical & Control Instr Mfg	3345	89,790	40,080	38,990	-1,090	-3	-57	24,051	46,813	57,386	139
Manufacturing & Reproducing Magnetic & Optical	3346	1,510	2,570	2,350	-220	-9	56	55,848	223,440	261,885	369
Aerospace Product & Parts Manufacturing	3364	115,430	43,830	39,970	-3,860	-9	-65	30,687	59,651	62,995	105
Medical Equipment & Supplies Manufacturing	3391	12,210	9,580	9,240	-340	-4	-24	28,070	31,576	38,721	38
Software Publishers	5112	2,310	5,680	5,350	-330	-6	132	16,948	53,393	61,325	262
Motion Picture & Video Industries	5121	52,130	115,340	111,980	-3,360	-3	115	31,569	63,665	61,011	93
Wired Telecommunications Carriers	5171	2,300	2,520	2,620	100	4	14	320,900	464,921	456,779	42
Wireless Telecommunications Carriers (except Satell)	5172	1,170	4,060	2,480	-1,580	-39	112	173,915	79,571	133,065	-23
Telecommunications Resellers	5173	30,120	15,750	14,320	-1,430	-9	-52	7,110	21,783	24,491	244
Satellite Telecommunications	5174	10,160	5,090	4,330	-760	-15	-57	1,115	4,077	4,977	346
Cable & Other Program Distribution	5175	1,090	4,710	4,340	-370	-8	298	35,284	79,694	97,571	177
Other Telecommunications*	5179	6,150	180	200	20	11	-97	8,725	350,333	313,000	3,487
Internet Service Providers & Web Search Portals	5181	5,550	6,690	6,410	-280	-4	15	11,636	37,118	40,952	252
Data Processing, Hosting & Related Services	5182	4,110	5,640	5,780	140	2	41	23,628	68,121	70,194	197
Other Information Services	5191	0	1,170	1,100	-70	-6	N/A	N/A	127,538	173,682	N/A
Architectural, Engineering & Related Services	5413	26,170	30,250	29,930	-320	-1	14	30,464	67,600	69,354	128
Computer Systems Design & Related Services	5415	11,060	26,680	26,540	-140	-1	140	20,216	71,029	76,520	279
Scientific Research & Development Services	5417	12,500	15,020	18,150	3,130	21	45	31,918	65,344	55,194	73
Medical & Diagnostic Laboratories	6215	5,360	7,550	7,770	220	3	45	11,440	39,849	39,486	245
Total		464,750	377,180	362,210	-14,970	-4%	-22%	26,197	60,846	64,234	145

* Figures are consistent with BLS data

Sources: Economy.com, Milken Institute

Concluding Points

With these dynamics in play, Los Angeles County's industrial structure is becoming increasingly polarized, with high-paying jobs at one end and low-paying jobs at the other. Longer-term changes in Los Angeles County's economic structure have contributed to a widening divide by class and race, with the establishment of two niches at both the high and low ends of the economic spectrum. Educational attainment and work skills divide Los Angeles County into two economies.

The findings support the conclusion that real wage gains per employee are greatest for those workers who are engaged in a knowledge-based industry while a major share of jobs – 39.4 percent with annual wages per employee below $31,000, not including government employment – has been created in low-paying industry groups over the past two decades. The data also indicates the emergence of an "ethnic economy" in Los Angeles County as an alternative avenue for low-skilled immigrants to achieve economic advancement.

Residents with low levels of education, especially immigrants, have filled a niche in low-end service occupations and light manufacturing industries catering to the needs of the highly skilled workforce. (In Section III, we examine Los Angeles County's ethnic makeup, backed by detailed demographic information, exploring the characteristics and consequences of ethnic transition and its impact on Los Angeles County's divided economy.) The policy question that arises is what kind of educational programs does the city have for low-skilled immigrant job seekers? Section III addresses the issue of how well Los Angeles city's planning areas accommodate their diverse populations and how well the population, especially those participating in the "ethnic economy" adapt to economic changes.