

Making the City Distinctive:
A Guide for Planners and Policymakers

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I. The Challenge of the Distinctive City

Planners, urban economists and economic developers have traditionally viewed city economies as components of larger urban systems. They envision cities as trading partners with many other regions, importing goods and services that they cannot produce efficiently locally, because they are too small or lack the resources, and exporting other goods and services in the production of which they possess a comparative advantage. Most believe that the size of an urban economy is constrained by its ability to export. In this paper, we challenge and extend this view, using an occupational approach, and draw the implications for city and regional planners.

First, we argue that competitive pressures have heightened in the past thirty years, shaking up urban systems world-wide and intensifying the need for every urban economy to specialize. We find that specialization in the economic base of metropolitan areas is on the rise and infer from this that the recent differential job growth of cities can be explained by varying degrees of success in finding the right niches. Most cities have experienced erosion in the ranks of workers linked to their traditional economic base and to avoid shrinkage, which some haven't, they struggle to remake themselves in new lines of work.

Second, we argue that traditional urban economic theory has under-estimated the potential for import substitution and especially for the potential for local demand to expand more rapidly in “residential” goods and services – things such as restaurant meals, child care, health care and household services that can only be supplied within the local economy. We show that in the United States, job growth in these non-basic sectors

has expanded faster than growth in the export base. Much of this can be attributed to changing family structure and work patterns that have externalized women's household labor as their labor force participation has risen dramatically. Some is the result of affluence and the fact that households, as their incomes grow, choose to consume more locally-produced goods and services on balance. This phenomenon is also enhanced by the fact that a growing share of the population, those over 65, are relatively mobile and choose where they locate on the basis of amenities, rather than job opportunities. They bring their social security checks and savings with them and spend them heavily in the local economy on residentiary services. In addition, many young and entrepreneurial people flock to metros with good reputations as hot cultural and work centers, living on the margin and spending most of their incomes on rent, food and public transit. Of course, these factors make the residentiary service base more distinctive across metros as well.

The result of these two countervailing tendencies is that metro economies are becoming both more and less distinctive. They are more distinctive in the face they show to the external trading world – their economic expertise is becoming more sharply delineated and their ability to grow dependent upon choices made in nurturing their economic base. They are less distinctive in that larger portions of their economic activity now consist of services that are locally tied. Thus they are more similar in the vast landscapes of suburban retailing, fast food joints, health care empires and home repair and maintenance than ever before.

This duality presents economic development practitioners and policymakers with diverse challenges. How much of their cities' and states' energies and resources should

be put into shaping the economic base, through investments in infrastructure, education, and firm and industry targeted incentives that will strategically redirect the export base? How much of the same should be devoted to amenities that will attract affluent retirees and well-educated young people to the region and to efforts to shape consumption patterns in favor of locally produced goods and services? Should tax incentives be given for big box retail on the suburban fringe, and what is the opportunity cost for doing so? Questions like these abound in the hotbed of state and local economic development planning.

In this paper, we first present summary evidence on the growing distinctiveness in the urban economic base. We use an occupational approach, developed elsewhere (Markusen, 2004; Markusen and Barbour, 2003, Markusen and Schrock, 2004a, 2004b) and building on the work of Thompson and Thompson (1985) and Feser (2003). We show, using occupational data from the last three US Censuses, that distinctiveness in the economic base is on the rise but that the residential share of employment in large metro economies has also grown. The two are contradictory forces in shaping the overall disparity index – the latter phenomenon makes metropolitan economies appear more alike than distinct and helps us understand why much of contemporary metropolitan planning is residential in focus rather than targeted at the economic base. But differential growth rates in the economic base of cities remain crucial in setting the stage for overall growth of the region and constraining residential expansion.

We conclude that specialization in a city's economic base is mandatory in era of global market integration. Our findings provide evidence for the calls by several geographers and economists for metropolitan-level economic development strategies (Storper, 1997; Scott, 1998; Barnes and Ledebur, 1998). A powerful regional economic

development strategy can be created by using both industry and occupational lenses to produce “stereo vision,” enabling the integration of firm-oriented economic and labor-oriented workforce development at the regional and local levels. We explore a number of policy and planning approaches to successful occupational analysis and targeting. These include the following actions: build on occupational networks, organizations and institutions; promote entrepreneurship in key occupations; secure and enhance the pool of regional talent; link initiatives with community-based organizations; and use occupational composition as a screen for allocating employer incentives.

Complicating this project is that fact that responsibility for metropolitan economic development is split between states and local governments, each with different tools at their disposal and political constituencies to answer to. Although metropolitan planning around land use, transportation and environmental issues – the areas where metros are growing more alike – has made great gains over the past twenty year, metropolitan economic development planning remains vestigial. We address this reality in our closing section.

II. The Diverging Economic Base of Cities

To investigate distinctive urban economies, we first distinguish between those occupations that are associated with specialization and those that are chiefly residential, i.e. more closely associated with the sheer size of the local economy. We look at the degree to which occupational groups are concentrated or dispersed across the fifty largest metropolitan areas of the US and how these patterns have changed over time. For this analysis, we variously use Census of Population PUMS data for 1980, 1990 and 2000, based on individual’s reporting of their occupations by place of residence, state

occupational employment data based on ES-202 data from employers on the basis of place of employment and federal BLS occupational data sets aggregated up from state survey data, also based on employer records but sometimes adjusted for self-employment.¹

To identify the occupational economic base of large cities, we computed coefficients of localization for each of the BLS major occupational groups (Table 1).² A coefficient of localization shows the extent to which an occupation is distributed differently than all employment across jurisdictions. A high coefficient means that the occupation is quite skewed in its distribution across the set of fifty cities, while a low coefficient means that the occupation is relatively ubiquitously distributed in relationship to size of the metro economy. In 2000, the coefficients ranged from a high of 24.6 for farming, fishing and forestry to a low of 2.1 for office and administrative support.

The occupations fall fairly easily into three groups. At the top of the table are those that constitute the economic base of cities – high tech, arts and media, production and legal occupations that are fiercely competed over among cities and whose products and services are disproportionately exported from the region. They have coefficients above 11.5. The set of export-oriented occupations is diverse - people whose work involves assembly and craft skills, science, engineering, knowledge of the law, entertainment, media, computing, architecture and even home care form the core of the metro economic base. They comprise not just the creative class conceptualized by

¹ For explanations of these data bases and their strengths and weaknesses as well as they way they have been used in these analysis, see the technical appendices of the papers cited in this section and the Appendix to Markusen, Schrock and Barbour, 2005.

² In collecting data on occupations, the Bureau of Labor Statistics aggregates them into twenty-two major occupational groups. We have also done this analysis at the more highly disaggregated minor occupational group, where the results are similar but offer greater insight into change in specific occupations. See Markusen, Schrock and Barbour, 2005.

Florida (2002) but include some blue collar and nurturing occupations. Some workers in these occupations are serving local markets, but they constitute a much smaller share of their occupational group than workers in residential occupations.

At the bottom of the table, with coefficients less than 6.5, are occupations that are chiefly local-serving – necessary to meet the consumption, reproduction, routine maintenance and office services of the region. These include those engaged in clerical, sales, personal service, management and education activities. Some workers in these occupations may be working for industries that export, but they appear to be present regardless of the particular activities that constitute that export base.

In between are four occupations – health care support, protective services, construction, and community and social services – that are chiefly local-serving but exhibit some degree of clustering across large American cities. We take this to reflect differences in local consumption patterns, such as higher demand for health care and protective services in retirement communities in the American south and west. It is interesting that health care support occupations are much more concentrated in the US than are health care practitioners and technicians. We interpret this as a counterpart to the concentration of the elderly – a group requiring home health aides in large numbers - in certain metros, rather than to broader specialization in health care. Health care support remains a highly resident-oriented rather than an export base activity. Skewed construction activity reflects continued higher growth rates in certain American metros, associated with retirement, immigration, and the drive of new export-based sectors.

The 1990s appear as a decade in which concentration increased dramatically for many occupations, especially those in the economic base. After declining for many

occupations in the 1980s, skewness was up in the 1990s, especially for those occupations at the top of the table. All the economic base occupations except those engaged in legal work favored some cities over others in the growth and reshuffling of the 1990s. Most of the other local-serving occupations remained at relatively low or even declining levels of specialization across the set.

Our results illustrate the paradox of urban distinctiveness in the 1990s. While the economic base of cities became more highly differentiated, its size in terms of jobs grew more slowly than the residential sector. Major occupations in economic base comprise just 18% of employment in these metros in 2000, down from 21% in 1980. With the exception of computing and mathematical workers (up 316%), arts, design, entertainment and media workers (up 61%), and legal occupations (up 112%), most other economic base occupations grew just modestly above the national job growth rate of 33% over this period or below it in the case of production, architecture and engineering occupations. In comparison, health care, personal care and protective services workers, management, financial, and sales workers, and education occupations, all residential and ubiquitously distributed, grew more rapidly. As they work more jobs and longer work weeks, live longer, and consume larger portions of their income, and as the prices of imported commodities falls faster than local services, urban Americans appear to be spending a larger share of their incomes locally. As they do so, they create more relatively low-skilled jobs in local-serving sectors such as retail, food service, and housing. This is occurring across all metros. Yet the size of each metro economy is more heavily dependent than ever on a specialized and highly productive economic base.

Specialization in the economic base is not predominantly a matter of how cities rank in a size hierarchy (Markusen and Schrock, 2004). Over the past two decades, traditional urban hierarchies are breaking down and functional specialization is becoming more important. Where once all cities were assumed to serve primarily their hinterlands and to be nested in urban systems where some “world cities” served the globe with national and regional centers ranked below them, these distinctions are breaking down. The measure of specialization used here is the location quotient, a ratio of the occupation’s share of the metro workforce to its presence in the national workforce. We find that second tier cities are actually more specialized in many of the high tech occupations than are the three world metros of more than 4 million – New York, Chicago and Los Angeles (Table 2). Even among the latter, where financial, artistic and certain business occupation still concentrate, considerable divergence of function is occurring. Cities in the same tier, in other words, are now less alike than they were in the past.

Occupational specializations appear to be diverging over time even for metros of similar size and vintage in a single state. Large, older “core” metro areas such as Los Angeles, San Francisco, Oakland and San Diego are quite dissimilar from each other in occupational structure as they are, too, from younger peripheral metros like San Jose (Table 3). Certain activities such as engineering, computing, and garment-making are helping to distinguish some California metro areas from others (Markusen and Barbour, 2003). Existing occupational specialization is not destiny – each of these metros added surprising increments of jobs in under-represented occupations while losing ground

unexpectedly in others (Table 4).³ Among the notable divergences: the sheer numbers (more than 27,000) of unexpected new jobs created among low skilled garment workers in Los Angeles; huge unexpected gains in computing occupations in northern California (over 22,000 in San Francisco, Oakland and San Jose metros combined) compared with an even larger unexpected loss in Los Angeles metro (a shortfall of more than 33,000) and a static share in San Diego; the differential ability of the large metros to hold onto their traditional urban core finance and legal functions; the flight of skilled manufacturing jobs from the older inner city metros; and gentrification-related occupational expansion in the Bay Area metros. This north/south divide complements findings from Milkman and Dwyer's (2002) "tale of two cities" that chart diverging sources of income inequality between the Bay Area and LA basin economies. Readers should keep in mind that California, especially southern California, suffered a deeper recession than the nation over the period of the early 1990s, and this could be reflected in the shifts.

These macro trends bolster the case that we have made elsewhere for an occupational approach to economic and workforce development. We believe we have found, using an occupational measure of metro economic base, evidence for a dualizing "distinctive city" dynamic. How can cities and regions shape their own future economic base trajectories? What role does occupational analysis and targeting play in this effort? To these questions we turn in the rest of the paper.

³ We use here the metric of "unexpected job growth" over the period from 1988-97, which is computed by taking the residual, or "competitive shift" component of an occupational shift share analysis. The metric tells us the extent to which each occupation grew in the metro beyond what would have been expected given its initial year numbers of jobs in that occupation and the national growth rate of employment in that occupation over the period. See Markusen and Barbour, for an explanation.

III. Occupationally-oriented Strategies for Shaping the Urban Economic Base

The occupational approach pioneered by the researchers noted above and by practitioners in a number of locales offers new avenues for economic and workforce development practitioners to shepherd the economic base of their cities. The theoretical and practical case for an occupational approach is made at length in our recent work (Markusen, 2004; Markusen and Schrock, 2004a, 2004b; Markusen and Barbour, 2003). It is built on the growing recognition that human skill is an essential ingredient in local economies and may be more tractable and less expensive to attract, nurture and retain than physical capital, which has consumed the lion's share of economic development incentives in recent decades with disappointing results. Targeting occupations enables planners and policymakers to combat the proliferation of "poor jobs" or the filling of new jobs by outsiders associated with some types of development incentives and to fashion a strategy more closely tied to the skills and character of current local populations.

Our policy inferences below are based on research that we and others have done in probing the micro-workings of specific occupations. In our forthcoming book, *The Distinctive City*,

we illustrate the case for and an application of each policy prescription with evidence from this body of work. Case studies include analyses of mechanical engineers, software programmers and systems analysts, artists (including writers and musicians),

telecommunications equipment installers and home care workers. Here, we explore in greater depth approaches and tools that can be used to sharpen the occupational focus and build to a locality's strengths in its economic base. A discussion of how to choose occupations to target can be found in Markusen, 2004.

A. Build on occupational networks, organizations and institutions

State and local economic development officials should tap into existing occupationally-oriented institutions – including professional associations, trade unions, education and training institutions, and informal networks – to identify policies that could improve the viability of those occupations within the region. This utilization of existing associational infrastructure is a fairly common organizing tool among economic developers targeting specific industries, especially those using an “industry cluster” approach (Waits, 2000).

Many occupations, especially in professional and scientific fields, have counterpart professional associations and/or that are linked to national or international bodies – for instance, the American Society of Mechanical Engineers, or the National Writer's Union. On the national level these organizations establish standards for education and certification, provide forums for networking and technical debate, do research on pay and benefits, offer support on issues of contracts and property rights, and monitor relevant public policy issues. On the local level, they are more commonly a vehicle for networking and professional development, but rarely an active participant in efforts to promote economic development related to their field.

For example, efforts to promote biosciences should include not only trade associations comprised of bioscience firms, but also educational institutions that directly impact the future supply of workers in these fields (in this specific example the “supply” side is generally the province of universities and their personnel responsible for research efforts, eg, the Minnesota Bioscience Initiative). These efforts should not overlook the interests and motivations of bioscience workers, whose individual decisions to move into or out of a particular region or to pursue an entrepreneurial venture have enormous impact on a region’s economic trajectory. Traditional, firm-oriented economic development approaches largely miss this important piece of the puzzle. Working with occupationally-oriented institutions would facilitate the kinds of interventions discussed below and enhance industry-oriented development efforts as well.

In practice, the involvement of occupationally-based organizations in economic development initiatives works well under several circumstances. One occurs when there is a real or perceived shortage of workers in a given field, either current or projected. This was clearly the case in the 1990s with information technology occupations, when rising demand for workers in these fields mobilized a number of educational institutions and training organizations to develop programs (Benner 2002; Chapple et al 2000). Another example is the need for telecommunications installers as new technologies came on line in the 1990s. Unions such as the Communications Workers of America and the IBEW became important partners to smaller firms in their effort to train workers for this job (Wolf-Powers, 2003).

Second, working with occupational groups is particularly important when an occupation is not closely co-terminant with a single industry and where there are high

levels of self-employment and entrepreneurship. The arts are a good example here. Artists (including visual and performing artists, musicians and writers) exhibit high rates of self-employment, between 30% and 65% depending on the genre (Markusen, Schrock and Cameron, 2004). Many of them work across industry sectors, doing contractual work for non-arts firms and selling their work and services through the internet, publishers, at art fairs and by traveling to perform, none of which is captured in regional employment figures based on employers' records. Some cities and regions are beginning to understand the economic development significance of facilitating artists' live/work buildings and studio space, supporting artists' "clubhouses" where artists congregate to compare notes on craft and livelihoods, and commissioning public art as part of redevelopment projects. Agglomerations of artists also have salutary benefits in stabilizing and upgrading neighborhoods, although spirals of unsettling gentrification have sometimes ensued.

B. Promote entrepreneurship in key occupations

The distinctive city relies on the cross-fertilization of occupational knowledge across sectors to generate new entrepreneurial opportunities for economic development and to deepen the process of metropolitan specialization. Occupation-led economic development can facilitate this by working through organizations and institutions to help individuals identify entrepreneurial and self-employment opportunities and to learn the business skills to pursue them.

While career development is a common activity in unions and professional associations, such efforts are generally directed toward improving, upgrading, and

codifying skills. This occurs through certification processes, training seminars and short courses that allow individuals to remain current on new technology, issues, etc. related to the occupation. Benner (2002) discusses the importance of continuing education through professional associations (as labor market intermediaries) in assisting information technology workers in Silicon Valley to keep pace with rapidly-changing technologies for applications such as Web design.

However, most traditional occupational organizations stop short of active assistance in helping their members to identify new business opportunities, develop business plans, navigate capital access and intellectual property concerns, and learn management skills. At the same time, the resources that do exist for individuals to pursue entrepreneurial ventures – such as federally-funded Small Business Development Centers – tend to be occupationally- and industrially-generic and thus less directly attuned to the particular circumstances or knowledge base of a given occupation. Many engineers, for instance, aspire to start their own businesses but lack the managerial acumen. Economic developers could help to supply entrepreneurship training to occupational groups that show interest and promise.

In occupations such as the arts, where the rate of self-employment is quite high, this blurring of boundaries between professional development and entrepreneurship is more common. Across the US, help for artists in designing their careers and dealing with the business side of it has been forthcoming from enterprising arts organizations, not from economic development agencies. In Minnesota, Springboard for the Arts offers inexpensive counseling for artists on these issues, and in Los Angeles, the Center for Cultural Initiatives does the same. Both have helped thousands of regional artists to

create viable strategies for pursuing their art as their major livelihood, figuring out how to connect to new markets and beginning to build businesses that employ others.

C. Secure and enhance the pool of regional talent

The distinctive city relies on its ability to supply and retain top-notch talent – both “home grown” and imported – around its occupational specializations. The goal is to build a regional identity around key occupations that allows it to be known as a “place to be” for that occupation. Examples are IT professionals in the Bay Area, media artists in Los Angeles, automobile engineers in Detroit, outdoor gear designers in Boulder, software engineers in Seattle, writers in Boston and so on.

How should policymakers approach this? To begin with, having well-funded education and training institutions is essential. But just as importantly, those institutions need to be connected systematically to the demand side of the labor market, allowing them to ably recruit local graduates before they leave for greener pastures elsewhere and to ensure that graduates remain current. This is common practice at universities and community colleges through industry advisory groups and customized training programs. In addition, planners and policymakers need intelligence on what kinds of environmental amenities and networks members of target occupations prefer and rely upon, and attempt to enhance the presence of these in their local economies.

Efforts to recruit and retain individuals within targeted occupations should also work through occupational intermediaries. States and localities should market themselves directly to individuals within key occupations by advertising in occupationally-specific trade publications, marketing within education and training

institutions, etc. For example, Michigan recently established the Michigan Recruitment Alliance to connect job seekers, businesses and educational institutions around its targeted areas of life sciences, information technology, and advanced manufacturing occupations. Recruiters can also work with lists of alumni of local universities and colleges, encouraging them to come home to work and/or run their business. Such efforts appear to be oriented primarily toward retention of local college graduates; it is less clear whether they are successful in tapping into existing occupational labor pools in other places.

D. Link initiatives with community-based organizations

The distinctive city will seek to ground its specializations in unique “place” characteristics that endow them with local character, and generate benefits for the broader community. This can be done by linking occupationally-oriented economic development efforts to community-oriented goals of community-based organizations. Community-based organizations (CBOs) often take a direct stake in the vitality of industry sectors and occupations with a substantial presence in those communities. In the 1980s the City of Chicago institutionalized the use of CBOs for this purpose through its Local Industrial Retention Initiative (LIRI) that funded CBOs to provide technical assistance and outreach to local manufacturing businesses (Fitzgerald and Leigh 2002). Over time, many of these organizations have worked actively to link the prosperity of local businesses to that of local residents through training and placement services targeted at good-paying, skilled and semi-skilled occupations critical to those businesses. A widely cited example of this is the Jane Addams Resource Corporation, whose metalworking training program feeds

skilled workers to manufacturing businesses throughout the city and surrounding region (Fitzgerald and Leigh, 2002; Glasmeier, Nelson, and Thompson, 2000).

Efforts to create districts that harbor particular occupations and related work and shop or performance spaces are another route that is becoming increasingly more important. For instance, in the arts, economic developers are beginning to understand that funding large destination arts facilities surrounded by parking lots is an expensive way of remaking an area and often fails to create synergies in the immediate neighborhood. Shaping revitalization around artist live/work buildings, instead, has required modest funds with large payoffs for areas such as St. Paul's Lowertown neighborhood. Artists residing in concentrated numbers has prompted commercial and retail growth, the revival of the farmer's market, and spring and fall arts crawls where thousands come to visit artists showing their work in their studios. Artists' live/work buildings are now being invested in by smaller towns as the keystone to revitalization of aging downtowns.

E. Use occupational composition as a screen for allocating employer incentives

Occupational analysis has often been used as a subsidiary exercise when targeting industries in economic development. Once industries are chosen, their occupational structure is examined for ways to harness the workforce development system to the effort (Balfe and McDonald, 1994; Theodore and Carlson, 1998). Our research suggests that occupational analysis could play a lead role in economic development efforts. Turning the tables, economic development planners and policymakers could choose a set of target

occupations and then use these as a screen for deciding how employer-based incentives might be allocated.

If occupations are targeted on the basis of their current presence (even if modest), capturability, good pay and benefits levels, longer term promise, cross-industry fertilization and fit with the local populations' skills and aptitudes, the resulting occupational set can be matched to the occupational composition of a prospective employers' workforce or that of a current employer asking for retention incentives. Those employers where there is a good fit would be more readily funded, while those with a poor fit could be asked whether they are willing to upgrade their technologies and skill profiles as a counterpart for public support. They could also be asked to work with key occupational groups and CBOs as recruitment and training partners. Similarly, if you have strength in post-secondary colleges and universities in particular field where local demand is under-represented, you could target employers who need these skills in recruitment, to stem the outflow of graduates from your region.

IV. Conclusion

Our planning and policy prescriptions are the product of a mixed-method research agenda that has endeavored to understand the broader trends regarding regional occupational specialization as well as the micro processes that give rise to those trends. This is very much a work in progress, as the recognition of the role of human capital and skill in economic development is only now taking hold. The reality that shaping and incentivizing labor formation and retention could be co-equal with

incentivizing physical capital investments and firm retention is, we believe, the outstanding economic development challenge of the coming decade.

One very positive sign that labor is being taken more seriously in development planning is the structural re-organization of state and local agencies in some cities and states aimed at forcing greater integration between workforce and economic development. In Minnesota, the state Departments of Economic Development and Employment Security have been merged into a single Department of Employment and Economic Development. So far, after more than one year, the merger is far from complete – even the research departments are currently co-equal, with neither Director responsible to the other. At the city level, Minneapolis’ new Mayor has abolished the powerful Metropolitan Community Development Agency and merged its operations with the workforce development agency, directing that all economic development efforts should take the needs and skills of the city’s workforce into account.

Complicating the creation of an occupationally-focused and/or “stereo vision” (both occupational and industrial lenses) strategy for metropolitan economic development is the fact that responsibility for job creation and retention is currently split between states and local governments, each with different tools at their disposal and political constituencies to answer to. Although metropolitan planning around land use, transportation and environmental issues – the areas where metros are growing more alike – has made great gains over the past twenty year, metropolitan economic development planning remains vestigial. It will take at least a decade for metropolitan planners to realize that rationale land use, transportation and environmental planning will need to take into account the powerful economic development

competition among jurisdictions if it is to succeed. Experiments at the local level are more apt to drive this fusion, we believe, than is reform of state level economic development.

Table 1. Occupational Employment, Localization, 50 largest metros, 1980-2000

Major Occupational Group	Coefficient of localization			E Change, 1980-2000	Employment 2000
	1980	1990	2000		
Farming, Fishing, and Forestry	18.1	17.3	24.6	-37%	954,755
Life, Physical, and Social Science	14.1	13.0	17.3	36%	1,203,513
Computer and Mathematical	13.1	14.5	16.2	316%	3,162,637
Arts, Design, Entertainment, Sports, and Media Production	12.5	10.7	13.2	61%	2,477,332
Architecture and Engineering	10.3	11.3	13.0	-17%	11,003,719
Legal	11.0	11.1	12.6	15%	2,664,517
Healthcare Support	13.1	12.4	11.9	112%	1,423,337
Protective Service	7.9	9.7	11.5	66%	2,579,656
Construction and Extraction	9.7	9.0	10.1	64%	2,553,136
Community and Social Services	10.1	6.9	7.7	26%	7,150,604
Building, Grounds Cleaning and Maintenance	7.4	7.1	6.9	81%	1,945,926
Healthcare Practitioners and Technical	4.4	5.9	6.7	25%	4,250,257
Transportation and Material Moving	4.5	6.1	6.7	69%	5,985,446
Installation, Maintenance, and Repair	5.7	4.8	6.1	14%	7,959,078
Business and Financial Operations	5.7	5.7	6.0	21%	5,110,115
Food Preparation and Serving	5.6	5.8	5.7	95%	5,551,438
Personal Care and Service	5.9	5.7	5.6	33%	6,263,129
Management	5.9	4.6	5.5	66%	3,630,598
Education, Training, and Library	3.9	4.4	4.9	69%	11,884,694
Sales and Related	4.5	4.1	4.4	53%	7,331,579
Office and Administrative Support	3.9	3.4	2.9	56%	14,604,836
Office and Administrative Support	3.3	2.4	2.1	13%	954,755

Source:

Table 2. Occupational Specialization by Metro Size Class, 2000

Occupational Group	All MSAs	4m+	1-4m	500k-1m	250-500k	<250k
Computer and Mathematical	1.17	1.05	1.56	1.06	0.84	0.75
Legal	1.15	1.47	1.26	1.06	1.02	0.84
Business and Financial Operations	1.12	1.26	1.23	1.10	0.98	0.85
Arts, Design, Entertainment, Sports, Media	1.09	1.87	1.05	0.97	0.95	0.83
Architecture and Engineering	1.09	0.79	1.36	0.96	0.98	0.96
Life, Physical, and Social Science	1.05	0.96	1.26	0.95	0.89	0.92
Office and Administrative Support	1.04	1.14	1.04	1.06	1.01	0.95
Management	1.04	1.09	1.11	0.97	0.97	0.95
Protective Service	1.02	1.30	0.97	1.06	0.93	0.91
Healthcare Practitioners and Technical	1.01	0.98	0.95	0.99	1.11	1.10
Sales and Related	1.00	0.92	1.01	1.03	1.01	1.02
Personal Care and Service	1.00	1.13	0.99	0.98	0.97	1.00
Building, Grounds Cleaning, Maintenance	0.99	0.98	0.99	0.97	1.03	0.98
Community and Social Services	0.98	1.20	0.87	0.94	1.05	1.06
Construction and Extraction	0.97	0.74	1.01	0.98	1.01	1.05
Food Preparation and Serving Related	0.96	0.75	0.94	1.00	1.03	1.11
Installation, Maintenance, and Repair	0.96	0.79	0.95	1.00	1.01	1.04
Education, Training, and Library	0.96	1.01	0.92	0.90	0.96	1.11
Healthcare Support	0.96	1.00	0.86	0.95	1.04	1.12
Transportation and Material Moving	0.95	0.95	0.90	1.01	0.97	0.96
Production	0.91	0.95	0.81	0.94	0.97	1.01
Farming, Fishing, and Forestry	0.68	0.17	0.31	0.32	1.55	2.02

Significant specializations (10+ percentage points greater than average) in boldface

Source: Calculated from Bureau of Labor Statistics, Occupational Employment Statistics

Table 3. Top Occupational Specializations, California's Largest Metros, 1997

	Los Angeles	San Francisco	Oakland	San Diego
Aircraft assemblers, precision	6.1			
Sewing machine operators, garment	4.7	2.5		
Aeronautical and astronautical engineers	3.2			3.2
Jewelers and silversmiths	3.1			
Broadcast technicians	2.8			
Architects, except landscape and marine		3.5		
Messengers		3.2		
Lawyers		2.7		
Paralegals		2.5		
Civil engineers, including traffic engineers			2.9	
Life scientists			2.3	3.4
Operating engineers			2.0	
Recreation workers			2.0	
Science and mathematics technicians			1.9	
Drywall installers and finishers				2.5
Electrical and electronics engineers				2.4
Sales agents, real estate				1.9

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