Metropolitan Futures Initiative (MFI) Report

Irvine at 50: From a Planned Community to a Growing Job Center

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University of California, Irvine

The Metropolitan Futures Initiative (MFI) http://socialecology.uci.edu/mfi in the School of Social Ecology at the University of California, Irvine aims to develop an improved understanding of communities and their potential for integrative and collaborative planning and action to ensure a bright future for the region. It approaches these goals by bringing together an interdisciplinary research team along with the insights and techniques of "big data" research.

By combining various large longitudinal and spatial data sources, and then employing cutting edge statistical analyses, the goal is to come to a better understanding of how the various dimensions of the social ecology of a region move together to produce the outcomes observed within our neighborhoods.

With initial focus on Orange County and its location within the larger Southern California area, The Metropolitan Futures Initiative is a commitment to build communities that are economically vibrant, environmentally sustainable, and socially just by partnering the School of Social Ecology's world class, boundary-crossing scholarship with expertise throughout Southern California.

The MFI Report series presents cutting edge research focusing on different dimensions of the Southern California region, and the consequences for neighborhoods in the region. Reports released throughout the year focus on issues of interest to the public as well as policymakers in the region. In addition, the MFI webpage (mfi.soceco.uci.edu) provides interactive mapping applications that allow policymakers and the public to explore more deeply the data from each Report.

The MFI Research Team:

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Chapter 1. The History of Irvine

Irvine: A planned community

"What unfolds here is a master plan for a totally new city. We call it the City of Irvine. It will be a place where both nature and people prosper." – Irvine Master Plan

In the spring of 1970, reports of a master-planned city on a slice of the Irvine Ranch began to capture national attention. The model city was projected to cover 53,000 acres and a population of 430,000 by the year 2000.[1] The push for incorporation as a city occurred earlier in the process than had initially been intended, but this incorporation push came about due to increasing threat of annexation from nearby cities. Furthermore, the apple of these nearby cities' eye was the burgeoning Irvine Business Complex (IBC), with its growing concentration of jobs, and consequent tax revenue. Thus, this job center aspect has been a feature of Irvine even before incorporation, and will be a focus of this Report. As a consequence, on December 28th, 1971, residents of the emerging communities of Turtle Rock, University Park, Culverdale, the Ranch, and Walnut voted to incorporate into the City of Irvine, ushering in one of the largest experiments in modern urban development.[2]

The founding of the city of Irvine begins in part with the expansion of the University of California. In 1957, the University of California saw the need for new campuses to handle the expected increase in enrollment from the post-war baby boom.[3] Under the guidance of architect-planner William Pereira, a site on the Irvine Ranch was chosen, and after the Irvine Company approved transfer of the land, the University purchased 1000 acres of the ranch property from the Irvine Company for $1 due to a company charter which prevented it from donating property to a public entity.[4] The University of California, Irvine began campus operations in the fall of 1965. The university would serve as the anchor point for a collection of communities envisioned to attract buyers from a wide range of demographics and designed to offer various housing types to meet the diverse needs of residents. In the same year, ground was broken on University Park, the first of Irvine's five original planned residential communities or "villages".[5]

University Park drew from the Garden City movement with homes built to face internally located public park areas and pedestrian thoroughfares separated from roads. A pedestrian greenway system was designed to connect schools, recreation areas, and shopping facilities to the residential zones.[6] At the time of its opening, such planning concepts were considered experimental. Similarly, the design of many of Irvine's villages in the 1970s and 1980s envisioned self-contained residential communities which provided for a full range of needs in housing, education, employment, recreation, and open space.

1 *https://www.nytimes.com/1970/04/19/archives/news-of-the-realty-trade-new-california-city-set.html*
2 *https://legacy.cityofirvine.org/about/history.asp*
3 *Forsyth, A. (2002). Who built Irvine? Private planning and the federal government. Urban Studies, 39(13), 2507-2530.*
4 *http://50th.uci.edu/blog/2015/01/05/gift-of-land-from-the-irvine-company/index.html*
5 *https://150.irvinecompany.com/a-place-called-home/*
6 *https://150.irvinecompany.com/a-place-called-home/*

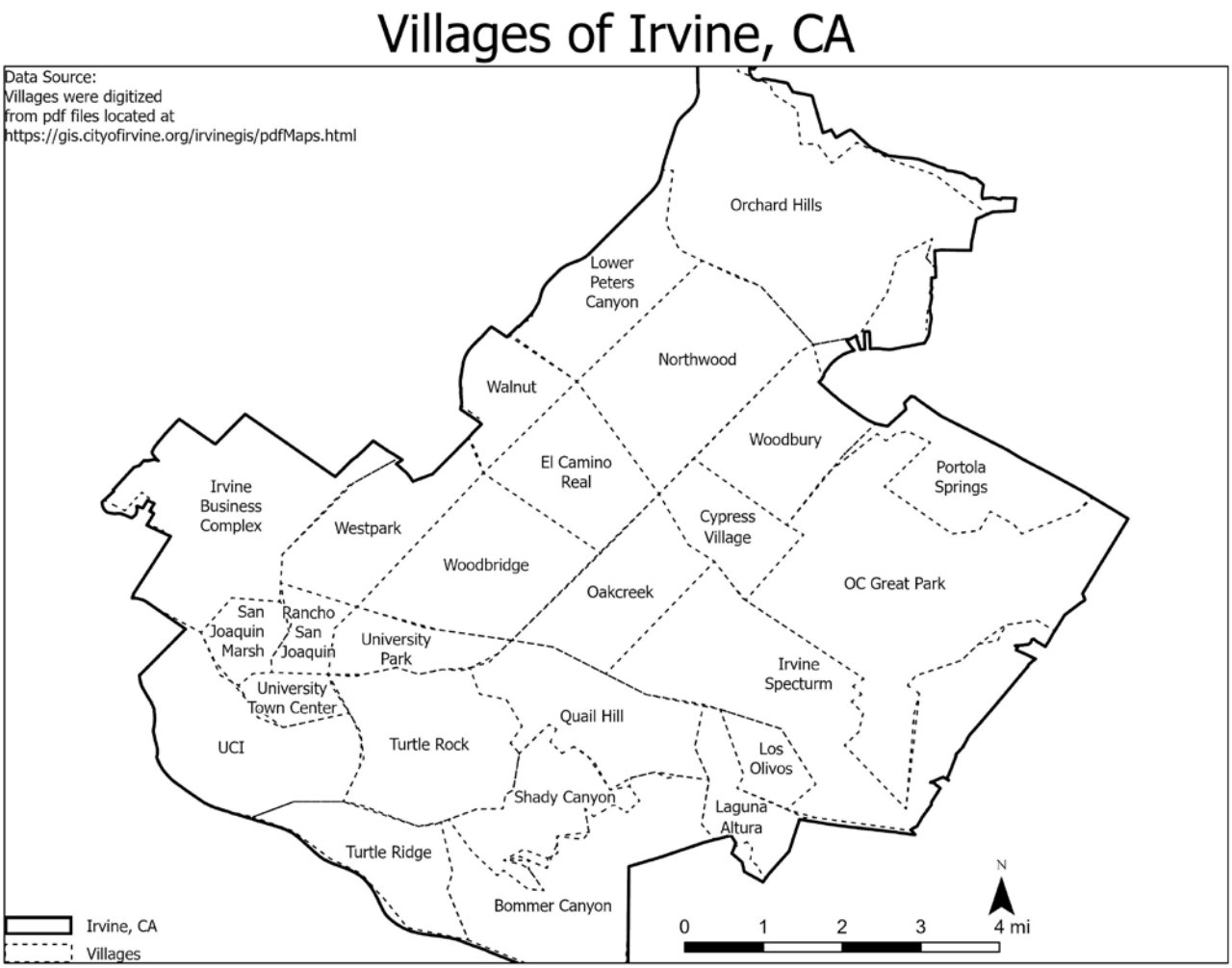

Figure 1.1 Current villages in Irvine

While Irvine was unique in terms of its origin and early history as described above, it has further distinguished itself from other cities in subsequent decades. The city has experienced sustained population growth since its incorporation, increasing its residential population from 10,081 in 1971 to approximately 110,000 in 1990 and over 270,000 in 2020 with 24 villages with an average population a little over 10,000. Furthermore, unlike many other planned suburbs, Irvine serves as an important job center for the Southern California region. Its business parks now form one of the largest business districts in California, hosting an array of industries that, in combination with UC Irvine, make the city's economy robust and diverse. We will describe this job growth as part of this Report.

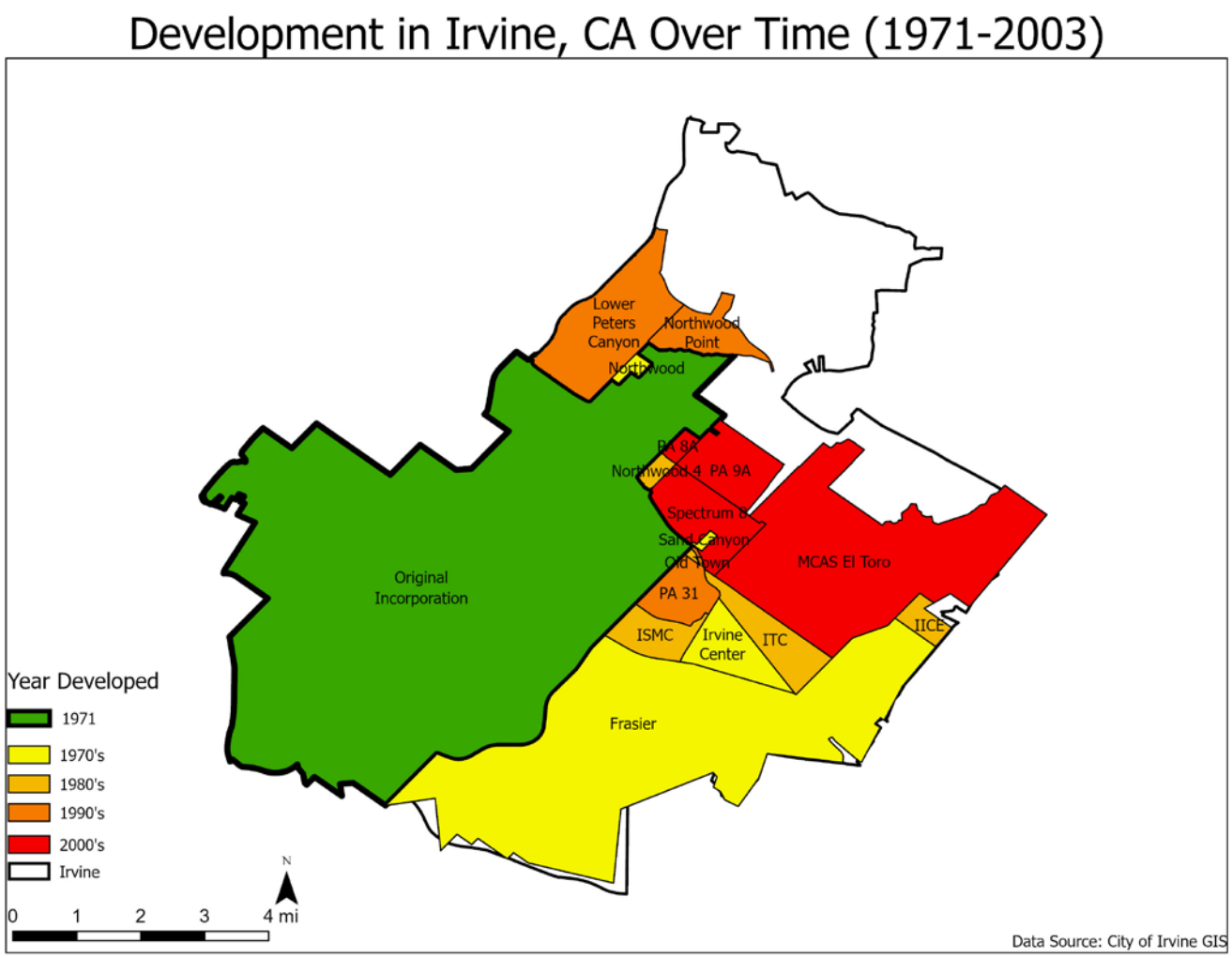

Figure 1.2. Changes in Irvine city boundaries over time

Figure 1.2 shows the growth in the city boundaries over this time period. The southwest portion contains the original extent of the city boundaries (the green area). This original area also includes the IBC in the western-most portion. We can see the subsequent growth over decades as the Irvine Company systematically developed new villages over time.

Although unique in many ways, looking into how Irvine has grown and transformed over the last 50 years would provide valuable lessons not only for those who are interested in the city's future but also for those who seek new ways to achieve sustained growth in their communities. This MFI report presents the evolution of Irvine with a focus on its function as a job center. For additional information on the housing in Irvine and the commuting patterns, see our companion report: Irvine at 50: The changing landscape of housing, commuting, and amenities. In the next chapter we will explore the growth in jobs in the city during the history of the city.

Chapter 2. Jobs in Irvine

Growth of Jobs in Irvine over time

From even before its inception, Irvine has had a strong jobs presence. From the beginning, the Irvine Business Complex (IBC) in the western portion of the city has attracted businesses in relatively high tech industries. For example, in the 1960s the city attracted the likes of Astropower Laboratories in technology research, the Philco Corporation aeronautic division, Delta Semiconductors in computing, Poly Optic Systems in fiber optics, and Kawasaki Motors Corp. In the 1970s the city attracted aerospace firms such as Parker Hannifan and Bertrea Corporation, electronics firms TDK and Ricoh, and other large firms such as Canon, Suzuki Motors, Mazda, Flour Corp, Xerox, and NextGen Healthcare.

The attraction of these business establishments enabled Irvine to function as a job center in the region at the time of its incorporation (late 1971) and early years. This characteristic of the city is well illustrated in Figure 2.1 showing the number of jobs located within the city of Irvine in comparison with the number of workers (employed people) living in the city (regardless of where they work).[7] We also show the growth in jobs throughout California as comparison (at the state level, the number of jobs and workers is effectively the same). The high ratio of jobs to workers (i.e., more jobs than workers) is indicative of job concentration in the city, and this phenomenon was not something that happened recently. Even in 1980 (for which reliable city-level data were first available), Irvine was a place with job abundance pulling in people from other cities every day.

As shown in the figure, Irvine has achieved rapid employment growth in subsequent decades, expanding its role as an important job center in the region. The growth trends in Irvine are much sharper than those of the state overall (the green line). The red line shows that the number of workers living in the city has shown a steady increase over this time period. However, the blue line shows that the number of jobs in the city has grown at a much sharper pace. In particular, the total number of jobs grew 180% in the 1980s and 1990s and, consequently, the ratio of jobs to workers increased from 1.90 to 2.47 between 1980 and 2000. Since 2000, the number of workers living in the city started to grow at a more rapid pace, while the city's job growth has continued. In 2016, the city had over 250 thousand jobs, much larger than the number of jobs in any other cities in Orange County and that in the City of Long Beach (the second largest city in Los Angeles County).

7 Note that jobs represent locations where persons work in the city of Irvine (regardless of where they live) and workers are persons who live in Irvine who work (regardless of where they work). These data for Irvine come from the Census Transportation Planning Package (CTPP) in various years, and the California data come from the Bureau of Labor Statistics.

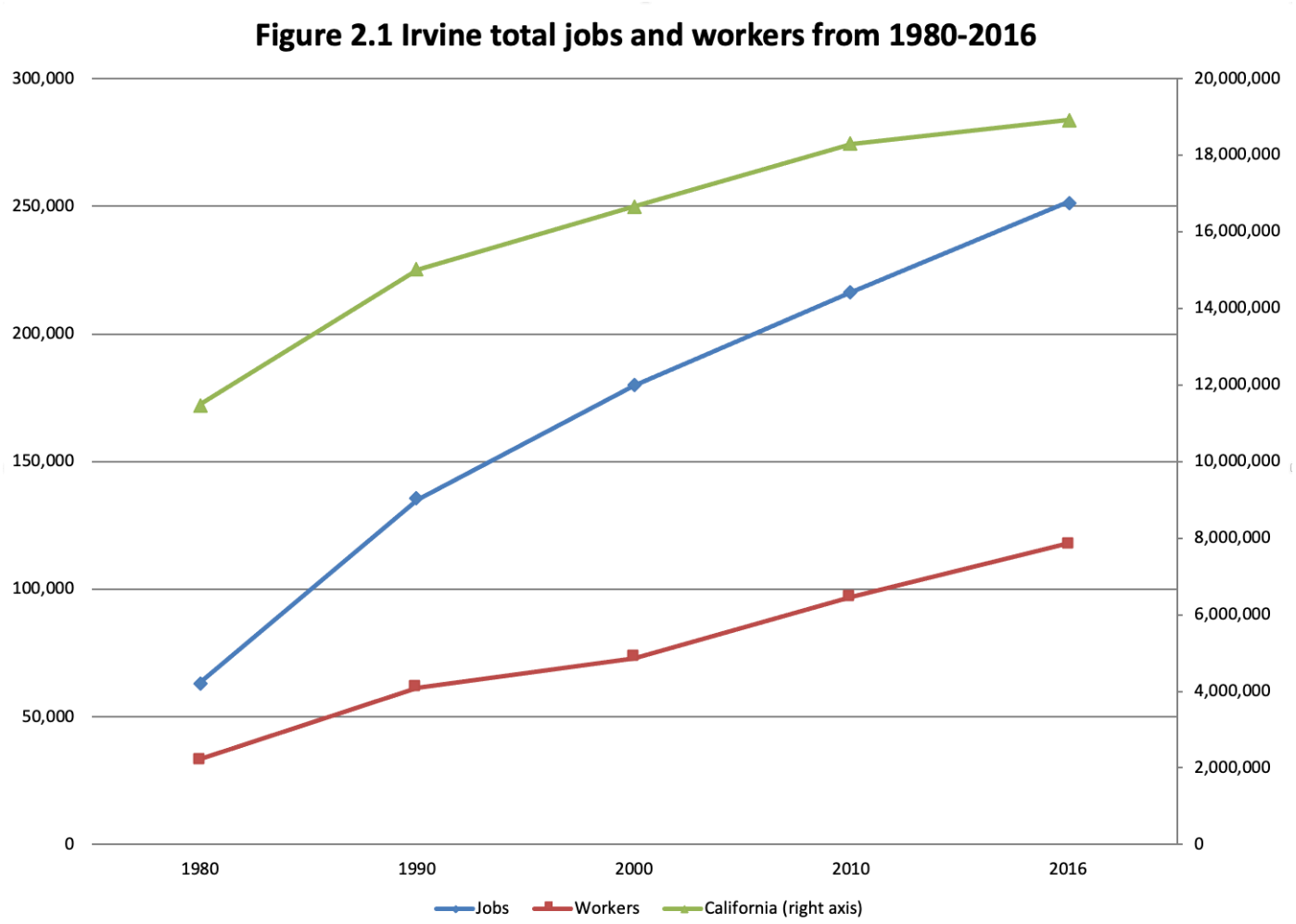

Figure 2.1

An important part of the job growth in the city of Irvine has been the University of California Irvine. The university has been integral in developing Irvine's educated workforce which has in turn attracted several large employers to the city, particularly within the high technology sector. Companies such as Rivian, Tyvak Nano-Satellite Systems, and Google have relocated to the city or expanded their existing operations to tap into the large number of graduates generated by UCI. Additionally, the UCI Research Park provides a unique foundation for job growth in the city by hosting a growing number of businesses, including entrepreneurs and startups who are able to access research generated across the university. Employers that have rented office space at the research park since its inception in 1996 include large multinationals such Canon, Toshiba America, Intel, Skyworks, and Medtronic, as well as smaller R&D firms in the technology, biotechnology, and medical research industries. In addition to their access to university faculty, students, graduates and research, business establishments located within the UCI Research Park benefit from agglomeration effects (e.g. cost reductions and efficiency gains) that emerge from their proximity to other firms engaged in similar production activities at UCI and across the city. Such mechanisms have contributed to Irvine's emergence as both a jobs center and high-technology cluster in Southern California.

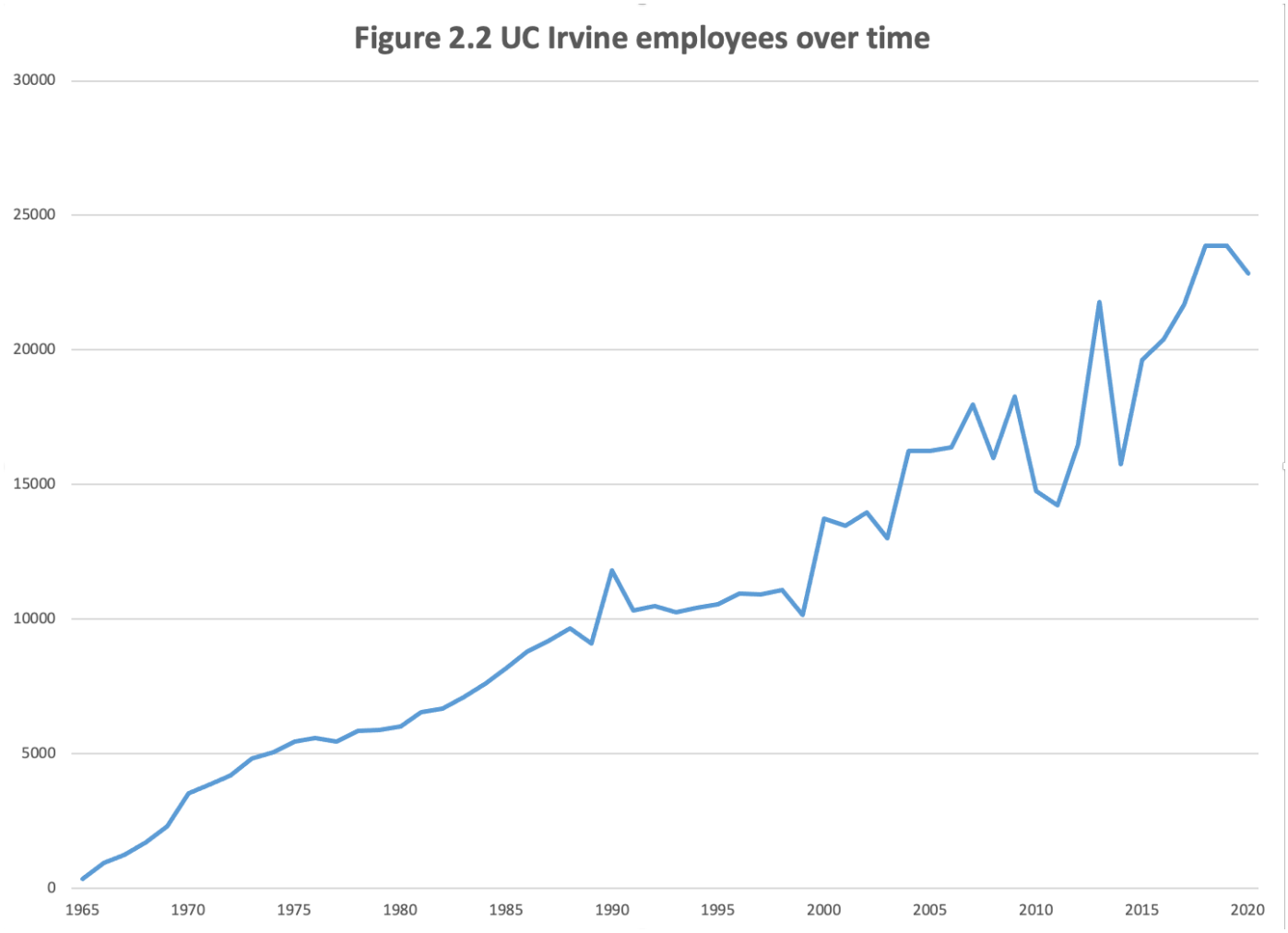

Figure 2.2

Figure 2.2 shows the growth in the number of UCI employees at the Irvine campus over the history of the university.[8] Despite occasional blips from year to year, the general pattern is a quite steady increase in employment at the university over the 50 years. The presence of all these jobs gives the sense that Irvine is actually a job center.

Irvine as a Job Center: Measuring the jobs/workers ratio

The ratio of jobs to workers mentioned above can be used as a tool for identifying "job centers" within regions. It also allows one to compare cities in terms of the degree of job concentration. As we mentioned previously, we define jobs as the locations of where people work, and workers are the locations of where people who work live. So computing this ratio, higher values indicate cities that have more jobs relative to the number of potential workers.

8 For this figure, we obtained access to the number of employees in many of the years. We also obtained information on the number of students per year. For years that we did not have employee information, we imputed the number of employees based on the number of students in the year.

Table 2.1. Top 20 cities with at least 50,000 population in Southern California based on jobs/workers ratio in 2016

		Jobs/ workers ratio					
		1980	1990	2000	2010	2016	Population 2016
1	Irvine	1.90	2.19	2.47	2.23	2.14	256,877
2	Santa Monica	1.17	1.66	1.93	2.07	2.07	92,495
3	Burbank	1.64	1.80	1.75	1.82	1.91	104,765
4	Newport Beach	1.42	1.64	1.78	1.77	1.85	86,793
5	Palm Desert	-	1.60	1.63	1.78	1.85	51,675
6	Pasadena	1.28	1.53	1.64	1.77	1.65	141,231
7	Cerritos	0.72	1.11	1.41	1.53	1.59	50,145
8	Torrance	1.05	1.36	1.49	1.54	1.55	147,190
9	Orange	1.21	1.53	1.46	1.44	1.51	140,289
10	Ontario	0.68	0.96	1.37	1.48	1.46	171,041
11	Chino	0.73	1.15	1.26	1.42	1.41	85,609
12	Costa Mesa	1.05	1.36	1.45	1.44	1.41	112,930
13	San Bernardino	1.35	1.48	1.30	1.32	1.39	215,252
14	Carson	1.02	1.41	1.40	1.43	1.34	92,927
15	Carlsbad	0.85	0.98	1.32	1.23	1.33	113,147
16	Redlands	0.67	0.78	0.96	1.18	1.30	70,765
17	San Diego	1.07	1.21	1.25	1.27	1.28	1,390,966
18	Gardena	1.33	1.31	1.27	1.23	1.17	60,096
19	San Buenaventura (Ventura)	0.92	1.16	1.11	1.10	1.16	110,153
20	Riverside	0.94	1.08	1.12	1.16	1.15	321,570

Table 2.1 shows twenty cities (with at least 50,000 population) showing the highest jobs/workers ratios in Southern California (including the following seven counties: Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties). Irvine has had the highest jobs/workers ratio in the entire Southern California region over this whole time period (of cities with at least 50,000 population). In 1980, Irvine had almost twice as many jobs as workers (with a ratio of 1.9). The second highest ratio was in Burbank (1.64). The large growth in jobs in the 1980s for Irvine increased the ratio to 2.19 in 1990, and it increased further yet to nearly 2.5 in 2000. In the 2000s and 2010s the ratio slid a bit in Irvine, to around 2.2, but still remained the highest in the region.

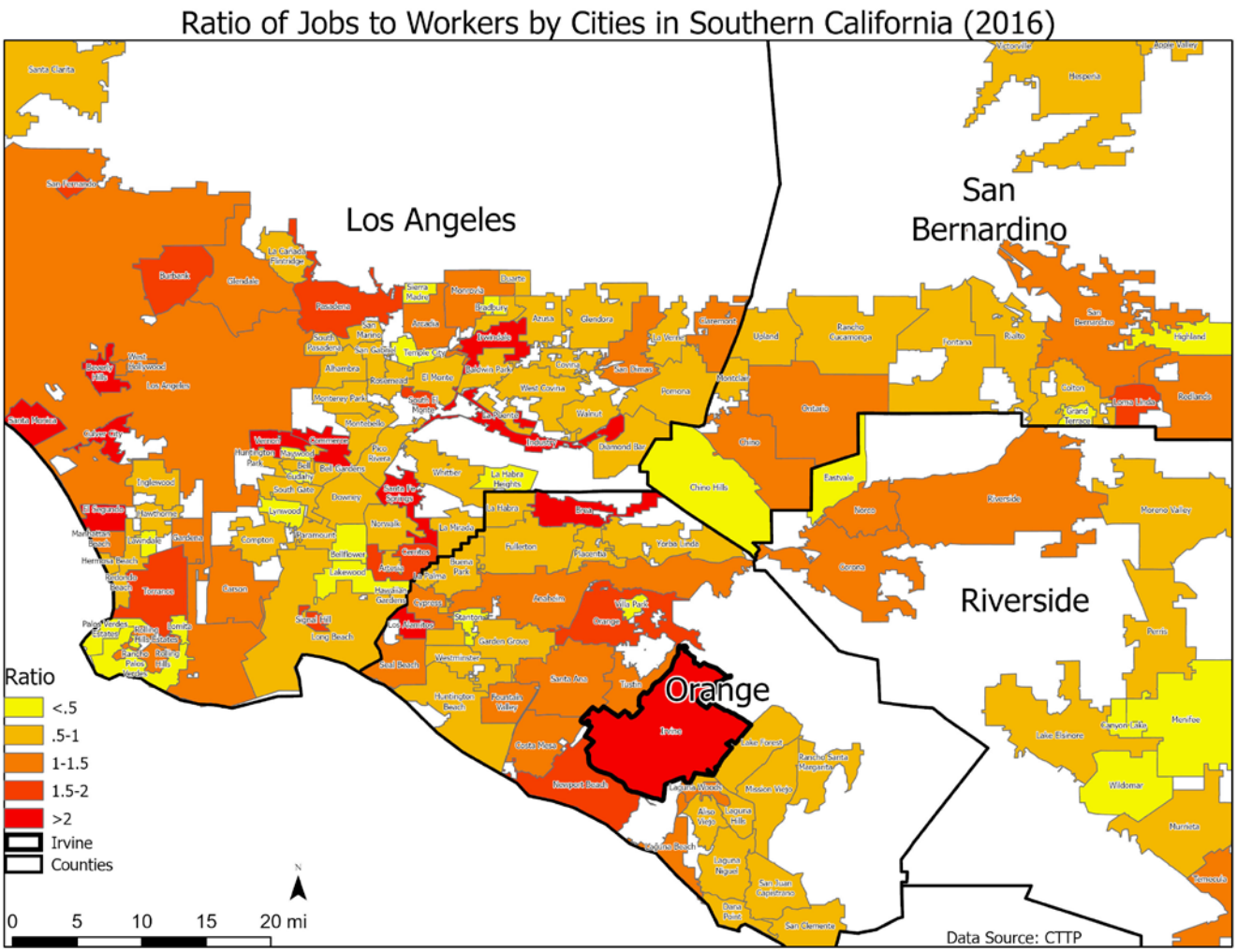

Figure 2.3

Mapping Jobs/workers in cities

We next show in Figure 2.3 the spatial location of these southern California cities based on the jobs/workers ratio.[9] Most notable is that Irvine is indeed a job center. In Orange County, we also see that the smaller city of Brea in the northern part of the county has a relatively high jobs/workers ratio, whereas the cities of Newport Beach and Orange also show up here. Spatially, we can see that Irvine anchors a job center in the southeastern part of this map, whereas Los Angeles and several smaller cities (Pasadena, Beverly Hills, Santa Monica, and Culver City anchor the traditional job center in the region.

Where are jobs located in Irvine?

Up to now we have described the general patterns of jobs in the city of Irvine, regardless of where they are located within the city. We now move on to focus where jobs are located within Irvine. The most recent year for which we have trustworthy data is for 2014, so we constructed an average of the number of employees in each block in the city from 2012-2014. We average over these three years since there may be year to year fluctuations if a firm goes out of business and is not replaced immediately.[10]

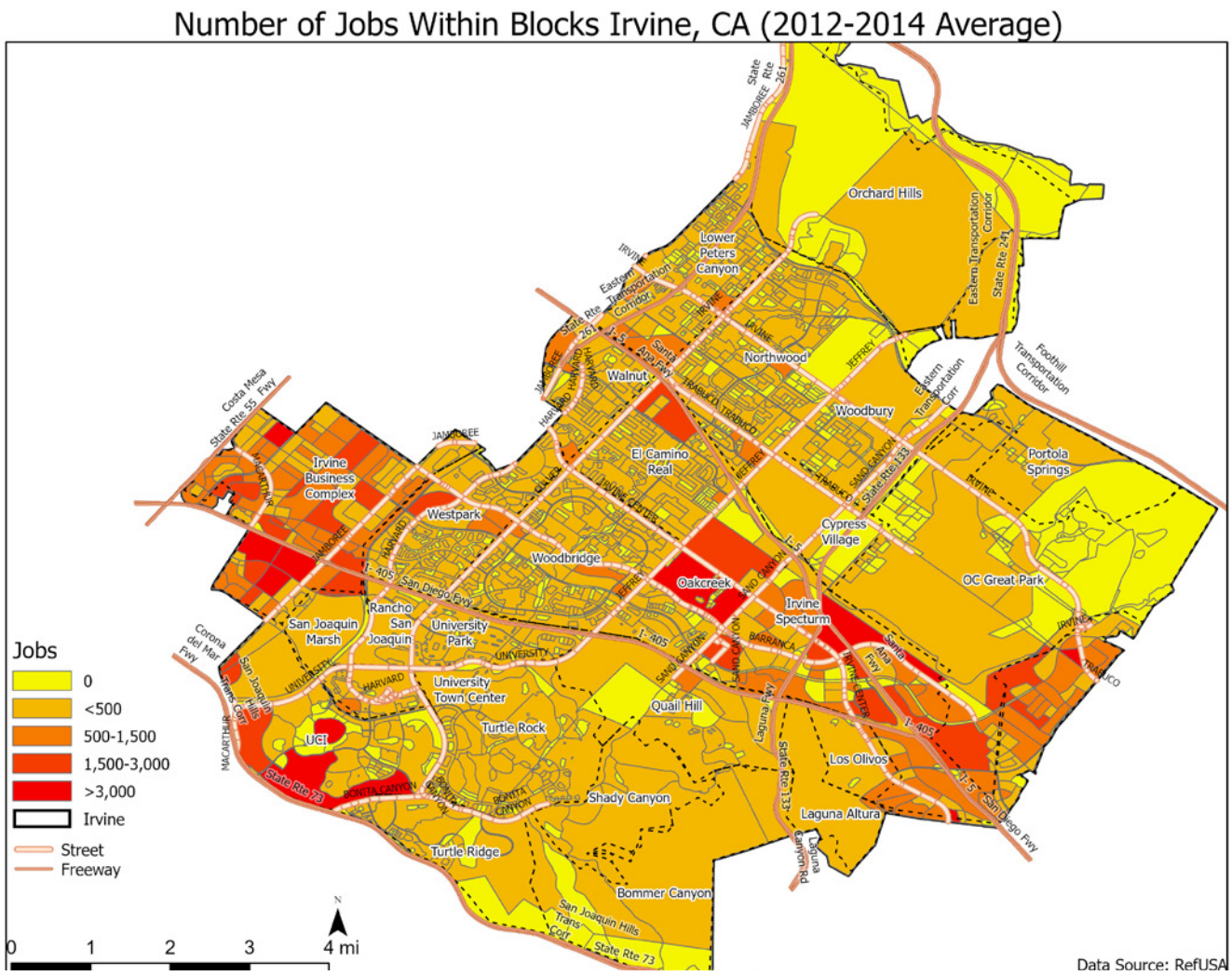

Figure 2.4

Figure 2.4 shows the location of jobs in the city in blocks. We see the presence of the high job concentration in the Irvine Business Complex (IBC) in the westernmost portion of the city. We also see that the eastern side of the city has a high composition of jobs. This includes the Irvine Spectrum area, as well as the area north of there that surrounds the Great Park. The central and most northern parts of the city have fewer jobs. We also observe the job concentration associated with UC Irvine in the southwestern portion of the city.

Summary

In this chapter, we have described the number of jobs in Irvine, and how they have grown over the history of the city. In the next chapter we will disaggregate the total number of jobs and assess the types of jobs that the city has experienced over time.

9 For a more exhaustive study on jobs/housing balance in the Southern California region, see the earlier MFI Report: Hipp, John R., Kevin Kane, and Jae Hong Kim. 2017. "Jobs-housing balance in Egohoods in Southern California." Metropolitan Futures Initiative (MFI), Irvine, CA

10 Data source: Reference USA Historical Business Data. .

Chapter 3. What types of jobs does Irvine provide?

Moving beyond simply the number of jobs in Irvine, in this chapter we focus on the types of jobs that exist within the city. We therefore focus on the number of jobs in different industries. We also focus on the types of jobs that residents in the city of Irvine work at: we ask what industries these workers are in, as well as what occupations they tend to work in. It should be noted that not all Irvine residents work at jobs within the city. In fact, less than 50% of the residents work within the city, although the percentage has been rising over the last few decades (see Chapter 4 for more details).

Irvine jobs by industry

Figure 3.1 shows the number of jobs in Irvine from 1980 to 2016 broken out by industry.[11] While the city's economy is diverse, professional services account for the largest share (38% in 2016). The professional sector experienced about a 150% increase in the 1980s and again doubling in the 1990s. Since 2000, the number of professional service jobs has increased another 50%. There has also been a very steady increase in the number of jobs in the education and health industries. It may be surprising to some that the third largest industry in the city is manufacturing jobs, which has exhibited steady growth over this time period. This reflects the relatively large presence of light industry in Irvine, including biomedical and pharmaceutical firms such as Edwards Lifesciences, Johnson & Johnson, and Allergan. The next largest industry is retail, with very large growth in the 1980s and then steady, slower growth since then. Likewise, jobs in entertainment and food services have shown a steady growth since 1980. The number of jobs in construction and utilities has remained relatively constant.

11 We defined these based on 1-digit NAICS codes. The data in this section come from various years of the Census Transportation Planning Packages (CTPP). The 2010 data come from the 2006-2010 CTPP data from the American Community Survey (ACS), and the 2016 data come from the 2012-2016 CTPP ACS data.

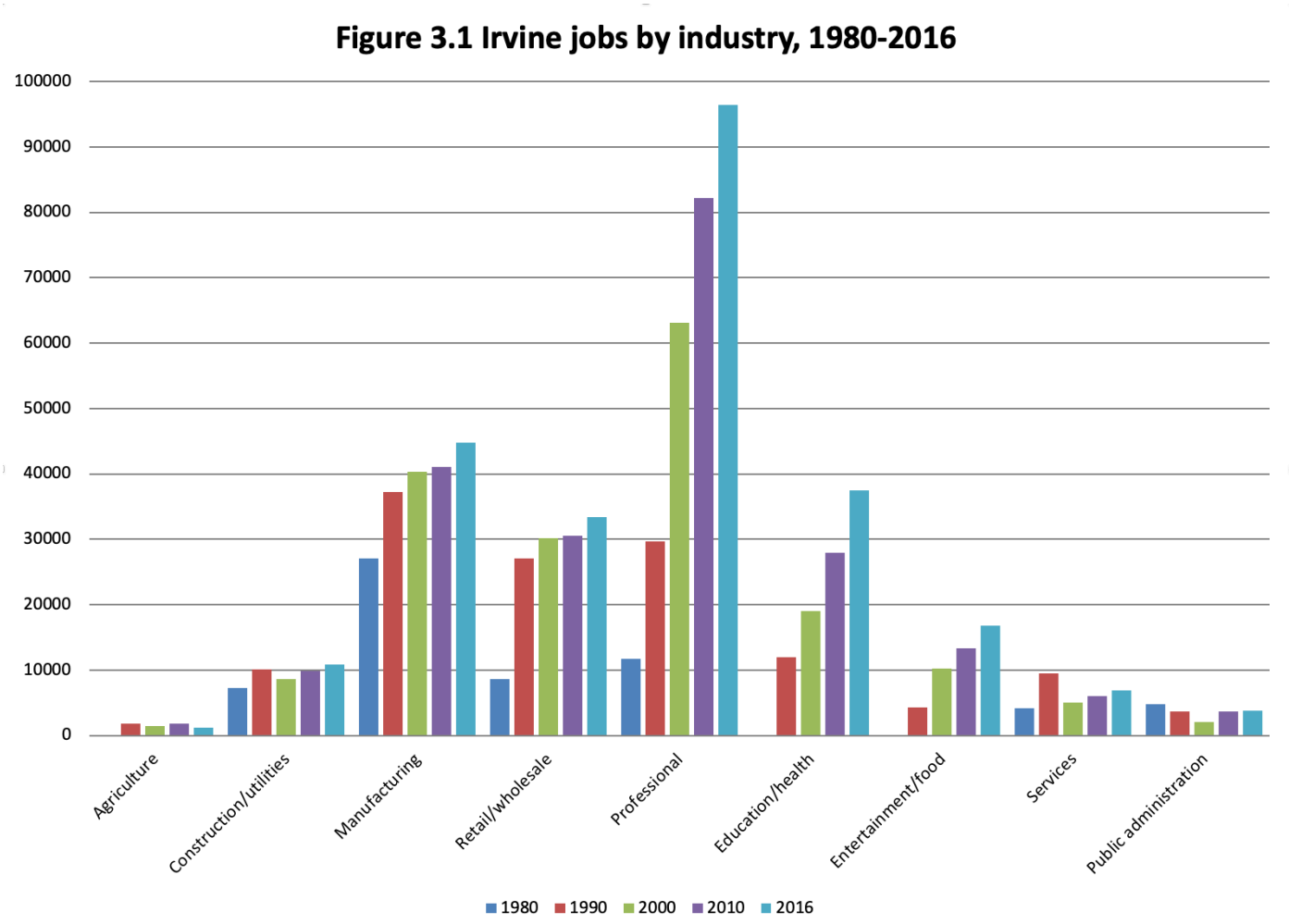

Figure 3.1

While viewing the raw number of jobs in each industry is useful, another way to assess the composition of jobs in Irvine is to compare them to the composition of the region overall. We do this by computing location quotient values. The logic of location quotients is this: first, compute the percentage of all workers in the region working in each industry; second, compute the percentage of workers in Irvine working in each industry; third, compute the ratio of these percentages in Irvine to those in the entire region. Thus, for example, if 5% of the jobs in Irvine are in agriculture and 5% of the jobs in the region are in agriculture, then Irvine's location quotient for agriculture in that year would be 1.0 (as 5/5 = 1). However, if 7% of Irvine's jobs are in agriculture, then their location quotient for agriculture in that year would be 1.4 (as 7/5 = 1.4). Or, if just 3% of Irvine's jobs are in agriculture, then their location quotient for agriculture in that year would be 0.6 (as 3/5 = 0.6). Thus, values greater than one indicate that Irvine has a greater proportion of jobs in this industry, whereas values less than one indicate that Irvine has a smaller proportion of jobs in the industry compared to the region overall.

Figure 3.2 Irvine jobs by industry, location quotients 1980-2016

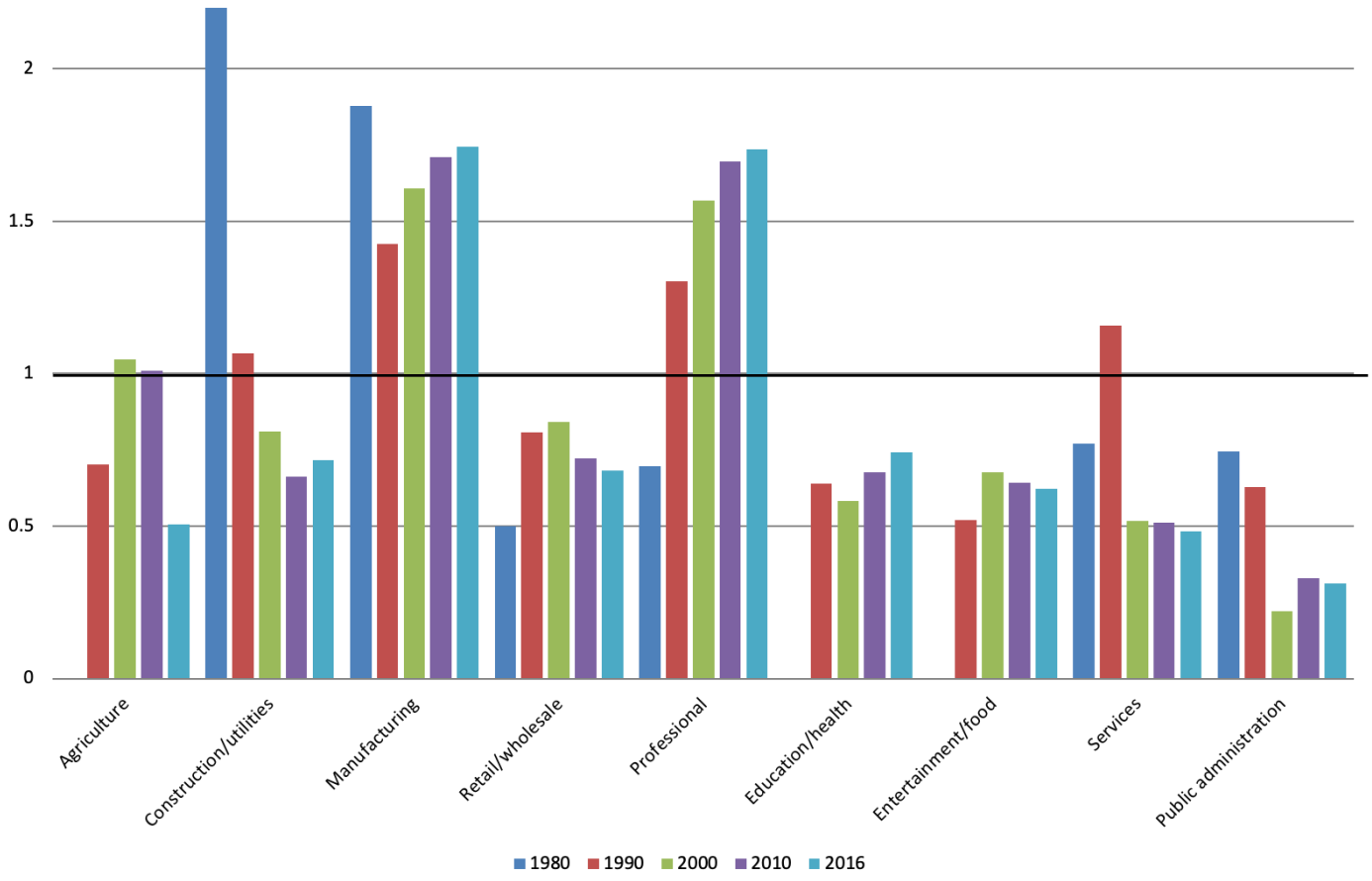

Figure 3.2

Figure 3.2 shows the location quotient of jobs in each industry for Irvine compared to the region (Southern California, as a whole).[12] Not only have jobs in professional industries been growing in Irvine, but they've been growing faster than the rest of the region. Thus, Irvine had about 30% more professional jobs than the region in 1980 (given a location quotient of 1.3), and has remained at 50% more professional jobs than the region since 1990. Despite the growth in jobs in education and health industries, Irvine has only 60-75% as many of these jobs as the region. We see that Irvine is actually a hub of manufacturing jobs, as they have 40-85% more manufacturing jobs than the region. On the other hand, Irvine has only 50-85% as many retail jobs as the region, 50-60% as many entertainment and food jobs, and about 50% as many service jobs since 2000. Whereas Irvine had a very high concentration of construction jobs in 1980 with the early growth of the city, that has steadily declined since then and there are now about 70% as many construction jobs in Irvine compared to the region. Finally, we see that Irvine has a similar percentage of agriculture jobs in 2000 and 2010 compared to the region, although that has fallen sharply in the 2010s.

12 We caution that the number of categories of industries is smaller in 1980 compared to the later years. Although this should not affect our location quotient values for the categories that are available, it does explain why we are missing the education/health and entertainment/food categories in 1980.

Figure 3.3 Irvine workers by industry, location quotients 1980-2016

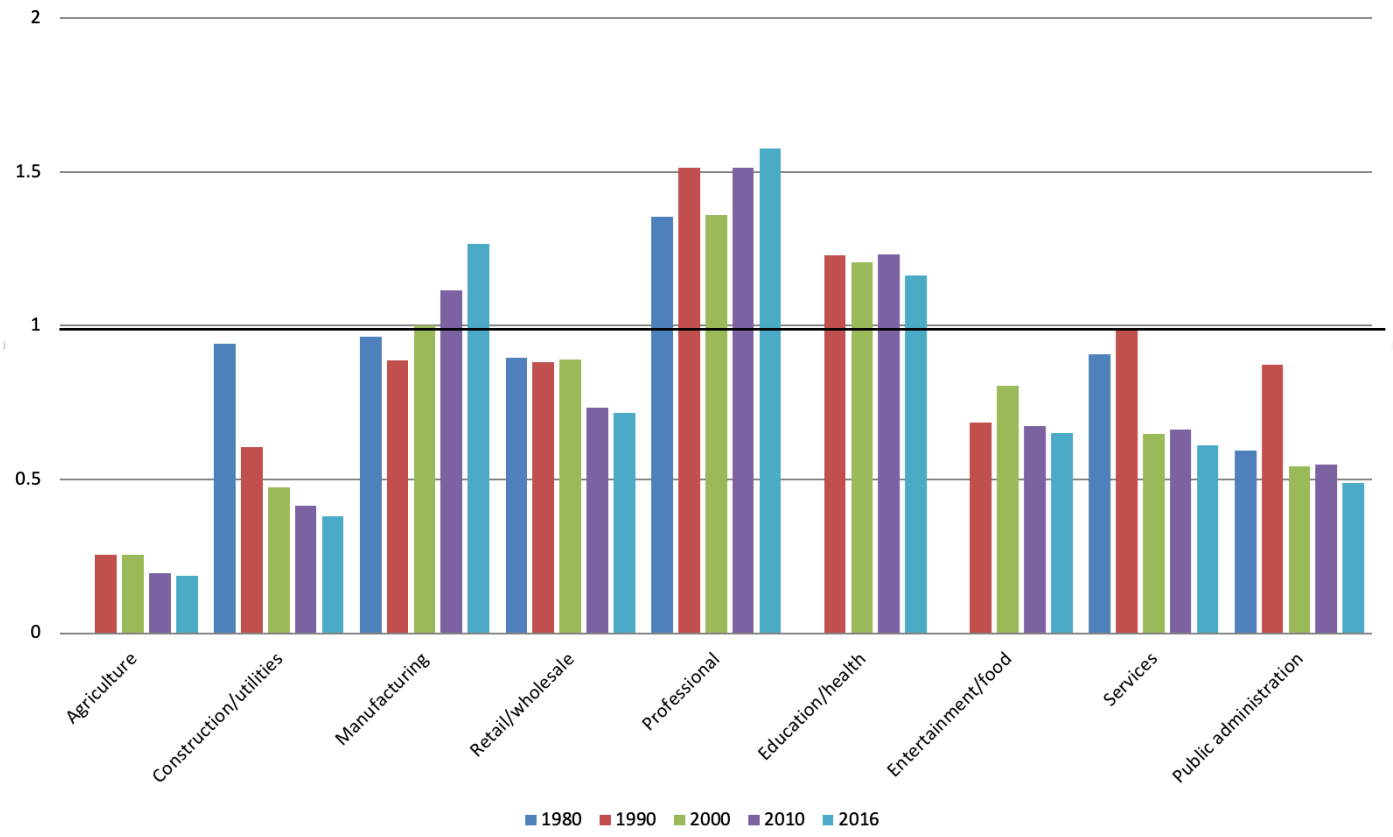

Figure 3.3

Whereas we have just viewed the composition of jobs in Irvine, we can also look at the industry composition of Irvine residents (regardless of where they work). Figure 3.3 shows the location quotient of workers in Irvine in each industry compared to the region. As presented in the figure, Irvine workers are disproportionately in professional service industries, as the composition of workers in the city has about 50% more professional workers compared to the region. There are about 20% more workers in education and health industries compared to the region, and the city has had a similar composition of workers in manufacturing compared to the region, and has actually risen 25% higher than the region most recently. The proportion of workers in retail, entertainment, food, and services industries are all lower than the region average. Whereas Irvine workers in construction and utilities industries was near the region average in 1980, since then such workers are far less present in Irvine.

Figure 3.4 Ratio of Irvine jobs to workers location quotients by industry 1980-2016

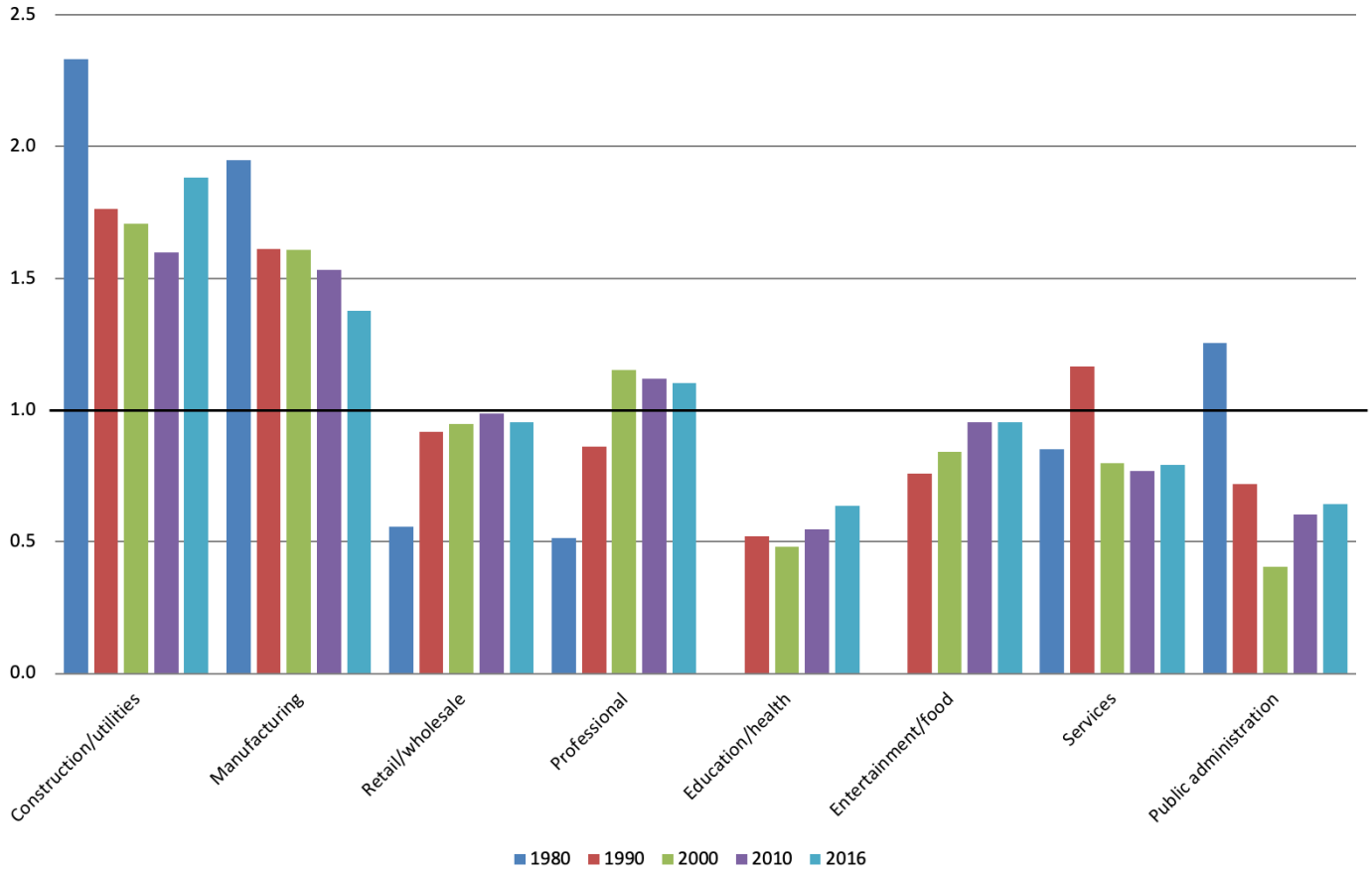

Figure 3.4

In Figure 3.4 we directly compare the industries of Irvine's jobs to those of Irvine's workers, by computing the ratio of the ratios shown in the two prior figures. Values greater than 1 indicate that Irvine has relatively more jobs than workers in an industry, whereas values less than one indicate that Irvine has relatively fewer jobs than workers for an industry. We see that Irvine has more jobs than workers in the construction and manufacturing industries. There are actually fewer jobs than workers in education, health, services, and public administration industries.

Jobs by income level in Irvine

Another way to consider the composition of Irvine jobs is to consider the income level of these jobs. It is challenging to define categories of income as low, medium, and high, especially over time given inflation. Nonetheless, we selected the categories here by constructing distributions of low, medium, and high income such that the three categories each constituted approximately 1/3 of the jobs (or workers) in the entire region each decade. This allows comparing Irvine's share of income category in each decade, but

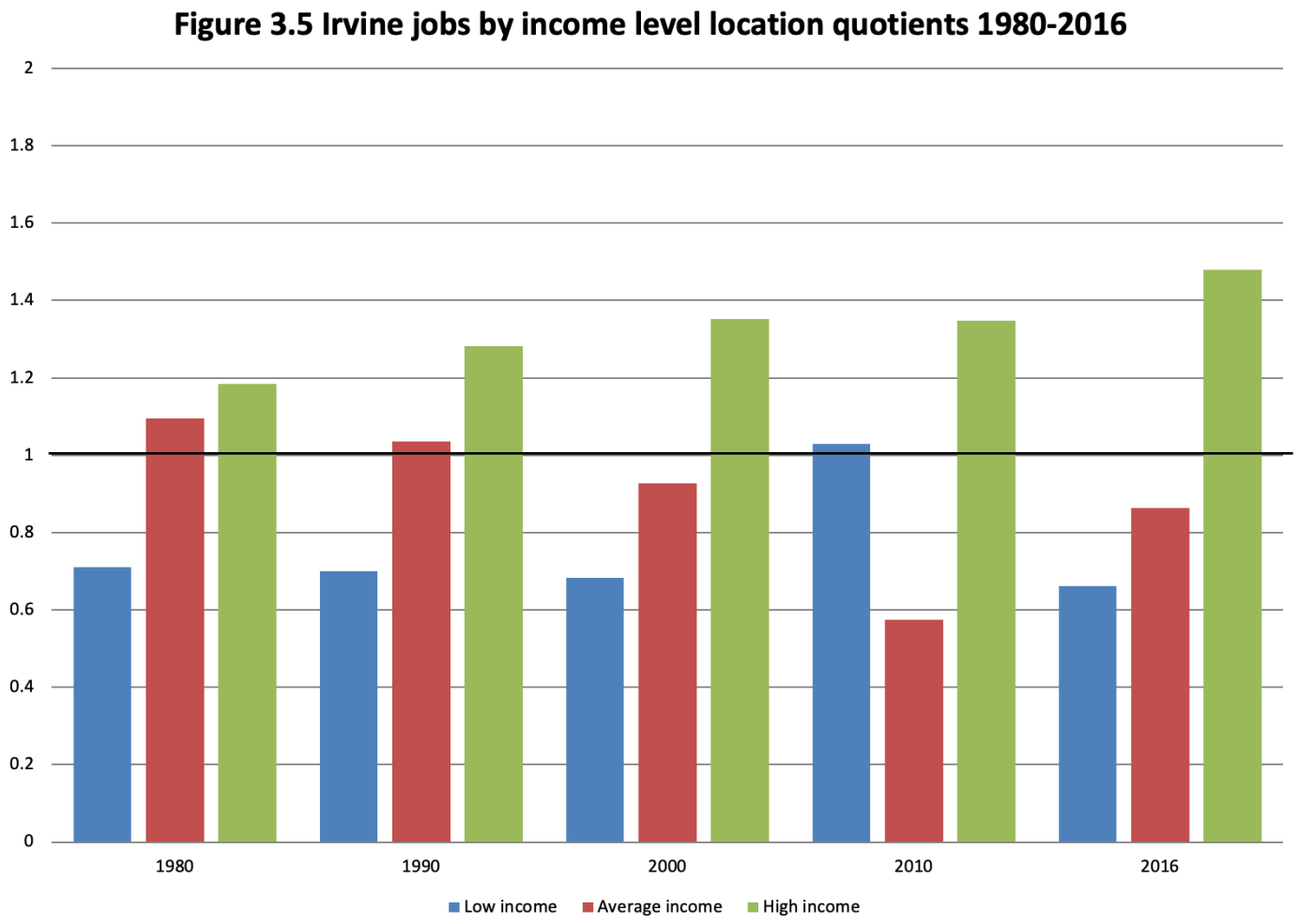

Figure 3.5

implicitly accounting for general inflation. The results are presented in terms of location quotients, so again values greater than 1 indicate that Irvine has a larger share of jobs in this income group compared to the region, whereas values less than 1 indicate that Irvine has fewer jobs in this income group.

As shown in Figure 3.5, Irvine has consistently had fewer jobs in the lowest income category over this entire time period. From 1980 to 2000 Irvine had about 70% as many low income jobs as did the region, and although there was an upward blip in 2010 (in part due to the recession combined with the caveats of income classification mentioned above), this has returned to the same low level in 2016. The proportion of high income jobs has steadily risen since 1980. While there were about 20% more high income jobs in Irvine compared to the region in 1980, this has risen to about 50% more high income jobs in 2016. In contrast, jobs in the average income category show a declining trend. More specifically, whereas Irvine had slightly more average income jobs compared to the region in 1980 and 1990, by 2000 they had fewer compared to the region.

Figure 3.6 Irvine workers by income level location quotients 1980-2016

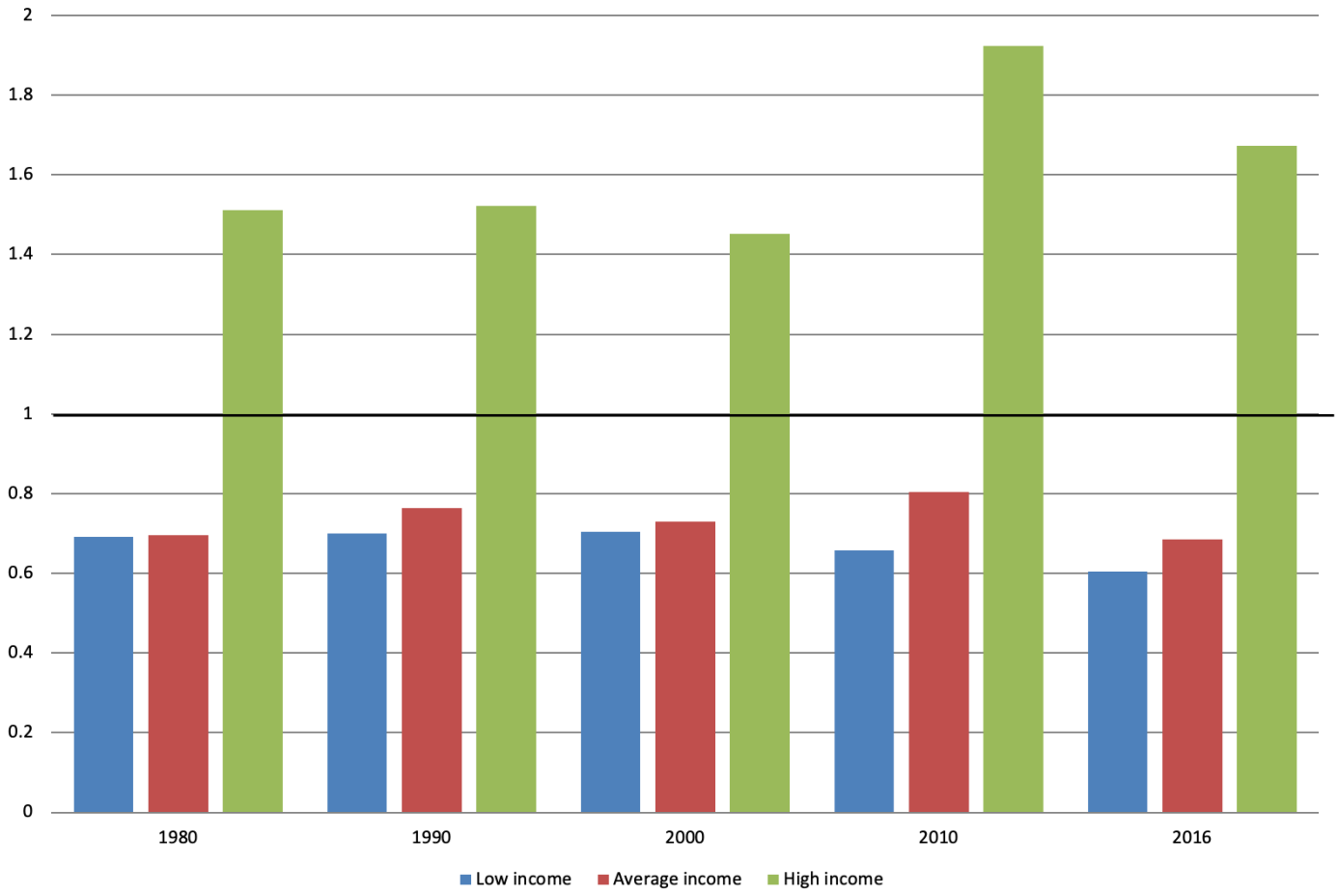

Figure 3.6

The next figure (Figure 3.6) presents the income level of workers living in Irvine. The most striking observation is that Irvine disproportionately has high income workers, and this has been the case since 1980. From 1980 to 2000, Irvine had about 50% more high income workers compared to the region, and this increased to 90% more and 70% more in 2010 and 2016. Irvine has consistently had fewer low and average income workers compared to the region, and in 2016 Irvine had 60% as many low income workers and 70% as many average income workers.

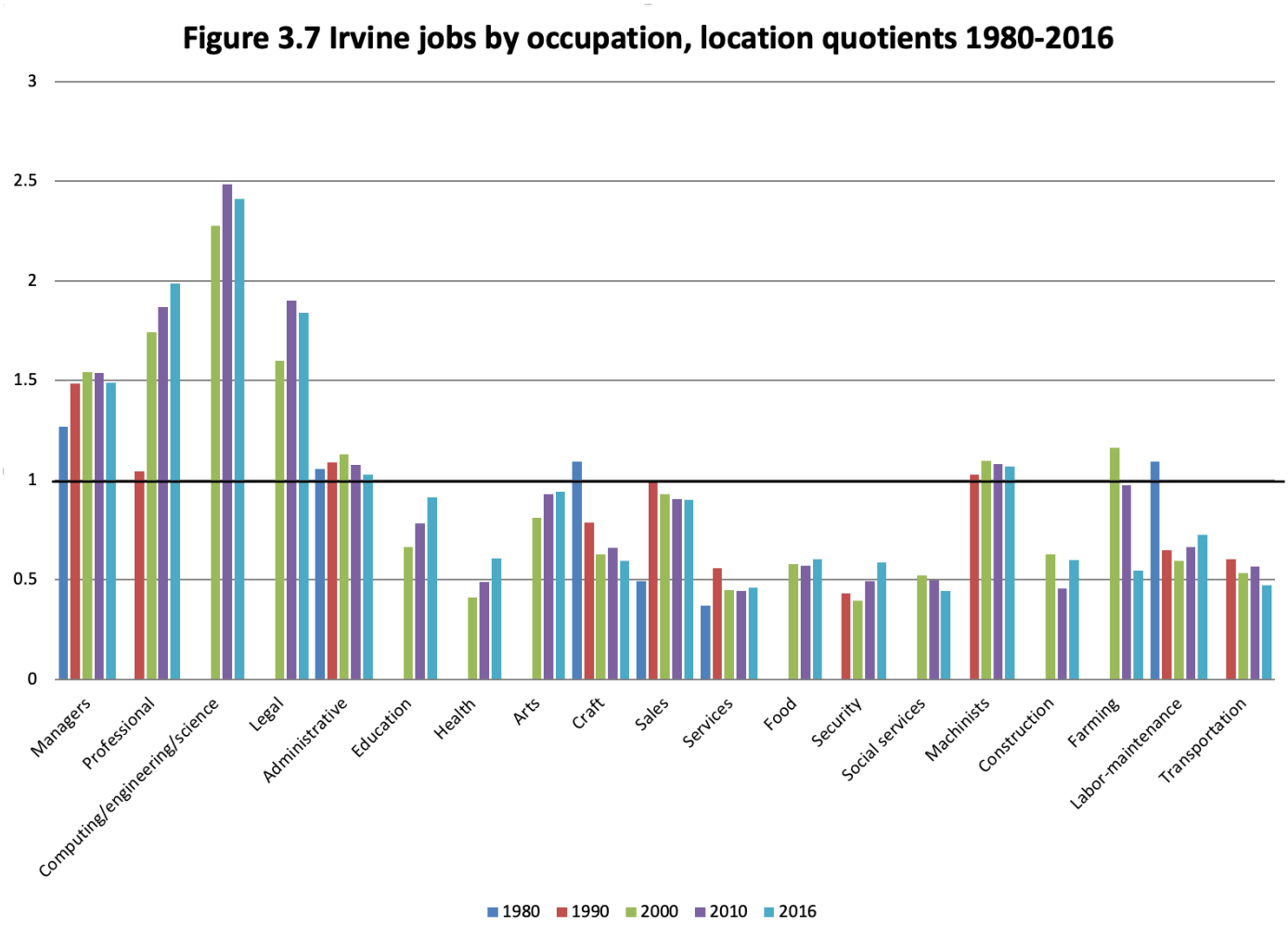

Figure 3.7

Jobs by occupation in Irvine

Earlier we showed the industries of Irvine jobs, but now we focus on the occupations of Irvine jobs. Occupations capture the type of work that the employees are doing, as opposed to the type of industry that the firm is in. In Figure 3.7 displaying location quotients, we see that there are about 50% more manager jobs in Irvine businesses compared to the region overall. There is also a strong growth in professional jobs, as Irvine was near the region average in 1990, but since then have grown to have almost twice as many professional jobs as in the region overall. The city's jobs are particularly overrepresented in the computing, engineering and science occupations, as there are about 150% more jobs in these occupations compared to the region. There is also overrepresentation in legal occupations. On the other hand, there is underrepresentation in education and health occupations, as well as construction, food, services, security services, and transportation occupations.

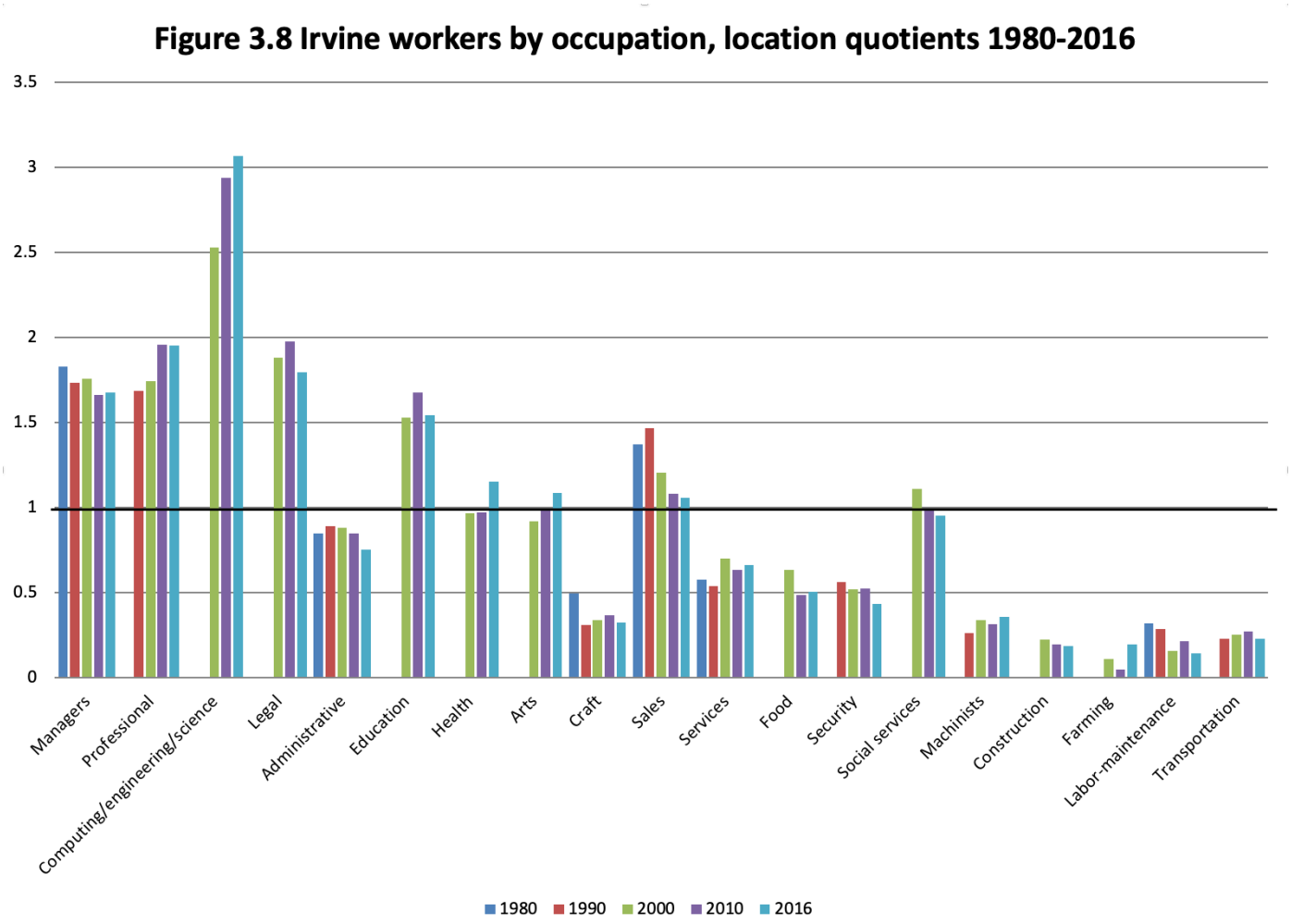

Figure 3.8

Rather than considering the occupations of jobs in Irvine, in the next figure we show the composition of occupations for Irvine workers – that is, those who live in the city, regardless of where they work. We see in Figure 3.8 that Irvine residents tend to be disproportionately represented in the computing, engineering, and science occupations, as their composition is about 200% greater than the region overall. They are also overrepresented in education, legal, management, and professional occupations. Irvine residents are particularly unlikely to work in the construction, craft, farming, food, machinists, labor/maintenance, and transportation occupations.

Summary

In this chapter we have described the types of jobs in Irvine, and shown that there is a relatively high proportion of higher income, professional jobs. So who is working at these jobs? In the next chapter, we will explore the commuting patterns to Irvine jobs.

Chapter 4. Commuting flows into Irvine: where do workers come from?

While we have demonstrated how Irvine has become a job center, a next question is where do the job holders live? We explore this question and associated commuting patterns in the current Chapter. Some of these workers live in the city of Irvine, but many others commute from neighboring cities, or even further distances.

Where do Irvine residents work?

One advantageous feature of Irvine serving as a job center is that it provides many jobs for its residents. In an earlier chapter we compared the number of jobs in Irvine with the number of workers. However, while that indicates that there are plenty of jobs nearby for Irvine residents, it does not assess whether Irvine residents actually work within the city, or nearby.

One metric we can use is to ask what percentage of Irvine residents work within the city. Figure 4.1 shows how this has changed from 1980 to now.[13] We see that in 1980, Irvine ranked #29 among Southern California cities for having the highest percentage of residents working within the city. At that time, 26% of residents worked at jobs in Irvine. The city has improved considerably since then, as Irvine has expanded the job opportunities it offers dramatically in both number and variety. In 1990, Irvine ranked #13 as 35% worked at jobs in the city, and since 2000 it has ranked #9. In 2000, 39% of residents worked at jobs in the city, and this has risen to 44% in the most recent decade.

13 The data used in this chapter come from the Census Transportation Planning Packages (CTPP) for various years.

Figure 4.1 City of Irvine: percent of residents who work in the city

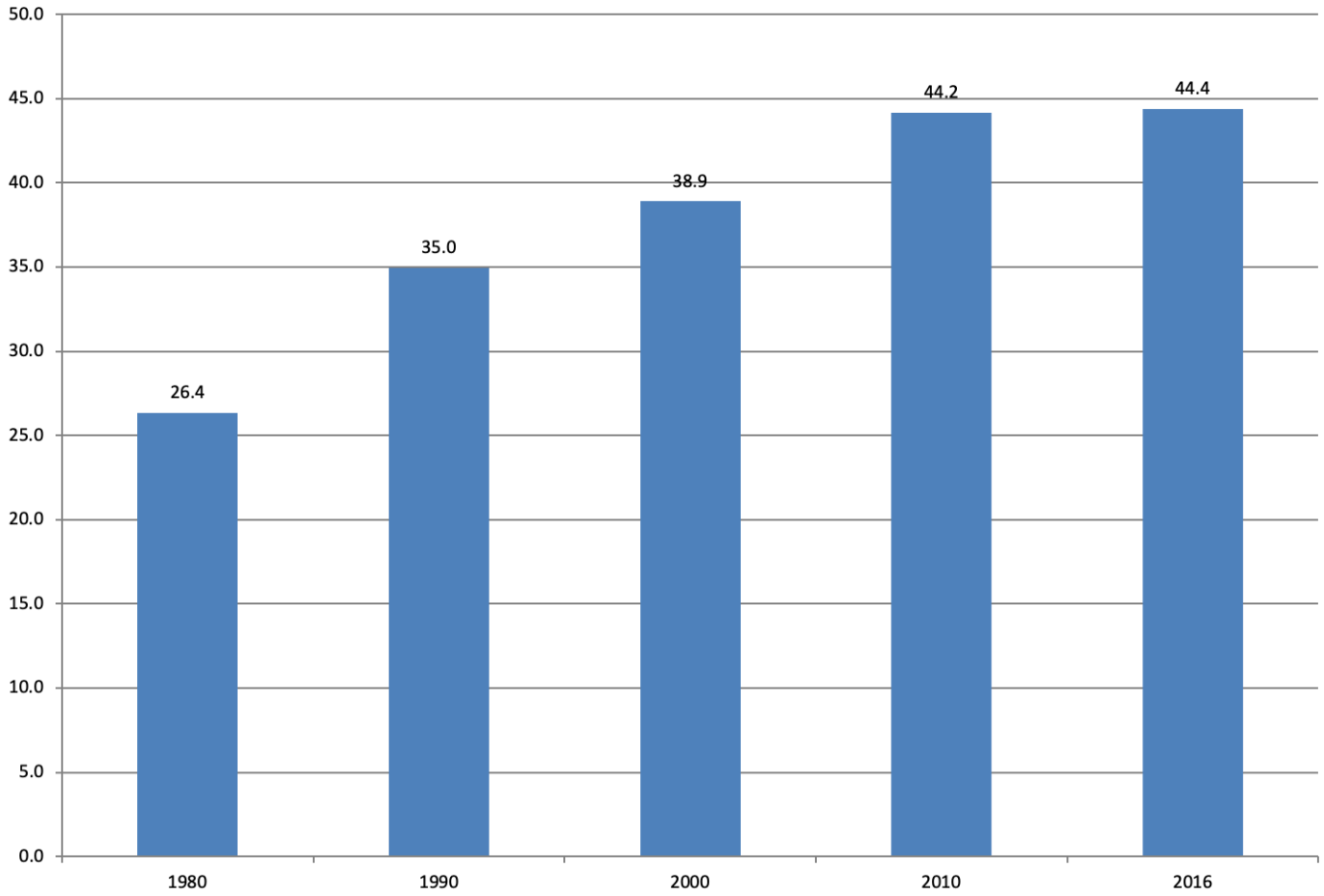

Figure 4.1

Flows of total workers into Irvine

We can ask where in general do all workers in Irvine come from? Table 4.1 illustrates the ranks of commuting flows of total workers into the city of Irvine from 1980 to 2016. Except for unincorporated areas in Orange County, Santa Ana had the largest commuting flows into Irvine in 1980 (n=8,875, 14.0%). Note that much of southern Orange County was still unincorporated in 1980, which is why there is such a large proportion from unincorporated areas (and will be seen shortly in the maps).[14] The second-largest commuting flow was Irvine's internal trips (n=8,196, 12.9%). Costa Mesa, Anaheim, and Huntington Beach are also major cities that have many commuters into Irvine. However, their percentages of commuting flows into Irvine have decreased over time.

14 In 1980 the CTPP only provided data for cities, and did not provide data for Census Designated Places (CDPs). Beginning in 1990, CTPP disaggregated unincorporated county data to CDPs, which is why El Toro appears in Table 1 in 1990. El Toro was a CDP in 1990, and incorporated into the city of Lake Forest in 1991.

Table 4.1. Ranks of commuting flows into Irvine 1980-2016

1980				1990			
Rank	City	No. of trip	%	City	No. of trip	%	
1	Uninc. Orange County	12,923	20.3	Irvine	20,659	15.5	
2	Santa Ana	8,875	14.0	Santa Ana	16,734	12.6	
3	Irvine	8,196	12.9	Costa Mesa	6,515	4.9	
4	Costa Mesa	4,667	7.3	Huntington Beach	6,367	4.8	
5	Huntington Beach	4,206	6.6	El Toro	6,151	4.6	
6	Newport Beach	2,843	4.5	Mission Viejo	6,017	4.5	
7	Anaheim	2,812	4.4	Newport Beach	5,473	4.1	
8	Tustin	2,042	3.2	Tustin	5,424	4.1	
9	Garden Grove	1,965	3.1	Anaheim	4,736	3.6	
10	Orange	1,895	3.0	Garden Grove	3,945	3.0	
11	Westminster	1,353	2.1	Orange	3,747	2.8	
12	Fountain Valley	1,320	2.1	Laguna Niguel	3,582	2.7	
13	Uninc. LA County	1,198	1.9	Uninc. LA County	3,404	2.6	
14	Long Beach	840	1.3	Laguna Hills	2,674	2.0	
15	Fullerton	823	1.3	Westminster	2,423	1.8	
2000				**2016**			
Rank	City	No. of trip	%	City	No. of trip	%	
1	Irvine	28,350	15.8	Irvine	52,785	21.2	
2	Santa Ana	17,000	9.5	Santa Ana	21,945	8.8	
3	Huntington Beach	8,540	4.8	Anaheim	11,075	4.4	
4	Anaheim	7,950	4.4	Costa Mesa	8,850	3.6	
5	Costa Mesa	7,385	4.1	Huntington Beach	8,835	3.5	
6	Mission Viejo	7,185	4.0	Lake Forest	8,780	3.5	
7	Garden Grove	6,270	3.5	Tustin	8,255	3.3	
8	Tustin	6,020	3.4	Garden Grove	8,030	3.2	
9	Newport Beach	5,675	3.2	Mission Viejo	7,920	3.2	
10	Lake Forest	5,550	3.1	Orange	7,885	3.2	
11	Orange	5,200	2.9	Newport Beach	7,605	3.1	
12	Rancho Santa Margarita	4,665	2.6	Aliso Viejo	5,550	2.2	
13	Aliso Viejo	4,385	2.4	Laguna Niguel	4,395	1.8	
14	Uninc. LA County	4,095	2.3	Rancho Santa Margarita	4,340	1.7	
15	Laguna Niguel	4,075	2.3	Long Beach	4,220	1.7	

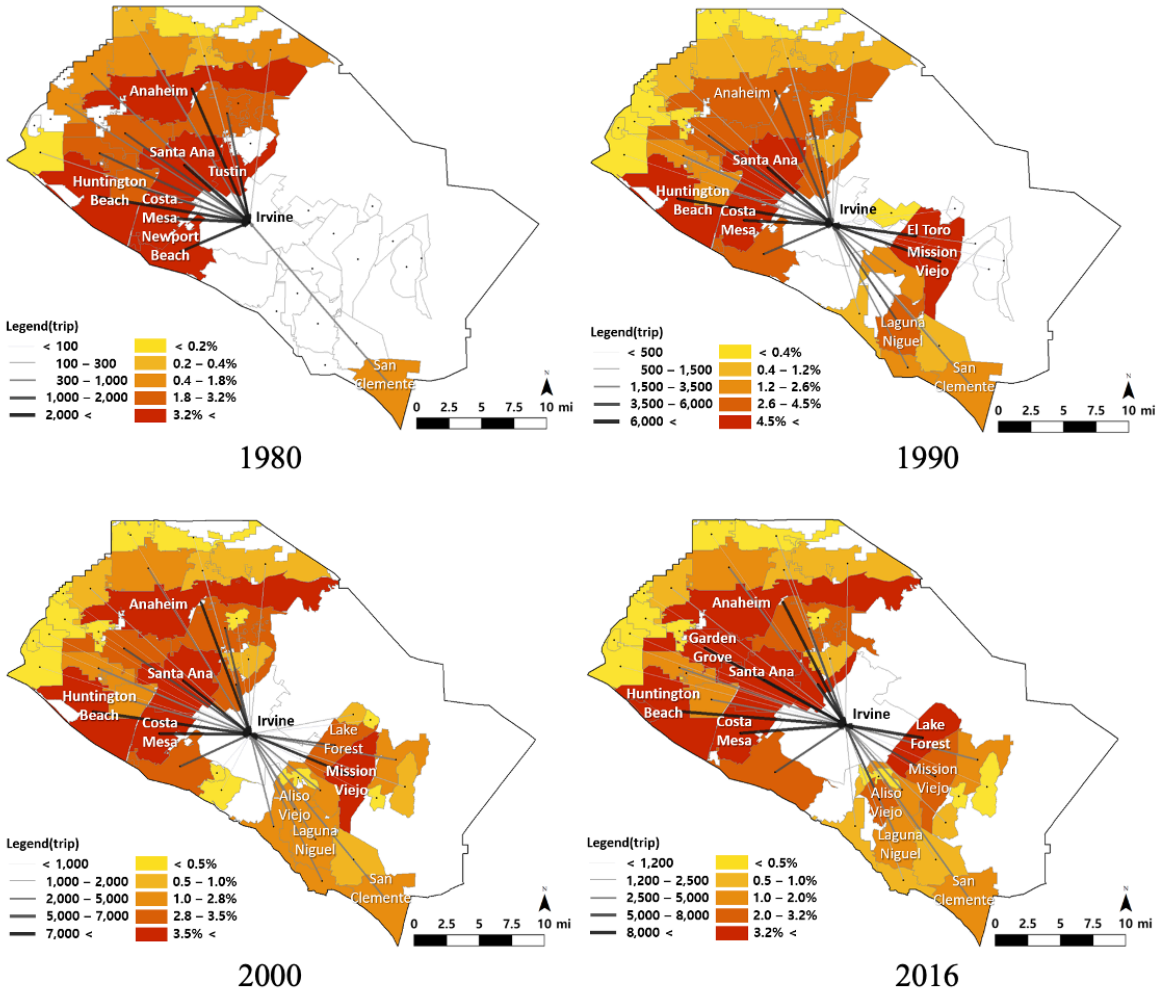

Figure 4.2. Spatial commuting flows of total workers to Irvine, 1980-2016

As shown in Figure 4.2, more of the commuting flows to Irvine were concentrated towards the northwest, which contains cities they were developed earlier than Irvine, such as Santa Ana, Costa Mesa, and Huntington Beach. Recall that several cities in south Orange County were not incorporated in 1980, which is why they do not appear on this map. Some south county cities have declined since 1990, such as Mission Viejo which has fallen from constituting 4.5% of commuters in 1990 to 3.2% in 2016. Santa Ana to the north has fallen from 14% to 8.5% since 1980, and nearby Costa Mesa has cut in half from 7.3% to 3.6%. However, Anaheim to the north has consistently remained at 4.4% since 1980.

Figure 4.3 Percentage internal trips in Irvine, 1980-2016

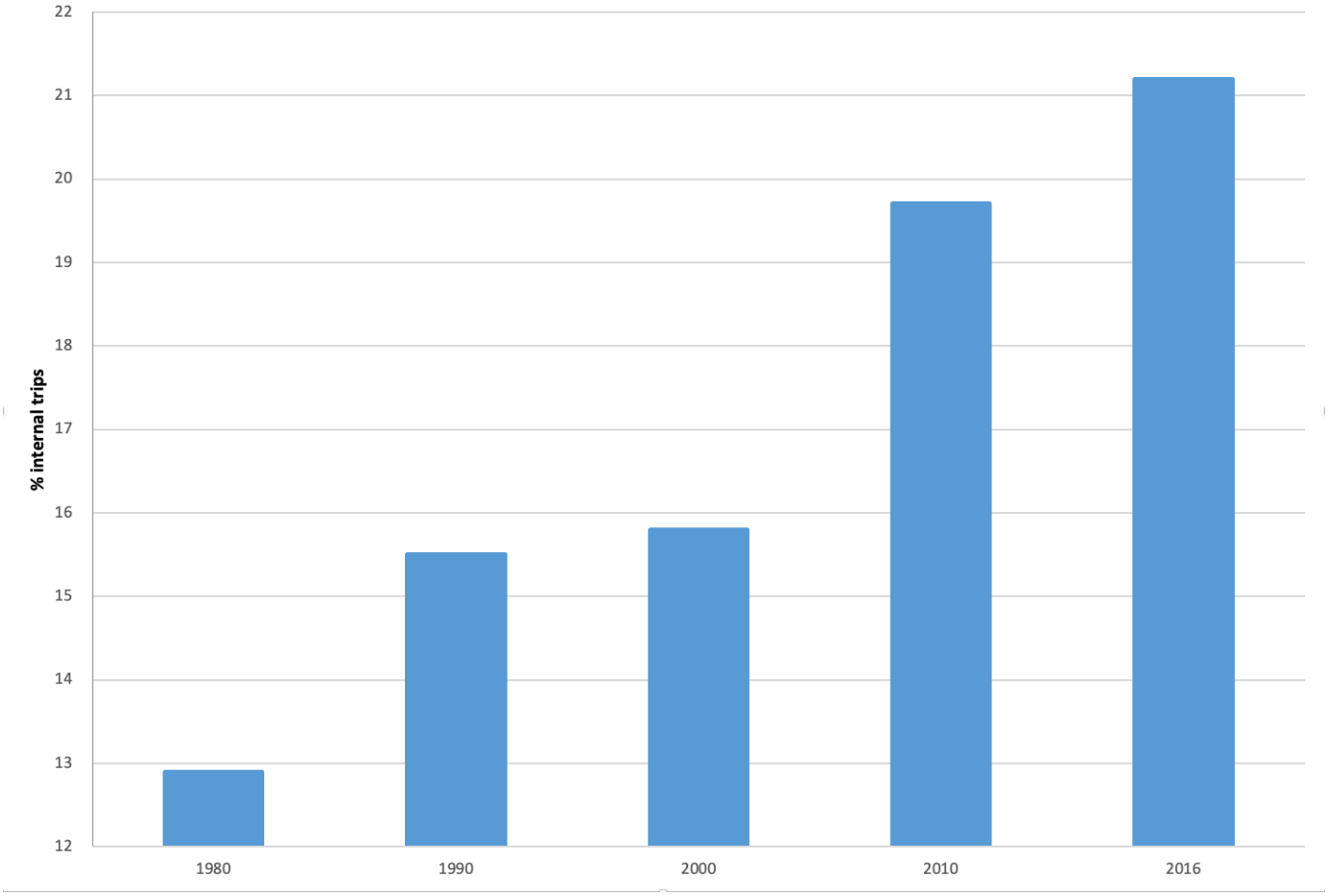

Figure 4.3

Figure 4.3 demonstrates the change in internal trips in Irvine from 1980 to 2016. This is slightly different from Figure 4.1, which showed the percentage of Irvine residents that work in the city. This asks what percentage of Irvine workers live in the city. The percentage of internal trips in Irvine has shown a steady increase over this time period, increasing from 13% in 1980 to 21% in 2016. The biggest jump occurred between 2000 and 2010 when the percentage of internal trips increased from 16% to 20%. Although there are numerous possible explanations for this jump, it is interesting to note that this occurred during a time when large annexations took place. The increasing pattern of internal trips indicates that Irvine residents are proportionally filling more of the jobs within the city and thereby enable the city to become more self-sufficient despite its rapid job growth rates.

Flows of workers by income level

While these initial plots have shown the general commuting pattern of all workers into Irvine, we next disaggregate these flows into categories based on the income level of workers. This allows us to distinguish between higher income and lower income jobs, and how these commuting patterns have changed over time. Whereas in the prior chapter we created income categories with approximately equal proportions, in this chapter we categorized income categories of those commuting into the city by classifying those with incomes that were less than 80% of median income as the low income group, those with incomes greater than 120% of median income as the high income group, and the remainder classified as middle income.

Commuting flows of low-income workers into Irvine

We first describe the commuting flows of low-income workers into Irvine from 1980 to 2016. Table 4.2 shows that there is a large presence of Santa Ana residents among low income workers in Irvine, followed by Anaheim, Garden Grove, and Costa Mesa. The percentage of workers commuting to Irvine from some cities has decreased over time. For instance, Costa Mesa, Huntington Beach, and Newport Beach show substantial decreases in the commuting flow of low-income workers into Irvine. Figure 4.4 demonstrates the spatial commuting patterns of the low-income workers who commute to Irvine. We can see that the commuting flow of low-income workers from newly developed areas in south Orange County is not substantial compared to the total commuting flow. The commuting flows of the low-income workers are relatively concentrated in the area northwest of Irvine, such as Anaheim, Garden Grove, Costa Mesa, and Tustin.

Table 4.2. Top 15 cities based on the number of low-income workers trips to Irvine

		1980		2000		2010		2016	
Rank (2016)	City	trips	%	trips	%	trips	%	trips	%
1	Irvine	4,421	13.0	4,940	17.1	4,045	24.7	8,065	22.2
2	Santa Ana	5,962	17.5	4,425	15.4	2,475	15.1	6,190	17.0
3	Anaheim	1,446	4.2	1,870	6.5	1,005	6.1	1,985	5.5
4	Garden Grove	1,165	3.4	1,325	4.6	550	3.4	1,755	4.8
5	Costa Mesa	2,753	8.1	1,765	6.1	690	4.2	1,605	4.4
6	Tustin	1,380	4.1	1,110	3.9	505	3.1	1,380	3.8
7	Huntington Beach	2,423	7.1	1,275	4.4	585	3.6	990	2.7
8	Orange	1,000	2.9	765	2.7	470	2.9	955	2.6
9	Lake Forest	-	-	680	2.4	405	2.5	680	1.9
10	Newport Beach	1,304	3.8	610	2.1	430	2.6	665	1.8
11	Aliso Viejo	-	-	340	1.2	140	0.9	505	1.4
12	Mission Viejo	-	-	460	1.6	215	1.3	440	1.2
13	San Clemente	113	0.3	225	0.8	85	0.5	335	0.9
14	Rancho Santa Margarita	-	-	410	1.4	50	0.3	290	0.8
15	Laguna Niguel	-	-	390	1.4	125	0.8	165	0.5

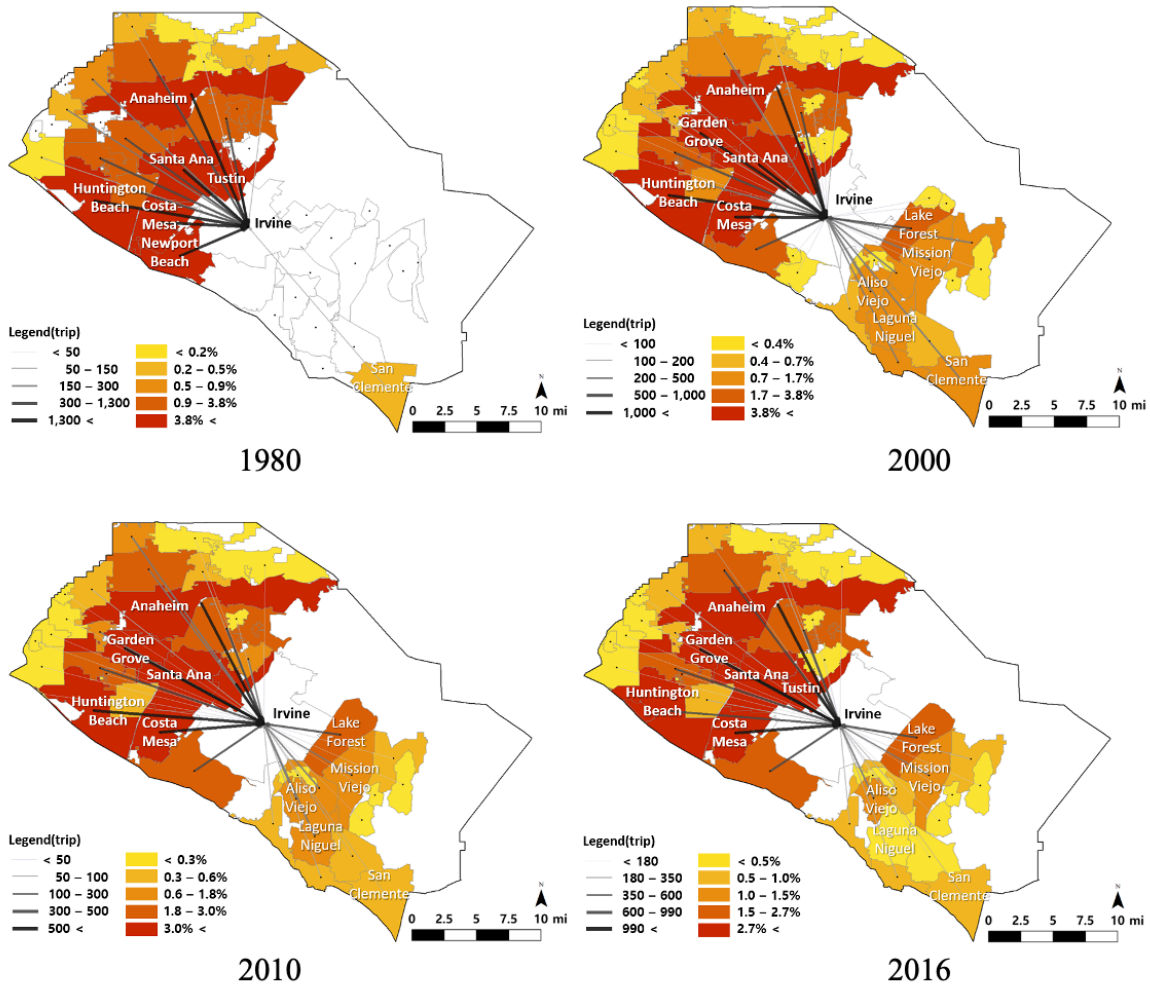

Figure 4.4. Spatial commuting flows of low-income workers into Irvine

Table 4.3. Top 15 cities based on the number of middle-income workers trips to Irvine

		1980		2000		2010		2016	
Rank (2016)	City	trips	%	trips	%	trips	%	trips	%
1	Irvine	1,667	10.2	3,910	12.8	8,340	16.6	14,055	19.8
2	Santa Ana	2,190	13.5	4,290	14.1	7,705	15.4	8,020	11.3
3	Anaheim	835	5.1	1,785	5.9	3,000	6.0	3,620	5.1
4	Tustin	331	2.0	1,420	4.7	2,445	4.9	3,125	4.4
5	Garden Grove	543	3.3	1,545	5.1	2,215	4.4	3,035	4.3
6	Huntington Beach	1,031	6.3	1,445	4.7	1,605	3.2	2,935	4.1
7	Orange	662	4.1	885	2.9	1,735	3.5	2,905	4.1
8	Costa Mesa	1,247	7.7	1,440	4.7	2,515	5.0	2,745	3.9
9	Lake Forest	-	-	915	3.0	2,095	4.2	2,375	3.3
10	Mission Viejo	-	-	780	2.6	1,085	2.2	1,370	1.9
11	Newport Beach	507	3.1	735	2.4	955	1.9	1,275	1.8
12	Aliso Viejo	-	-	515	1.7	675	1.3	1,205	1.7
13	Rancho Santa Margarita	-	-	625	2.0	530	1.1	915	1.3
14	Laguna Niguel	-	-	500	1.6	660	1.3	760	1.1
15	San Clemente	87	0.5	290	1.0	405	0.8	680	1.0

Commuting Flows of middle-income workers into Irvine

Table 4.3 shows the commuting pattern of middle-income workers into Irvine. Most external middle income workers come from Santa Ana, followed by Anaheim and Tustin. Again, most of the other cities have experienced decreases in the percentages of middle-income workers' trips to Irvine after 2010, as Irvine has been able to increase its own percentage substantially. The spatial commuting flows of the middle-income group are shown in Figure 4.5 and are similar to that of low-income workers. Most middle-income workers came from the central part of the county, such as Anaheim, Garden Grove, Huntington Beach, and Tustin.

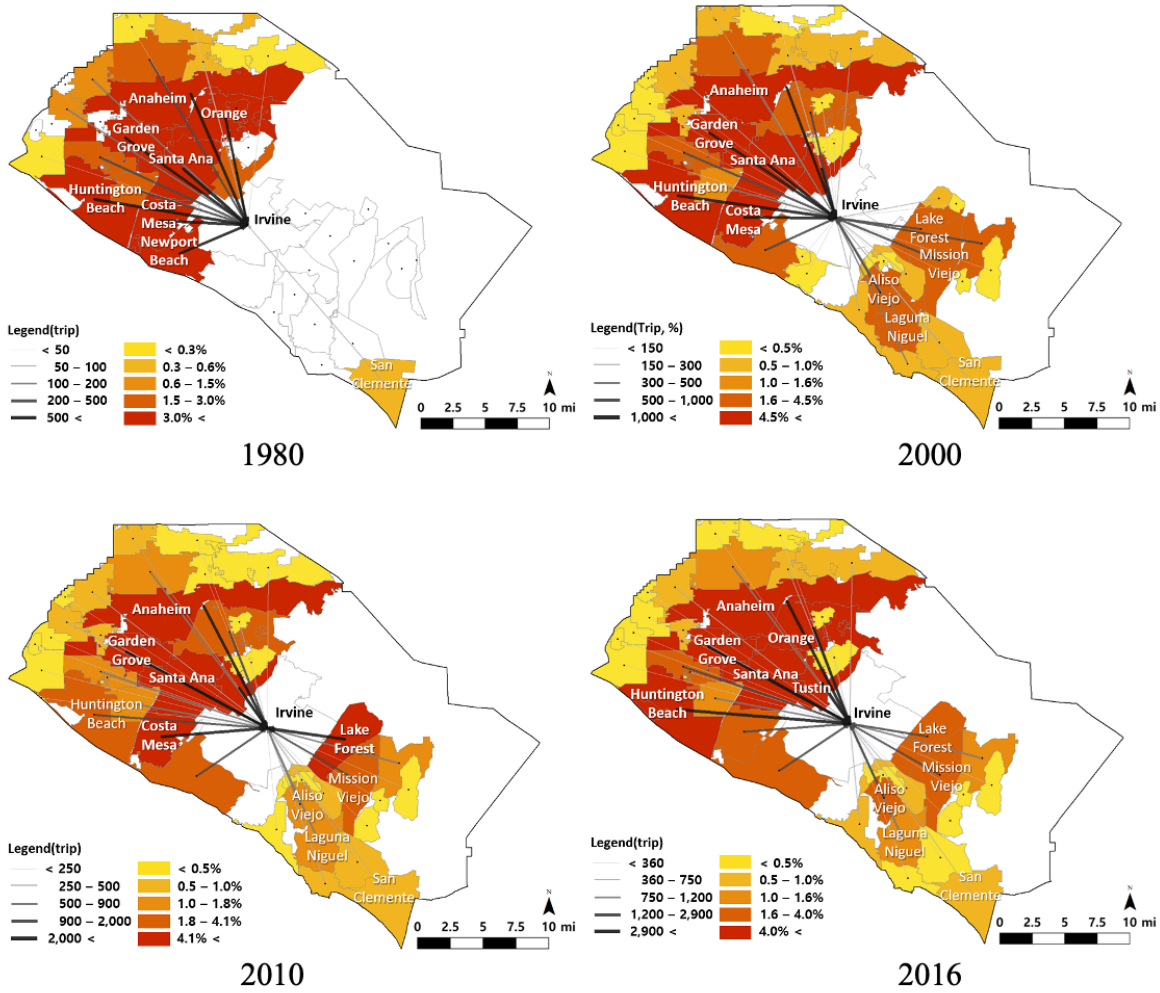

Figure 4.5. Spatial commuting flows of middle-income workers into Irvine

Table 4.4. Top 15 cities based on the number of high-income workers trips to Irvine

		1980		2000		2010		2016	
Rank (2016)	City	trips	%	trips	%	trips	%	trips	%
1	Irvine	1,818	15.5	17,515	15.0	27,655	19.0	29,500	21.0
2	Santa Ana	440	3.8	8,265	7.1	9,695	6.7	7,710	5.5
3	Mission Viejo	-	-	5,945	5.1	5,385	3.7	6,105	4.4
4	Lake Forest	-	-	3,955	3.4	5,715	3.9	5,720	4.1
5	Newport Beach	965	8.3	4,220	3.6	6,395	4.4	5,660	4.0
6	Anaheim	397	3.4	4,295	3.7	5,360	3.7	5,380	3.8
7	Huntington Beach	641	5.5	5,820	5.0	6,040	4.2	4,905	3.5
8	Costa Mesa	603	5.2	4,120	3.5	4,495	3.1	4,460	3.2
9	Orange	233	2.0	3,540	3.0	4,770	3.3	3,980	2.8
10	Aliso Viejo	-	-	3,525	3.0	3,565	2.4	3,830	2.7
11	Tustin	294	2.5	3,490	3.0	4,565	3.1	3,755	2.7
12	Laguna Niguel	-	-	3,185	2.7	4,030	2.8	3,455	2.5
13	Garden Grove	221	1.9	3,400	2.9	3,470	2.4	3,240	2.3
14	Rancho Santa Margarita	-	-	3,625	3.1	3,460	2.4	3,130	2.2
15	San Clemente	114	1.0	1,585	1.4	2,180	1.5	2,420	1.7

Commuting flows of high-income workers into Irvine

Table 4.4 shows the commuting flows of high-income workers who commute to Irvine. Although the largest percentage of external high income workers comes from Santa Ana, this is a much smaller percentage compared to low and middle income workers in which Santa Ana residents are a large proportion. Here we see that south county cities such as Mission Viejo, Lake Forest, as well as wealthy Newport Beach send large proportions of high income workers to the city. We also see smaller changes in the commuting patterns of high-income workers compared to the other income groups over this time period. In terms of the spatial commuting pattern of high-income workers, the pattern is somewhat different compared to the other income groups (see Figure 4.6). Whereas a larger proportion of low- and middle-income workers came from the central part of the county, a larger proportion of high-income workers come from south county, such as Lake Forest and Mission Viejo.

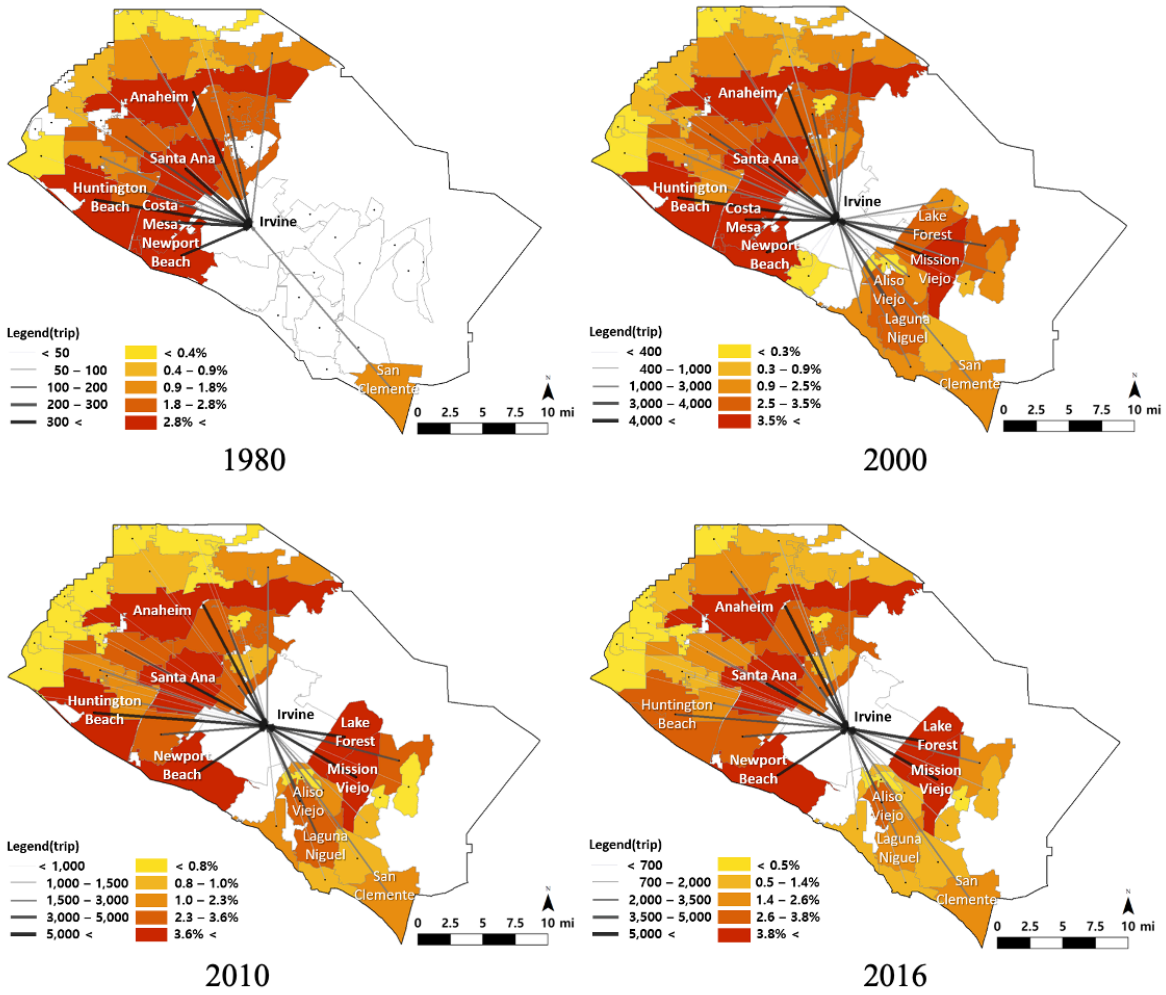

Figure 4.6. Commuting flows of high-income workers into Irvine

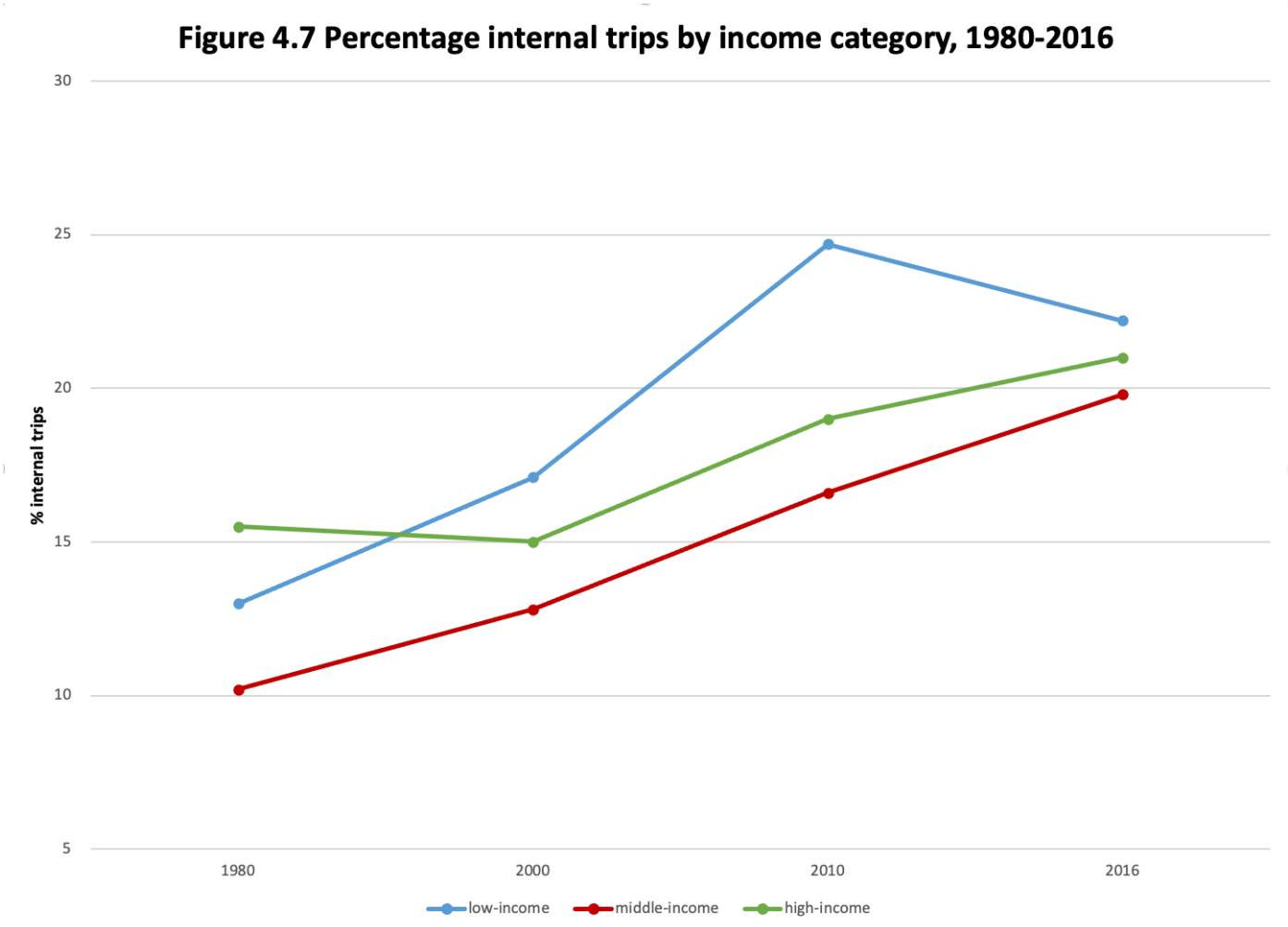

Figure 4.7

Combining high, medium, and low income commuting flows

In the prior tables and maps, we showed the flows of high, medium and low income workers into Irvine. In this section we combine this information to provide comparisons. For example, a question is how the change in internal trips for Irvine workers has changed over time, based on income levels. We show this in Figure 4.7 where we plot the percentage of Irvine workers by income level who live in the city. We see that the internal trips of low-income workers sharply increased from 13% in 1980 to 25% in 2010, although it then slightly decreased to 22% in 2016 (the blue line). There has been a consistent increasing pattern of middle-income workers' internal trips (red line). Although middle income jobs are least likely to be filled by Irvine workers—which is why this line is lowest on the plot—there has been a steady increase in this internal trip percentage and now they are nearly at the same percentage as low and high income commuters. Finally, the green line shows the trend of high-income workers' internal trip percentage. On the one hand, this line was higher than the other lines in 1980, indicating the high income workers were more likely to reside in Irvine compared to low or middle income workers. On the other hand, although the trajectory was flat from 1980 to 2000, since then there has been a steady growth in the percentage of high income jobs filled by Irvine residents.

As another way of understanding whether surrounding cities are more likely to send high or low income workers to Irvine, we computed the ratio of high to low income workers from a city (or CDP) into Irvine, in each decade. This compares cities without considering the city size effect: that is, in many of the prior tables and maps we see Santa Ana near the top, simply because it has a large population. On the one hand, it is indeed correct to note that the percentage of Irvine workers who come from Santa Ana is relatively high regardless of income level. But if we want to assess whether Santa Ana, for example, is more likely to send high or low income workers to Irvine, then Table 4.5 is more informative.

Table 4.5 shows the top 10 cities that send a higher ratio of high to low income cities (the top half of the table). And the bottom half of the table shows the bottom 10 cities: that is, cities that are more likely to send low income workers to Irvine rather than high income workers. [15] Since 2000, we see that certain south county cities are particularly likely to send high income workers rather than low income workers: Mission Viejo, Aliso Viejo, Laguna Niguel, Laguna Hills, and Rancho Santa Margarita. In contrast, we see that cities from central Orange County are more likely to send low income workers to Irvine rather than high income workers: Santa Ana, Garden Grove, Westminster, and La Habra.

15 These are ratios of ratios. For each city, we compute the percentage of commuters to Irvine who are low, medium, and high income workers. We then compute a) the ratio of percent high income commuters from the city to the percent high income workers in Irvine; and b) the ratio of percent low income commuters from the city to the percent low income workers in Irvine. We then compute the ratio of a to b and report the results here.

Table 4.5. Ratio of high to low income commuters to Irvine, by decade

1980		2000		2010		2016	
Top 10		**Top 10**		**Top 10**		**Top 10**	
West Covina	8.40	Mission Viejo	3.86	Rancho Santa Margarita	10.05	Laguna Niguel	6.37
Placentia	5.52	Aliso Viejo	3.10	Fountain Valley	5.45	Ladera Ranch	4.36
Claremont	4.27	Yorba Linda	2.98	Laguna Niguel	4.68	Mission Viejo	4.22
La Mirada	3.91	Laguna Beach	2.84	San Clemente	3.72	Rancho Santa Margarita	3.28
Cerritos	3.73	Rancho Santa Margarita	2.64	Aliso Viejo	3.70	Laguna Hills	2.63
San Clemente	3.05	Laguna Niguel	2.44	Mission Viejo	3.64	Newport Beach	2.59
Yorba Linda	2.68	Laguna Hills	2.16	San Juan Capistrano	2.70	Lake Forest	2.56
Newport Beach	2.24	Dana Point	2.15	Laguna Beach	2.38	Aliso Viejo	2.31
Seal Beach	1.59	San Clemente	2.11	Placentia	2.25	Fountain Valley	2.20
Bellflower	1.54	Newport Beach	2.07	Corona	2.21	San Clemente	2.20
1980		**2000**		**2010**		**2016**	
Bottom 10		**Bottom 10**		**Bottom 10**		**Bottom 10**	
Santa Ana	0.22	La Habra	0.54	Lake Elsinore	0.57	La Habra	0.23
Ontario	0.30	Santa Ana	0.56	Santa Ana	0.57	Bellflower	0.25
Norwalk	0.40	Norwalk	0.60	Fullerton	0.70	Lake Elsinore	0.26
Garden Grove	0.57	Los Angeles	0.68	La Habra	0.71	Stanton	0.31
Buena Park	0.64	Anaheim	0.69	Long Beach	0.73	Santa Ana	0.38
Tustin	0.65	Costa Mesa	0.70	Anaheim	0.77	Garden Grove	0.56
Costa Mesa	0.66	Garden Grove	0.77	Westminster	0.83	Westminster	0.59
Westminster	0.69	Stanton	0.79	Los Angeles	0.89	Los Angeles	0.60
Orange	0.71	Long Beach	0.80	Garden Grove	0.92	Long Beach	0.65
Huntington Beach	0.80	Fullerton	0.81	Costa Mesa	0.95	Riverside	0.67

Note: For each city, we compute the percentage of commuters to Irvine who are low, medium, and high income workers. We then compute a) the ratio of percent high income commuters from the city to the percent high income workers in Irvine; and b) the ratio of percent low income commuters from the city to the percent low income workers in Irvine. We then compute the ratio of a to b and report the results here.

Summary

In summary, the overall commuting flows to Irvine indicate increasing self-sufficiency of Irvine from 1980 to 2016. In particular, currently, over 40% of Irvine residents who are employed have their jobs within the city. Furthermore, the percentage of Irvine jobs that are filled by Irvine residents (the internal trip ratio) rose from 13% in 1980 to 21% in 2016. We also saw a growth in internal Irvine workers by income group over this period. This is evidence that Irvine workers are more and more likely to live in the city as well. Regarding the spatial distributions of commuting workers to Irvine, lower income workers commuting to Irvine are more likely to be concentrated to the north and west of the city, in cities such as Santa Ana, Anaheim, Garden Grove, and Costa Mesa. We found that cities in southern Orange County are more likely to send high income commuters to Irvine rather than low income commuters. These include cities such as Mission Viejo, Aliso Viejo, Laguna Niguel, Laguna Hills, and Rancho Santa Margarita. In the next chapter we will summarize what we have learned in this Report, and look to the future for Irvine as a job center.

Chapter 5. Conclusion: What does the future look like for Irvine?

This report has documented changes in employment and commuting patterns across the city of Irvine. By using data from various sources over a long period of time—predating the city's incorporation for some measures—we have been able to describe how these changes increasingly reflect the city's growth and evolution from a master-planned community into a growing jobs center in the region. As Irvine turns 50, many aspects of its early ambitious vision, which aimed to balance land uses supporting economic growth and high-quality living environments, continue to be realized. Long recognized for its nationally acclaimed schools, public safety, and recreational opportunities, the city's economic diversity has fueled growth in both jobs and new residents.

A key finding of this report is that Irvine's emergence as a job center has been distinguished by both the number and types of jobs that exist within the city. Since 1980, it has retained the highest jobs/workers ratio in the Southern California region while also experiencing the fastest job growth in professional service industries throughout the region, particularly in computing and engineering occupations. As a consequence, the city has a much higher composition of high income jobs compared to the region—about 70% to 90% more than the region overall—and therefore fewer low and average income jobs. More recently, Irvine's burgeoning health and education industries–due in large part to the presence of UC Irvine and Chapman University's Health Sciences campus–continue to enable it to augment its already relatively highly educated workforce. Consequently, the city has emerged as one of the top 10 fastest growing cities in the United States, increasing its population by 45% between 2010 and 2020, the largest increase among cities in California with at least 50,000 people. [16]

In addition to analyzing the city's job growth and industrial structure, the report also focused on how Irvine fits into the spatial structure of the region by examining the city's commuting patterns. A key finding of the analysis of commuting flows revealed an increasing number of internal trips since 1980, suggesting greater employment self-sufficiency. The percentage of Irvine residents who work within the city has risen from 26% in 1980 to 44% in the most recent decade. There has been a similar growth in internal trips among different income categories over time. Currently, higher income jobs tend to be filled by commuters from south county, whereas lower income jobs are more likely to be filled by commuters from the central and northern part of the county. Nonetheless, there may be concern in the future if the city's intensifying population growth generates demand for the city to build additional housing units in the near term. Moreover, rapid housing price appreciation and future expansion of the Irvine Business Complex and Irvine Spectrum areas may present further challenges in maintaining a healthy jobs/housing balance.

16 US Census Bureau

Over the past decade the city has increased the diversity of its housing stock, particularly rental units, resulting in Irvine becoming a renter-majority city for the first time in 2013.[17] Despite the increased supply of rental units, however, concerns of overcrowding and housing unaffordability have persisted, particularly among lower-income households. Low-income elderly renters are a particularly vulnerable group and are often the most in need of decent, affordable housing options, a concern that may become more pressing as Irvine's senior population is expected to almost triple (to 18,963) by 2035.[18] The city's ability and willingness to house its growing homeless population will also likely continue to be a flashpoint in affordable housing debates.

The city's ability to provide affordable and expanded housing options for existing and aspiring residents also raises important implications for its capacity to leverage the opportunities and benefits provided by the presence of its educational institutions and employment centers. A lack or absence of attainable housing options may price out graduates of the city's higher education institutions and other educated professionals, who might otherwise choose to pursue a career and build a life in Irvine. A companion MFI report further addresses some of the implications of housing affordability for Irvine's future.

Although some might think of Irvine as just a typical suburb mostly featuring residential units, this is clearly quite inaccurate. Irvine is a genuine job subcenter in the region, and has been for quite some time. Since at least 1980, Irvine has had the highest ratio of jobs to workers of all large cities in the region (greater than 50,000 population). Furthermore, it is characterized by a high proportion of high income jobs in professional occupations and the high tech industry. Given that these are industries and occupations that are likely to experience continued growth into the foreseeable future, this bodes well for the near term future of Irvine. As a New Town design intending to provide employment opportunities for its residents, it has clearly been successful.

17 2013 American Community Survey, 5-Year Estimates. In addition, see our complete report on Irvine housing: "Irvine at 50: The changing landscape of housing, commuting, and amenities."

18 City of Irvine, Housing Element: http://alfresco.cityofirvine.org/alfresco/guestDownload/direct?path=/Company%20Home/Shared/CD/Planning%20and%20Development/General%20Plan/04.%20Housing%20Element%20-%20Aug%202015.pdf

Technical Appendix

In the preparation of this Report, we used various data sources. For information on jobs in the city, as well as commuting patterns we used various years of the Census Transportation Planning Packages (CTPP). 1980 was the first year for which we could obtain data for cities, and we also obtained data for 1990 and 2000. The 2010 data come from the 2006-2010 CTPP data from the American Community Survey (ACS) 5-year estimates, and the 2016 data come from the 2012-2016 CTPP ACS 5-year estimates data. When classifying the industry of workers, we defined them based on 1-digit NAICS codes. NAICS codes have 6 digits, but the first digit provides broad information on the particular industry.

As information on the firms in Irvine, and the number of employees in those firms, we used the Reference USA Historical Business Data. This is a proprietary dataset that provides the address of these businesses by year. We geocoded these address to a specific location, and then could aggregate them to U.S. census blocks.

Stratifying workers by income levels

Although there are various strategies for classifying workers based on income levels, we used two different strategies in chapters 3 and 4.

In Chapter 3 we classified Irvine jobs based on the income level of these jobs. One challenge for defining income categories as low, medium, and high is that the data are reported in income bins. Another challenge is accounting for inflation. Our strategy was to create categories of low, medium, and high income such that the three categories each constituted approximately 1/3 of the jobs (or workers) in the entire region each decade. This allows comparing Irvine's share of income category in each decade, but implicitly accounts for general inflation.

In Chapter 4 we disaggregated workers based on the income level of workers in capturing commuting flows. For these analyses, we categorized income levels of those commuting into the city based on the household median income for each year. Using U.S. Census Bureau and California Department of Housing and Community Development data, we classified the income level of commuters into low, middle, and high-income groups. We classified those with incomes that were less than 80% of median income as the low income group, and those with incomes greater than 120% of median income as the high income group, with the remainder classified as middle income. We show these median income values in Table A1. The CTPP data on workers was reported in income bins: when an income bin straddled one of these cutpoints, we classified those workers into the category in which the largest proportion of the bin overlapped. We assessed if this impacted the results by utilizing an approach that assumed a uniform distribution of income levels within a bin, and assigned workers to the proper broader category (high, medium, low) based on this assumption. These alternative results were effectively the same as those presented in the Report.

Table A1. Household median income for each year

Year	1980	2000	2010	2016
Household median income	$18,243	$46,816	$54,283	$70,489
Low-income group: < Median Income * 0.8 Middle-income group: > Median Income * 0.8 and < Median Income * 1.2 High-income group: > Median income * 1.2				

Source: US Census Bureau (https://www.census.gov/), California Department of Housing and Community Development (https://www.hcd.ca.gov/)

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