

# The California Tech/Info Boom: How It Is Spreading Across the State



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Here's an astounding fact. Since the recovery started in 2009, California businesses have created 1.5 million new private sector jobs.<sup>1</sup> That puts California number one in private sector job creation among all states, slightly ahead of second place Texas, and more than double that of third place Florida. Moreover, total job creation in California since 2009 exceeds that of Germany, Europe's largest and most successful economy.

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How can this spectacular performance be explained? The answer: creativity and innovation. Since 2009, the Golden State's economy has ridden the power of the sizzling tech/info revolution. From mobile to social media, to online video and the Internet of Things, California-based companies are leading the way.

This paper has two main goals. First, we document how the tech/info boom is helping propel the California economy. We carefully define the tech/info sector, building on our previous studies of California and other tech hubs around the world. We then show that the tech/info sector has directly accounted for more than 30% of the increase in real wage payments in California. These gains have boosted tax revenues and helped California run a budget surplus. In addition, the strong growth in California's tech/info sector has translated into faster non-tech job growth than the rest of the country.

Next we look at the distribution of tech/info jobs across the state. It's still true that the bulk of the tech/info growth is concentrated in the San Francisco-Silicon Valley region.

However, a careful analysis of newly-released data from the Bureau of Labor Statistics shows that a wide range of metro areas around the state have been experiencing strong tech/info growth. These metro areas include Santa Barbara, San Luis Obispo, Redding, Fresno, Santa Cruz, Chico, and Stockton (Figure 2).

For example, MindBody—a San Luis Obispo-based company that provides software for wellness businesses such as fitness, yoga, and martial arts studios—went public in June 2015. Between the end of 2013 and the first quarter of 2015—a period of just

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over a year—the company’s employment went from 800 to 1100 workers, a 36% growth that any Silicon Valley company would be proud of.

The results presented in the current paper support and extend our 2013 policy brief, “The Rebalancing of the California Economy,” which showed how want-ads for such tech-related occupations such as web developers and media and communications workers were rising across the state, in areas such as the Central Valley and the Central Coast. The current paper takes the analysis one step further by showing how the rise in want-ads has been converted into jobs. Finally, we offer some thoughts about policies that could continue the tech/info boom in California.

## Defining the Tech/Info Sector

Defining the boundaries of the ever-evolving “tech” sector is not easy. In the late 1990s and 2000s, economists in the United States and Europe focused on the “information and communications technologies” (ICT) industries, which include IT hardware, software and services.<sup>2</sup>

Nevertheless, the age of convergence has arrived—especially in California—and the line between Internet and content companies has become blurred. Twitter, a platform for sharing 140-character communications, has morphed into a major news source for many people around the globe. Google owns YouTube, which according to the company, adds 300 hours of new videos every minute. Comcast, the large cable and Internet service provider, also owns NBCUniversal, a major content producer with large operations in California. News and publishing operations are increasingly becoming Internet-based.

Moreover, new business models intrinsically link big data analysis with content. LinkedIn, for example, contains huge amounts of data about people, their work history, their skills, and their connections. But it’s also become a publishing platform as well, allowing people and companies to send out information to their connections.

Because of this convergence, it is no longer useful, or even possible, to separate out tech and communications from content. Consequently, in a September 2013 study of the New York City tech boom, we defined the “tech/info” sector to include tech, communications, and content producers.<sup>3</sup> We also used our analysis of the tech/info sector to rank large counties nationally.<sup>4</sup>

Roughly speaking, the core of the tech/info sector includes the Internet industry, software and computer programming firms, cloud providers, the communications and broadcast industries, the movie and music industries, and the publishing industry. In addition, the tech/info sector can also include the manufacturing of computers, communications equipment, and semiconductors. Figure 1 lays out the definition of the tech/info sector.

### Figure 1: What's In the Tech/Info Sector

<b>Information And Internet Services</b>
Web search, news organizations, social media
<b>Media And Content Production</b>
Video, music, radio, television and cable
<b>Software Developers</b>
App developers, web developers, custom and prepackaged software
<b>Infrastructure</b>
Telecom providers, cloud providers, hosting
<b>Manufacturing*</b>
Computers, communication equipment, semiconductors

*\*Included in state-level analysis for California. Not included in MSA-level analysis for data availability reasons.*

*Data: Progressive Policy Institute.*

We use Bureau of Labor Statistics (BLS) data, which has both advantages and disadvantages. The plus side is that the official data is carefully collected and complete.<sup>5</sup> The minus is that we still may be missing some “tech” companies that don’t fit the usual classifications. Edtech companies such as Udacity might be classified in educational services rather than one of the tech/info categories. Uber might be classified under transportation services. Employees in AT&T, Verizon, Microsoft, or Apple stores might be classified under retail rather than tech/info. And unfortunately, industry classifications are not public so we can’t really tell how big the difference might be. Still, if anything, these numbers are going to be an underestimate of the size of the tech/info sector.

## Contribution of Tech/Info Sector to the California Economy

Let’s assess the contribution of the tech/info sector to the overall California economy. As of 2014, there were roughly 900,000 workers in the California tech/info sector, just under 7% of the private sector workforce. Between 2009, when the recovery started, and 2014, the number of tech/info workers in California grew by 11%. That’s compared to roughly 5% growth for the tech/info sector in the rest of the country.

Previous work by PPI suggests that regions with vibrant tech/info sectors have performed better economically than other regions of the country, including stronger growth of non-tech/info jobs. And indeed, that’s what we find in California: From 2009 to 2014 private sector employment outside of the tech/info sector rose by 11% in California, compared to an average of 8% in the rest of the country.<sup>6</sup>

Why should non-tech/info jobs be growing faster? One reason is spillover from tech/info growth. Adjusted for inflation, California private sector workers received an additional \$117 billion in wages in 2014 compared to 2009, a 17.4% increase (Figure 2). The gains figure in both rising employment and rising compensation.

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Out of that total increase in inflation-adjusted private sector wage payments since 2009, an astounding one-third, or \$38 billion, came from the tech/info sector. This growth in spending power was a key reason why non-tech jobs rose so sharply in the state. It's also a key reason why the California state government is on so much firmer footing these days.

The next largest contributor to California's economic recovery, the broad healthcare sector—including healthcare services, social assistance, pharmaceutical manufacturing, and biotech—only accounted for a \$15 billion gain in inflation-adjusted wages from 2009 to 2014. That's less than half of the contribution of the tech/info sector.

**Figure 2: The Tech/info Sector Drives the California Recovery**

Increase in Wage Payments, 2009-2014		
Billions of 2014 Dollars		
All Private Sector	117.3	
Tech/Info*	36.6	32.1%
Healthcare**	15.4	13.1%
Trade, Transportation and Utilities	14.4	12.3%

\*Tech/info includes information, computer systems design, and computer and related manufacturing.

\*\*Health includes healthcare services and social assistance, pharmaceutical manufacturing, and biotech.

Wage payments include salaries, bonuses, and most exercised stock options.

Data: BLS (QCEW), Progressive Policy Institute.

## Geography of the California Tech/Info Sector

In this section we take our analysis down from the state level, and consider the growth rate of tech/info jobs by metropolitan region (MSA) in California, using newly released data from the BLS. California has 26 MSAs, running in size from Los Angeles, with roughly 13 million residents, down to Napa, with roughly 150,000.

We followed a multi-step analysis process. First we calculate the number of “core” tech/info jobs in each MSA, in each year, from 2007 through 2014. Core tech/info omits computer and related manufacturing, for which data often is spotty on the MSA level.<sup>7</sup> The one exception was the Yuba City MSA, for which the full data was not available.

Second, we identified the “turning point” for each MSA—the year that tech/info employment bottomed out in that MSA after the Great Recession and started growing. Third, we calculated the growth of tech/info jobs in that MSA from the turning-point year to 2014, the last year available.

For example, tech/info jobs bottomed out in Fresno in 2011. Since then they have grown by 20%. By comparison, all private sector jobs in Fresno bottomed out in 2010, and have only risen by 10% since then.

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The reason for adopting this procedure is that each MSA recovered at a different rate from the Great Recession. The turning point year gives us important information about how quickly the tech/info sector in an MSA recovered from the downturn, and how well it has done since then.

Figure 3 lays out the results for 25 California MSAs. As expected, the San Francisco and San Jose MSAs are at the top of the list. Each of these MSAs had tech/info employment bottoming out in 2009, and increasing by almost 50% since then, a gain far in excess of the corresponding growth in the overall private sector.

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However, several coastal and Central Valley MSAs also show strong tech/info growth. Going north to south along the coast, Santa Cruz, San Luis Obispo, Santa Barbara, and the Oxnard-Thousand Oaks-Ventura MSAs have all experienced tech/info growth above 10% since bottoming out after the recession. Similarly in the Central Valley, Redding, Chico, Stockton, Fresno, and Visalia are reporting strong tech/info growth.

The tech/info growth in these areas is being driven by a wide variety of companies. For example, Shasta QA, a software testing company with offices in Redding and Chico, was advertising as of early July 2015 for a software quality assurance manager and a tester.

In some cases, the tech/info firm is quite specialized. For example, as of early July 2015 Valley Agricultural Software—based in Tulare, California, part of the Visalia MSA—was listing several open tech and non-tech positions. The company, which calls itself as “the world leader in Dairy Herd Management systems,” reports that its software is “used to manage approximately 30% of the cows in the United States.”

Some tech/info companies based outside of the Bay Area have quite a few openings in California. Vsolvit, a Ventura, California-based firm that specializes in geographic information systems for large enterprises, including the federal government, was listing openings for more than 25 open positions in California, including everything from a senior GIS web developer to a facilities security officer.

On the other hand, some areas, such as Sacramento, show no tech/info growth in our analysis. It may very well be that state budget cutbacks post-recession took a heavy toll on the local tech/info sector in the state’s capital. If that’s true, the better performance of the state’s budget in recent years—in part because of the revenues generated by California’s tech/info boom—should soon lead to a revival of growth in the private tech/info workforce in the Sacramento MSA.

**Figure 3: Tech/Info Jobs in California: Which Regions Are Leading?**

Metropolitan Region (MSA)	Tech/Info		All Private-Sector Jobs	
	Growth	Turning point	Growth	Turning point
<b>Superstars</b>				
San Jose*	48%	2009	18%	2010
San Francisco	41%	2009	16%	2010
<b>Tech/Info Leaders</b>				
Santa Barbara	37%	2009	10%	2010
San Luis Obispo	37%	2007	14%	2009
Redding	20%	2012	6%	2011
Fresno	20%	2011	10%	2010
Santa Cruz	18%	2012	7%	2010
Chico	17%	2011	12%	2011
Stockton	16%	2011	10%	2010
Santa Rosa	13%	2011	10%	2010
Visalia	10%	2012	5%	2012
Oxnard-Thousand Oaks-Ventura	10%	2011	7%	2010
<b>Modest Growth</b>				
Modesto	5%	2013	9%	2010
Vallejo	5%	2012	8%	2011
Los Angeles	4%	2010	10%	2010
Napa	3%	2013	16%	2010
Salinas	3%	2012	12%	2009
Madera	3%	2012	19%	2010
San Diego	2%	2011	10%	2010
Riverside-San Bernardino-Ontario	2%	2013	15%	2010
<b>Slow Starters</b>				
Bakersfield	No growth yet		21%	2009
El Centro	No growth yet		17%	2011
Hanford-Corcoran	No growth yet		7%	2011
Merced	No growth yet		12%	2010
Sacramento	No growth yet		11%	2010

Core tech/info jobs include NAICS 51 (Information) and NAICS 5415 (Computer systems design)

The turning point is the year with the lowest employment in the 2007-2014 period

Growth is measured from the turning point year to 2014.

Figures for San Jose include only Santa Clara County.

Data: BLS (QCEW), Progressive Policy Institute.

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California state government should be very wary of increasing the burden on the tech/info sector at the very time other countries are increasingly beckoning.

## Policy Conclusions

California is an anomaly in many ways. A high-tax, high-regulation state, it has produced a better economic performance than many states with lower taxes and less regulation.

Yet there are changes coming on the global stage that may make it harder for California to sustain that record. The United States has a marginal corporate tax rate of 35%, one of the highest in the world, and California adds on another 8.8%.<sup>8</sup> Meanwhile, the increasingly tech-savvy United Kingdom has lowered its corporate tax rate to only 20%. Companies that invest in intangibles such as software in the UK are given an even lower tax rate.

Other European countries are following the same strategy of lowering corporate taxes, giving tech companies more of an incentive to move workers to the United Kingdom and other tax-friendly countries. Moreover, new international tax rules that are scheduled to be announced by the OECD by the end of 2015 are likely to make an even more compelling case for US companies to move workers overseas.<sup>9</sup>

This particular danger does not come from Sacramento, of course. But the California state government should be very wary of increasing the burden on the tech/info sector at the very time other countries are increasingly beckoning.

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## Endnotes

- <sup>1</sup> We compare the 12 months ending May 2015 with the annual average for 2009.
- <sup>2</sup> OECD, “OECD Guide to Measuring the Information Society 2011,” OECD Publishing, 2011, <http://dx.doi.org/10.1787/10.1787/9789264113541-en>.
- <sup>3</sup> Michael Mandel, “Building A Digital City: The Growth and Impact of New York City’s Tech/Information Sector,” South Mountain Economics, September 2013, <https://southmountaineconomics.files.wordpress.com/2013/09/building-a-digital-city1.pdf>.
- <sup>4</sup> Michael Mandel, “The PPI Tech/Info Job Ranking,” Progressive Policy Institute, October 2013, [http://www.progressivepolicy.org/wp-content/uploads/2013/10/2013.10-Mandel\\_The-PPI-Tech-Info-Job-Ranking.pdf](http://www.progressivepolicy.org/wp-content/uploads/2013/10/2013.10-Mandel_The-PPI-Tech-Info-Job-Ranking.pdf).
- <sup>5</sup> The tech/info sector includes NAICS industries 51 and 5415, plus 3341, 3342, and 3344 for manufacturing.
- <sup>6</sup> See Michael Mandel, “The PPI Tech/Info Job Ranking,” Progressive Policy Institute, October 2013, [http://www.progressivepolicy.org/wp-content/uploads/2013/10/2013.10-Mandel\\_The-PPI-Tech-Info-Job-Ranking.pdf](http://www.progressivepolicy.org/wp-content/uploads/2013/10/2013.10-Mandel_The-PPI-Tech-Info-Job-Ranking.pdf). See also the latest update at <http://www.progressivepolicy.org/blog/ppi-techinfo-job-ranking-2009-2013/>.
- <sup>7</sup> The BLS protects confidentiality of its data, which means that it suppresses figures for an industry in an MSA for which there are ‘too few’ companies. ‘Too few’ means that someone could look at the data and guess which companies it referred to.
- <sup>8</sup> The cumulative total is not as high because state corporate income taxes are deductible at the federal level.
- <sup>9</sup> Michael Mandel, “The BEPS Effect: New International Tax Rules Could Kill US Jobs,” Progressive Policy Brief, June 2015, [http://www.progressivepolicy.org/wp-content/uploads/2015/06/2015.06-Mandel\\_The-BEPS-Effect\\_New-International-Tax-Rules-Could-Kill-US-Jobs.pdf](http://www.progressivepolicy.org/wp-content/uploads/2015/06/2015.06-Mandel_The-BEPS-Effect_New-International-Tax-Rules-Could-Kill-US-Jobs.pdf).

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