

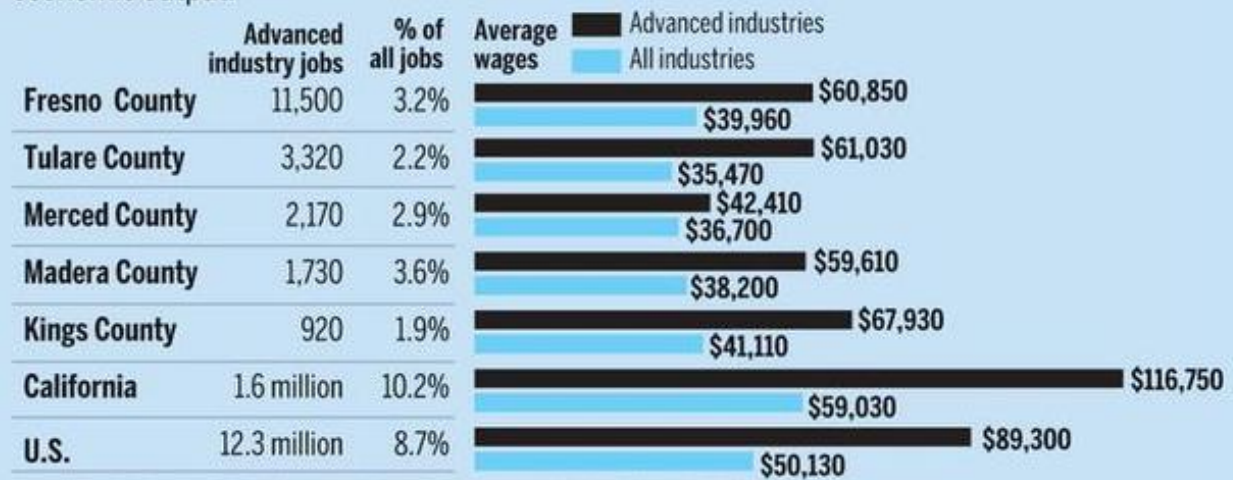
# Fresno lags most U.S. metro areas in ‘advanced industry’ jobs, wages

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## Advanced industries employment in the Valley

Advanced industries in the Fresno area accounted for an estimated 11,500 jobs in 2013, or about 3.2% of all employment. But they also accounted for nearly 7% of Fresno County's overall economic output.



Source: Brookings Institution Advanced Industries Project

All figures are for 2013

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U.S. top and bottom five in advanced industries

**Advanced industries in the Fresno area accounted for an estimated 11,500 jobs in 2013, or about 3.2% of all employment, ranking the city 98th among the 100 largest metro areas in the U.S. Here are the top five and bottom five:**

Metro area	Advanced industry jobs	% of all jobs	Avg. wage in advanced industries	Avg. wage in all industries
1. San Jose/Sunnyvale	291,700	30.0%	\$183,950	\$101,640
2. Seattle/Tacoma, Wash.	295,000	16.0%	\$113,160	\$63,180
3. Wichita, Kansas	46,800	15.5%	\$73,990	\$44,410
4. Detroit/Dearborn, Mich.	279,400	14.8%	\$85,910	\$53,300
5. San Francisco/Oakland	297,200	14.0%	\$157,700	\$80,960
U.S. nationwide	12,283,960	8.7%	\$89,300	\$50,130
96. Honolulu, Hawaii	19,900	3.9%	\$77,070	\$48,210
97. Las Vegas/Henderson, Nevada	30,800	3.6%	\$81,320	\$46,090
98. Fresno	11,500	3.2%	\$60,850	\$39,960
99. Stockton/Lodi	6,100	2.8%	\$59,590	\$42,660
100. McAllen/Edinburg, Texas	4,800	2.0%	\$49,780	\$31,960

All figures are for 2013

Source: Brookings Institution Advanced Industries Project

#### Advanced industries by the numbers

- Fresno ranks 98th out of the 100 largest U.S. metro areas in the proportion of workers employed by “advanced industries” at 3.2%.
- “Advanced industries” are those that spend at least \$450 per worker per year on research and development and in which at least one out of five employees work in science, technology, engineering and math (STEM) occupations.
- In Fresno, the average annual salary in advanced industries in 2013 was \$60,850, compared to the area’s overall average salary of \$39,960 across all industries.

Fewer of Fresno’s labor force works in “advanced industries” — sectors where jobs focus on science, engineering or technology — than almost every other major American metropolitan area.

But a researcher with the [Brookings Institution](#) said the Fresno area’s heavy reliance on agriculture as its economic engine also presents opportunities for public and private research and development, as well as industry specialization

in sectors that serve farming and its related manufacturing needs.

“You’ll see there are industries that are in the supply chain of advanced industries where it makes sense that Fresno would have specialization, such as food manufacturing or pesticide manufacturing,” said Siddharth Kulkarni, a senior research associate at Brookings and one of the co-authors of a new study, [“America’s Advanced Industries,”](#) issued Tuesday.

Industries counted as advanced, such as technology and manufacturing, can become important economic drivers in communities because they tend to pay higher salaries to employees and support other businesses through the purchase of goods and services.

The report by the Washington, D.C.-based think tank estimates that in 2013, advanced industries accounted for about 11,500 jobs in Fresno County, statistically known as the Fresno metropolitan area. That represented about 3.2% of all jobs in the region, a percentage that ranked Fresno 98th among the 100 largest metro areas in the U.S.

Brookings researchers defined advanced industries as “the tech sector at its broadest and most consequential.” They are industries in which firms make significant annual investments in research and development and in which at least 20% of employees work in occupations with a heavy focus on science, technology, engineering or mathematics — collectively known as STEM occupations.

In the Fresno area, they include an array of professional service fields like architecture/engineering; consulting services; general and specialized manufacturing; and medical equipment/diagnostic services. The largest Fresno sectors counted among advanced industries are architecture/engineering, with almost 1,800 jobs, and management consulting services at about 1,700 jobs. A variety of manufacturing industries with likely connections to agriculture, including general purpose machinery, agricultural/construction machinery, pesticide/fertilizer manufacturing and industrial machinery (including food-processing machinery) together account for about 2,240 jobs.

Collectively, advanced industries in Fresno County produced about \$2.7 billion in economic output, almost 7% of the entire economic production in the area. Still, the share of advanced-industry jobs is well below the national average of 8.7%, and even further behind California’s average of 10.2%.

Kulkarni said in California, it comes down to “a tale of two states.”

“The coastal regions have strong, diverse industries in these sectors, and the inland California metro areas are all towards the bottom of the rankings there,” he said. “But by no means are these the only industries that matter in a place. ... There is some other stuff that Fresno and other inland California areas have that are opportunities.”

In many of the U.S. metro areas with strong proportions of advanced-industry employment, “they have strong advanced universities, with strong research and STEM education,” Kulkarni said. “In Fresno, that starts with Fresno State and other educational assets” that are doing research and study in locally relevant fields including energy, water and food manufacturing.

Not surprisingly, the San Jose/Sunnyvale/Santa Clara metro area in the heart of Silicon Valley sits squarely at the top of the Brookings advanced industry ranking with nearly 292,000 workers, or about 30% of all jobs in the region — nearly double the proportion of the second-ranked Seattle/Tacoma/Bellevue metro area in Washington, where about 16% of all jobs are in advanced industries.

#### Why it matters

The average annual salary in an advanced industry in the Fresno area in 2013 was estimated at almost \$61,000 — more than 1 1/2 times higher than the overall average salary of just under \$40,000 across all industries. That’s in line with national figures that show a marked pay advantage for workers in such industries. “In 2013, the average advanced-industries worker earned \$90,000 in total compensation, nearly twice as much as the average worker

outside the sector,” the Brookings report states.

Kulkarni said that contrary to common perceptions, it doesn't necessarily take a four-year college degree to land a job in advanced industries. “Half of these jobs don't require a bachelor's degree,” he said. “We're seeing that in everything from information technology to certain manufacturing jobs, they don't require an engineer, but special training to use a particular piece of equipment.”

That falls in line with the goals of local education leaders in Fresno and the rest of the San Joaquin Valley. Mike Dozier, lead executive for the California Partnership for the San Joaquin Valley, said there is a great deal of effort by community colleges to bridge the skills gap between the labor force and the needs of industries in the region.

“STEM skills are needed in just about every area, but how do you get the training?” Dozier said, using the automotive service industry as an example. “Even as an auto mechanic, you really need to have some kind of industry certificate training because cars now are computers. Just changing the oil on most cars now takes a different level of training than the shade-tree mechanic of the old days.”

Not everyone has the desire or ability to go to college for a specific degree, Dozier added. “But what we're talking about isn't the traditional four years in a liberal arts college. We're talking about career technical education, and community colleges are trying to set themselves up to address that.”

On a macroeconomic scale, a prevalence of advanced industries can pay dividends for a region's economy. In the Fresno area, Brookings estimates that advanced-industry sectors support an additional 9,200 jobs in the region through their supply-chain spending and other economic ripple effects.

The report indicates that across the U.S., advanced industries directly employ about 12.3 million workers, but indirectly support another 14.3 million workers — about one-fourth of all U.S. employment.

“There is a strong multiplier effect,” Kulkarni said. “Not only are the wages of these workers very high, but the supply chains are very high and very deep. That's why we can see advanced industries contributing to the economies of their communities in a very important way.”

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