Manufacturers are paying relocation costs and bonuses to move new hires across the country at a time of record-low unemployment and intense competition for skilled workers.

Half a million U.S. factory jobs are unfilled, the most in nearly two decades, and the unemployment rate is hovering at a 50-year low, the Labor Department said Friday. At the same time, Americans are moving around the country at the lowest rate in at least 70 years.

To entice workers to move, manufacturers are raising wages, offering signing bonuses and covering relocation costs, including for some hourly positions. They are betting that spending on higher wages and moving incentives will help them find workers to fill their backlogs of orders.

Rather than just extending these benefits as part of job offers, factories are also advertising them in postings to encourage farther-away candidates to apply. On ZipRecruiter Inc.’s job-listing site, 1.6 percent of manufacturing positions include a pledge to pay moving costs, up from 1 percent in 2017.

“We’ve had to get very aggressive with talent acquisition,” said Michael Winn, chief executive of Columbus Hydraulics Co., which makes parts for Doosan Bobcat Inc. and The Toro Co. “We are having to draw people in from distant places.”

The company since 2018 has made extra cash payments to new hires to move near its factory in Columbus, Neb., a city of about 20,000 people 90 miles west of Omaha. Charlie Shoup received $2,000 to move from Salt Lake City to near Columbus, where he runs the company’s technology systems.

“It pretty much gave me enough cash to pay for gas out here, get myself established with a solid place to live in a not-backwater part of Omaha, and then I got a couple of shirts with collars on them,” he said. Mr. Shoup, who has a degree in computer engineering, said that at Columbus he makes more than double the $13 an hour he made in Utah at an electric bicycle shop.

Manufacturers say they are particularly eager to add moving reimbursements and payments for specialists such as welders, engineers and machine programmers. More manufacturing jobs require such skills as production becomes more automated.

At Caterpillar Inc.’s CAT engine plant in Lafayette, Ind., the company said electricians and machine maintenance staff are eligible for $5,000 in moving expenses if they lived at least 75 miles from the plant before being hired.
Lockheed Martin Corp. has moved skilled workers such as engineers to plants in Texas and California and highlights jobs that offer relocation benefits on its website. Raytheon Co. is offering up to $5,000 in moving benefits for a $17-an-hour position as a machine operator at a factory in Arizona.

The relocation payments and other perks some manufacturers have added recently coincide with a run of difficulties for the industry overall. The U.S. factory sector contracted for the fifth consecutive month in December, according to the Institute for Supply Management. The industry shed 12,000 jobs in December from the month before, the Labor Department said.

That weakness stems in part from lower global trade and domestic energy production as well as Boeing Co.’s decision to first slow, then halt, production of its 737 MAX. Other manufacturers say business is strong and that a shortage of skilled workers is impeding higher production.

New Way Trucks is offering a $1,000 payment to workers who move near its plant in Scranton, Iowa, as it adds dozens of positions to close its backlog and decrease turnaround times.

Companies are also raising wages. Wage growth at U.S. manufacturers reached its highest level since 2016 in December, rising 3 percent that month from a year earlier. The inflation rate in November was 2.1 percent.

G.H. Tool & Mold, an auto-industry supplier owned by Tooling Tech Group LLC, increased its starting wage to around $18 an hour last year from $15 a few years ago. The company also has paid moving expenses for workers relocating near its factory in Washington, Mo. Julie Scannell, the company’s head of human resources, posts notices on a Facebook group called “Leaving Illinois” to draw workers from that depopulating state.

“We are in an era right now that is unlike anything I’ve seen in 25 years as far as trying to recruit people,” Ms. Scannell said. “We are having to really track them down a little bit and schmooze them more than we used to.”

Lockmaker Allegion PLC flew the families of some skilled machine operators to its factory in Colorado Springs, Colo., to entice them to move to the area after it purchased some specialized equipment. The company also has started grooming employees at an Illinois plant to perform sophisticated jobs such as programming computerized machines.

“The war on talent: It’s there. It’s real,” said Brad Kendall, a human-resources executive at Allegion.

Other companies have added smaller sweeteners for new workers, according to current online job postings. John Zink, a Koch Industries Inc. manufacturing company in Tulsa, Okla., gives out free steel-toed boots; a Globus Medical Inc. plant in Audubon, Pa., provides workers with YMCA memberships; Whirlpool Corp. is paying workers at a factory in Findlay, Ohio, a $250 six-month retention bonus.

“Employers are getting creative,” said Julia Pollak, ZipRecruiter’s labor economist.