

Regional Income Studies

Working Paper Series

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Wage Divergence at Multiple Percentiles in the Income Distribution

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Introduction

Previous working papers have documented that mean wages in several regions have grown more quickly than mean wages in the St. Louis region. To give the most extreme example, the mean wage in San Jose was about 15% higher than the mean wage in St. Louis, in the year 1980. In 2014, the mean wage in San Jose was a full 85% higher than the mean wage in St. Louis. Other regions that have seen rapidly growing wages relative to St. Louis include New York, Boston and San Francisco.

The reliance on mean wages, though, raises questions about the robustness of this finding. Means are especially sensitive to outliers. When comparing mean incomes, it is possible that a very small number of extremely wealthy individuals could skew the results. Given that earners in the top 1% have been grabbing increasingly large shares of the national income in recent decades, it is possible that most or all of the observed wage divergence may have taken place in the top reaches of the income distribution.

This working paper addresses this issue by analyzing wage divergence at various percentiles in regional income distributions. This paper compares earnings of workers in the 10th percentile, 25th percentile, 50th percentile (median), 75th percentile and 90th percentile for the years 1980 and 2014. Six regions are compared: St. Louis, Kansas City, New York, Boston, San Francisco and San Jose.

In each of the graphs below, the values presented represent the ratio of each region's wage to the St. Louis wage at a given percentile. For example, in 1980, the median wage in New York was 3% higher than the median wage in St. Louis. In 2014, the median wage in New York had risen to 37% higher than St. Louis. In the graphs, a value of 1 represents the St. Louis wage level.

There are two graphs presented on each page. The top graph shows income distributions for all workers that reported any earnings during the previous year. Thus, the top graph includes some workers that may have rather marginal attachment to the labor force. The bottom graph shows only workers that worked at least 35 hours per year and at least 40 weeks during the year. These workers are referred to as "full-time" workers.

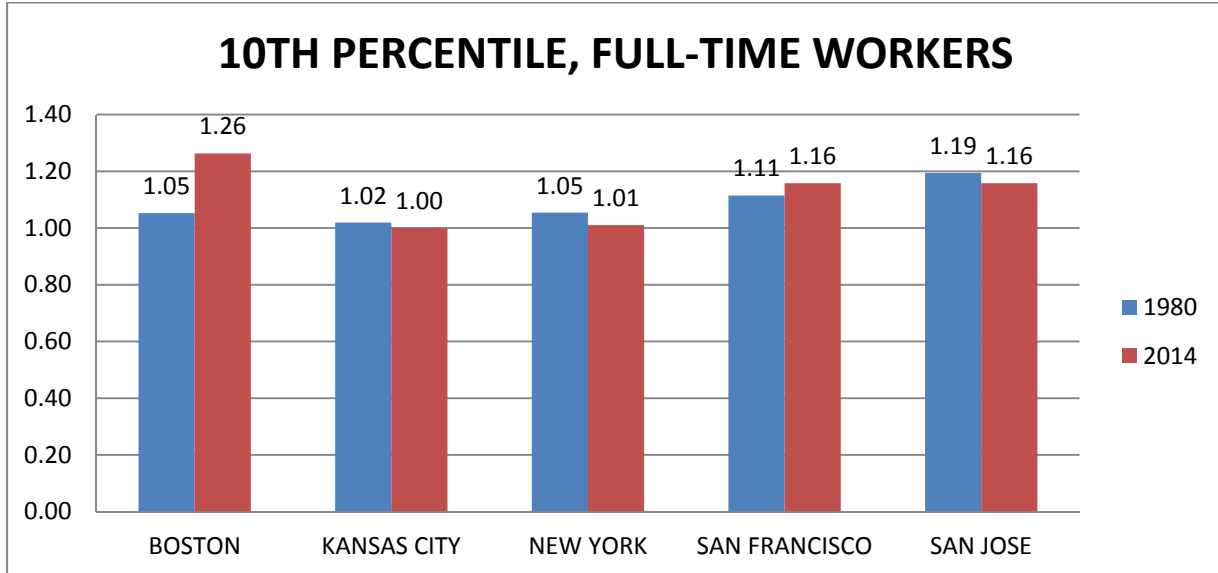
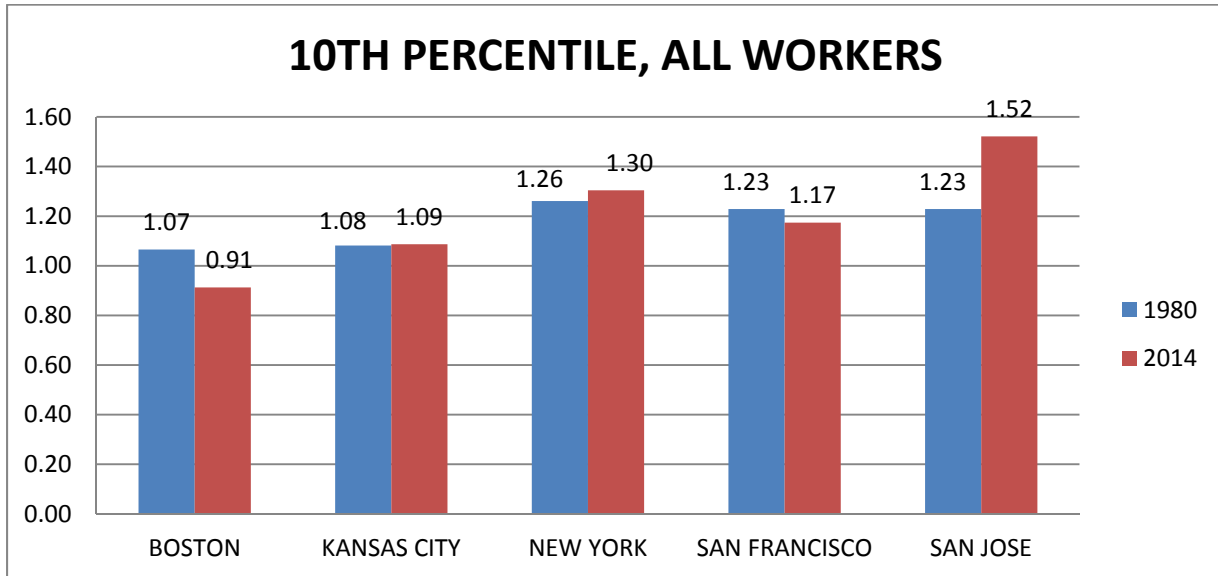
Tenth Percentile

In St. Louis, a worker at the 10th percentile of the regional wage distribution earned \$1,225 in 1980, and \$4,600 in 2014. If only full-time workers are considered, the worker at the 10th percentile earned \$6,285 in 1980 and \$19,000 in 2014.

For each of the five comparison regions in 1980, workers at the 10th percentile of the regional wage distribution earned more than their counterparts in St. Louis. In Boston, a worker at the 10th percentile in 1980 earned 7% more than a similar worker in St. Louis. In 2014, however, wage levels for the 10th percentile worker in Boston had fallen relative to St. Louis, so that in 2014 10th percentile workers earned only 91% as much as their St. Louis counterparts. In Kansas City there was little change, with workers at the 10th percentile earning 8% more than St. Louis workers in 1980, and 9% more in 2014. In New York, the wage differential for workers at the regional 10th percentile rose from 26% to 30%. San

Francisco saw a decrease in wage differentials, although workers in the 10th percentile still earned 17% more than their St. Louis counterparts in 2014. In San Jose, there was a large jump, from a 23% wage premium to a 52% wage premium.

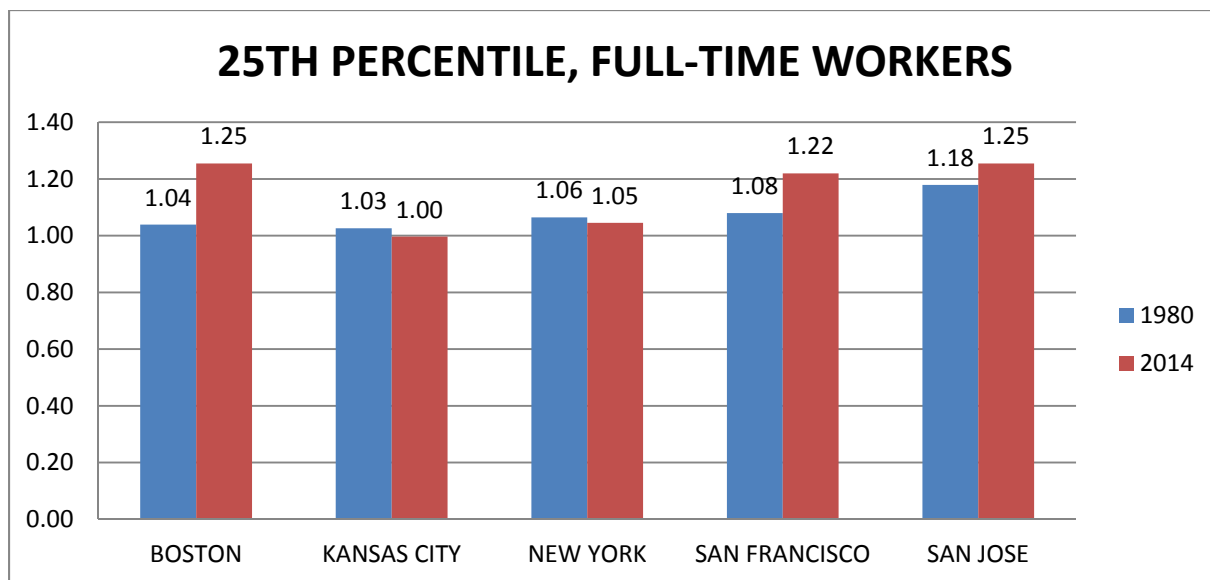
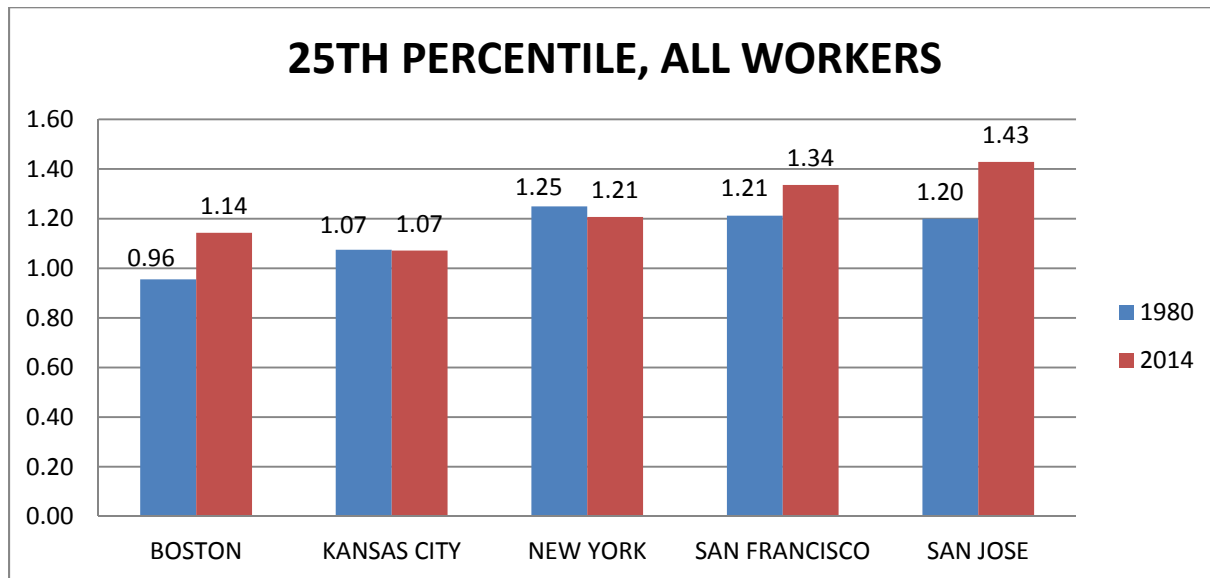
Figure 1: Wage levels relative to St. Louis for workers in the 10th percentile of the regional income distribution.



Twenty-Fifth Percentile

Figure 2 shows wage differentials for workers at the 25th percentile of regional wage distributions. In St. Louis, a worker at the 25th percentile would have earned \$4,005 in 1980, and \$14,000 in 2014. For full-time workers, the amounts rise to \$9,265 in 1980 and 28,700 in 2014.

Figure 2: Wage levels relative to St. Louis for workers in the 25th percentile of the regional income distribution.



In Boston in 1980, a worker at the 25th percentile earned a little less than his counterpart in St. Louis. But in 2014, the Boston worker earned 14% more. In Kansas City, the wage differential was unchanged, at 7% higher than St. Louis. In New York, the wage premium fell slightly, from 25% higher to 21% higher. In both San Francisco and San Jose, workers at the 25th percentile earned about 20% more than a similar St. Louis worker in 1980. In both regions, the wage premium increased by 2014.

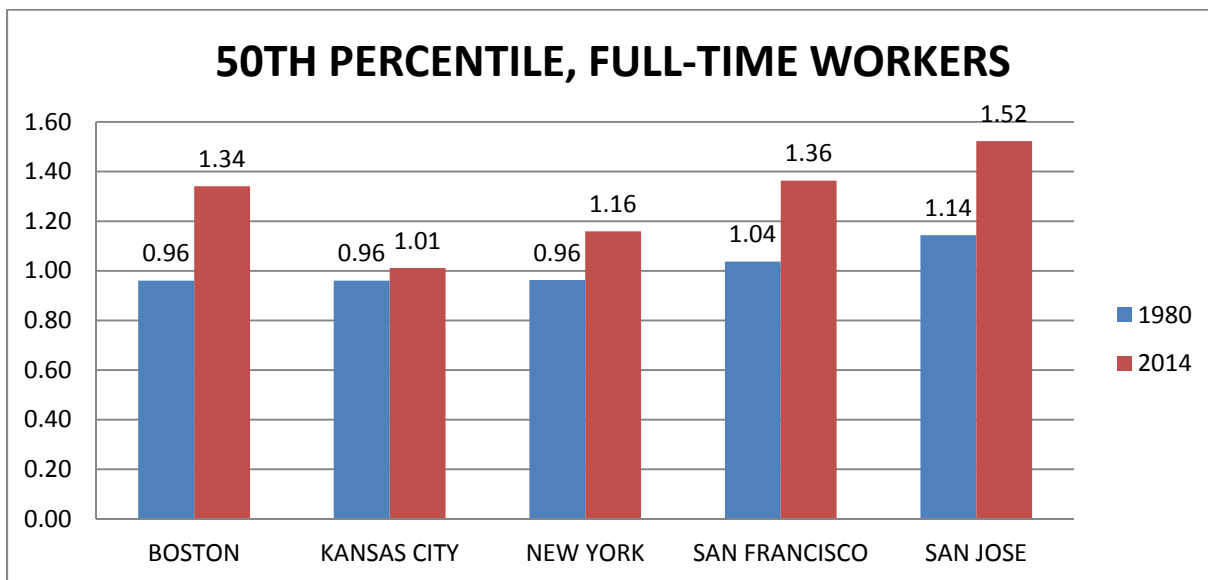
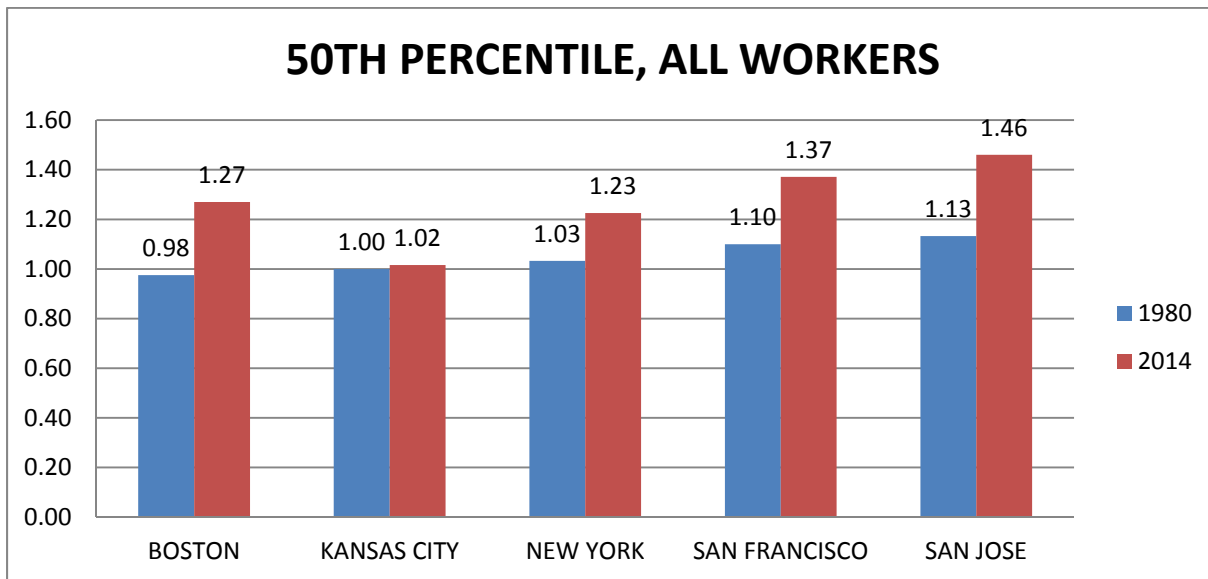
In looking at full-time workers, wage differentials were fairly stable in Kansas City and New York. In Boston, San Francisco and San Jose, though, wage differentials for workers at the 25th percentile increased from 1980 to 2014. In Boston, San Francisco and San Jose, workers at the 25th percentile in

2014 earned over 20% more than their counterparts in St. Louis. In Kansas City and New York, the wage differential was 5% or less.

Median Workers (50th Percentile)

The median earner in St. Louis earned \$10,005 in 1980, and \$31,500 in 2014. For only full-time workers, the wages were \$14,580 in 1980 and 44,000 in 2014.

Figure 3: Wage levels relative to St. Louis for workers in the 50th percentile of the regional income distribution.



In both 1980 and 2014, the median worker in Kansas City had an income very close to the median worker in St. Louis. Each of the other regions saw a dramatic increase in wages relative to St. Louis for workers at the median of the regional income distribution.

In 1980, the median full-time worker in Boston earned slightly less than the median full-time worker in St. Louis. In 2014, however, the median worker in Boston earned 34% more than the median worker in St. Louis. In New York, median full-time workers also earned slightly less than their St. Louis counterparts in 1980, but 16% more in 2014. In San Francisco, the wage premium relative to St. Louis for a worker at the regional median increased from 4% to 36%. In San Jose, the wage premium increased from 14% to 52%.

Seventy-Fifth Percentile

In St. Louis, a worker at the 75th percentile earned \$17,695 in 1980, and \$56,000 in 2014. If only full-time workers are considered, the 75th percentile rises to \$20,285 and \$70,000 for 1980 and 2014.

As with the 50th percentile, workers in Kansas City earned about as much as their St. Louis counterparts, whether all workers or only full-time workers are considered. Each of the other regions saw a dramatic increase in wages relative to St. Louis for workers at the 75th percentile of the regional income distribution.

In Boston and New York, a worker at the 75th percentile in 1980 earned about as much as a similarly situated worker in St. Louis. In 2014, however, a New Yorker at the 75th percentile earned 21% more, and a Bostonian earned 29% more than a St. Louis worker. In San Francisco, the 75th percentile rose from 9% higher than St. Louis in 1980 to 43% higher in 2014. In San Jose, the wage differential compared to St. Louis rose to 75% in 2014.

90th Percentile

For full-time workers in the 90th percentile of their regional income distributions, each of the coastal regions saw wage increases relative to St. Louis. The wage differential for Boston workers at the 90th percentile went from 2% higher to 42% higher. In New York, the change was from 8% higher than St. Louis to 35% higher than St. Louis. In 2014, a worker in the 90th percentile in San Francisco earned 50% more than his counterpart in St. Louis, while a worker in San Jose earned 70% more.

Conclusion

Median wages in St. Louis have grown slowly compared to regions such as Boston, New York, San Francisco and San Jose. In 1980, the median wage for full-time workers in New York, Boston and San Francisco were close to the median wage for full-time workers in St. Louis. In 2014, however, median wages in each of these regions were substantially higher than median wages in St. Louis. This confirms that wage divergence is not limited to the highest levels of the income distribution.

Nonetheless, wage divergence is most pronounced at higher levels of the income distribution. A worker at the 90th percentile of the regional wage distribution in San Jose earns 70% more than a similarly situated worker in St. Louis. In New York, Boston and San Francisco, this wage differential ranges from 35% to 50%.

Workers in the St. Louis region are falling behind their counterparts in coastal regions. This is true for workers at all income levels. Moreover, an increasing share of income is going to the highest paid workers in coastal regions. A future white paper will examine changes in the geographic distribution of elite workers.

Figure 4: Wage levels relative to St. Louis for workers in the 75th percentile of the regional income distribution.

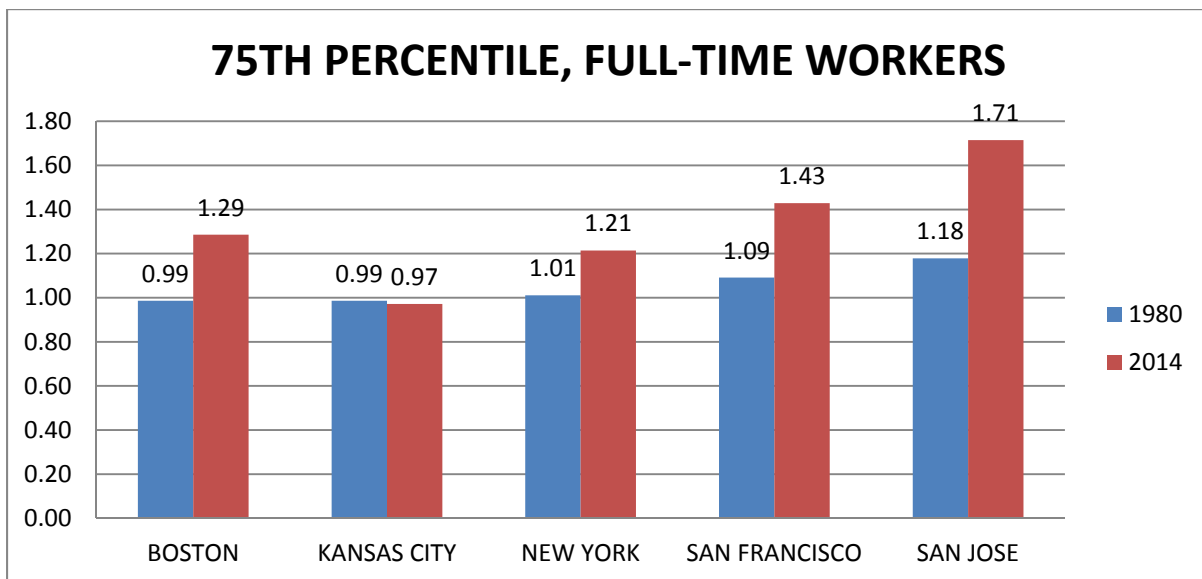
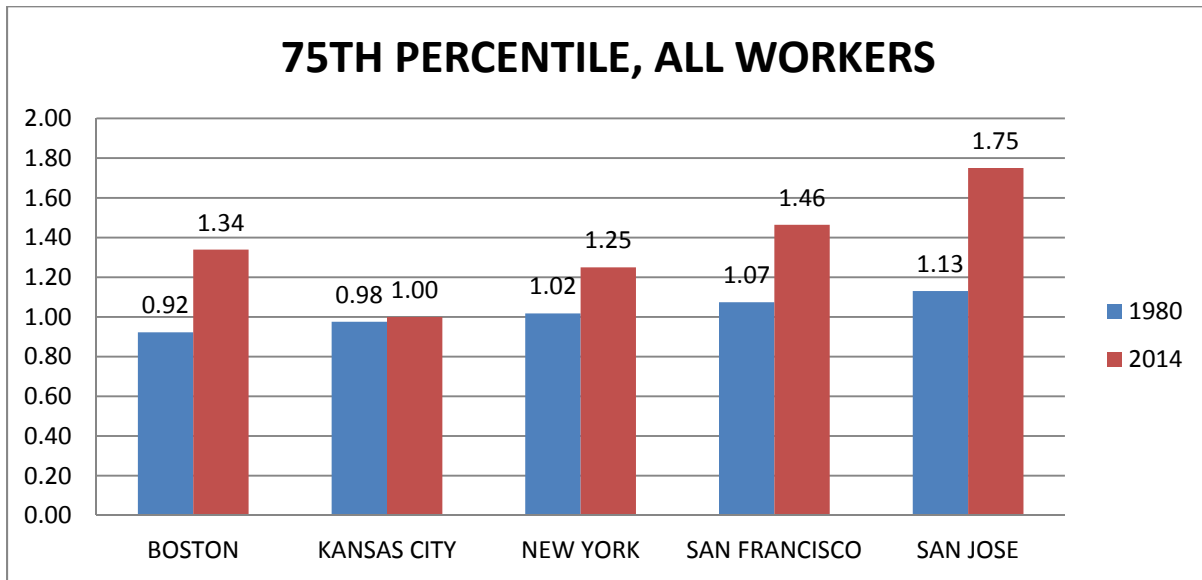
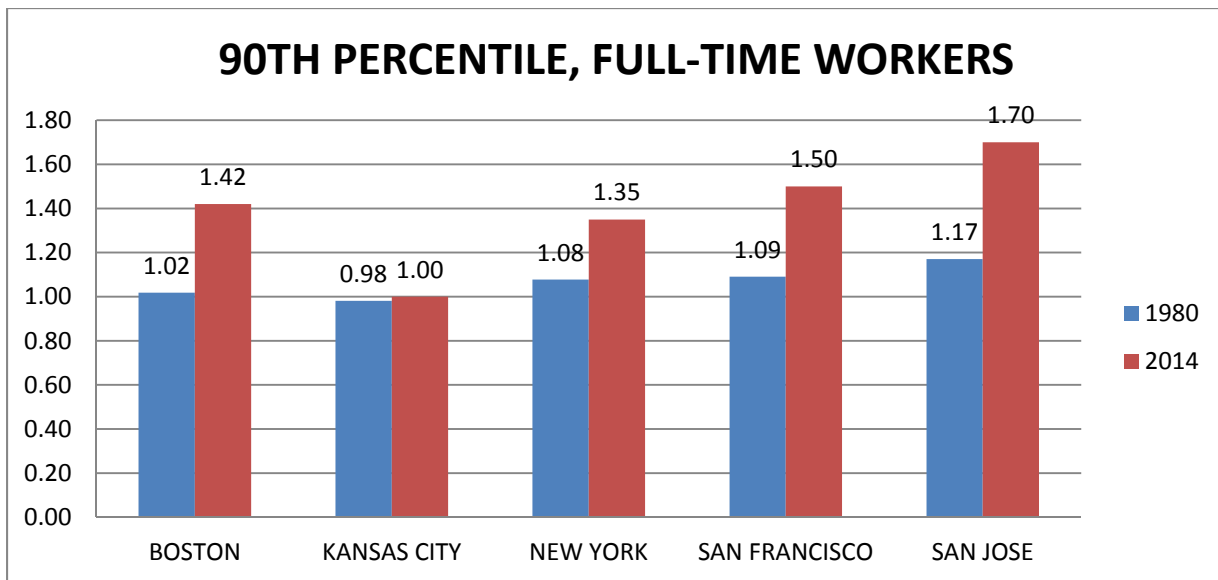
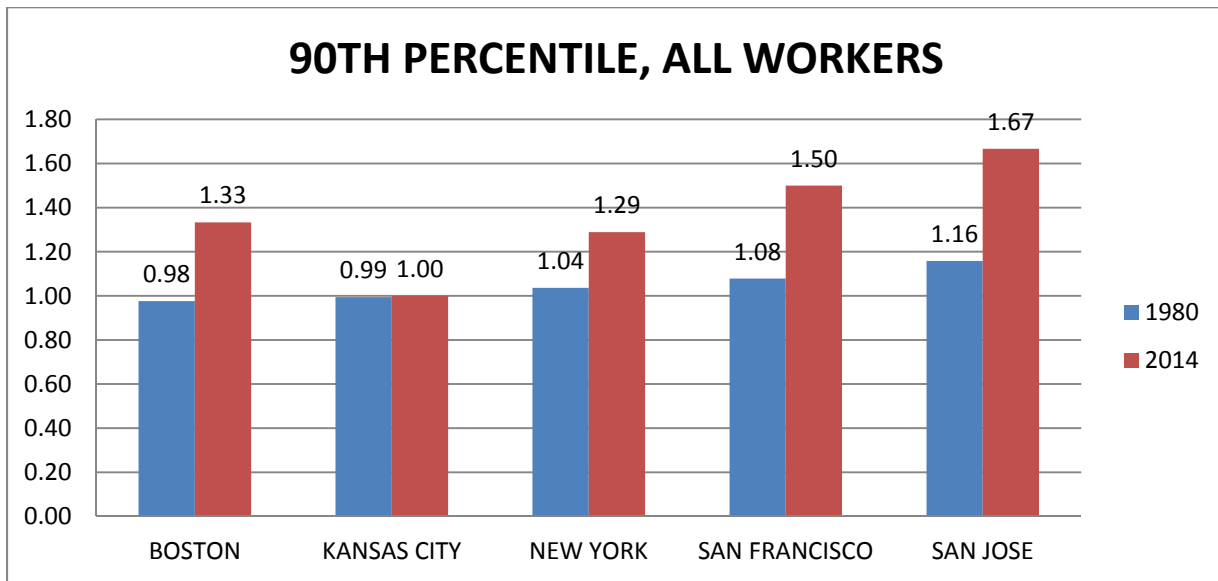


Figure 5: Wage levels relative to St. Louis for workers in the 90th percentile of the regional income distribution.



All statistics in this report were derived from the following data source:

Steven Ruggles, Katie Genadek, Ronald Goeken, Josiah Grover, and Matthew Sobek. *Integrated Public Use Microdata Series: Version 6.0* [Machine-readable database]. Minneapolis: University of Minnesota, 2015.