



## From Sewing to Analyzing: The Historical Shift in Urban Work

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At the height of the industrial era, urbanization was powered by the concentration of industry in cities. The rise of manufacturing brought huge waves of migration, as rural workers sought factory jobs in burgeoning industries located in cities. Boston grew as a center for textile and boot and shoe production. Pittsburgh grew as a center for steel-making. Detroit grew around automotive products. So day after day, these 19th century city dwellers engaged in exactly the kind of tasks memorialized by Charles Dickens and Upton Sinclair: braiding, sewing, threading, etc.

By now we all know that these types of jobs in textile mills and factories are no longer the economic engines of American cities. By the 1960s and 1970s, as heavy industry began to relocate outside of cities and city centers began to decline, economists began rethinking the entire concept that specialized industries and the clustering of capital and technology could really be drivers of economic growth.

In fact, cities grow today for just the opposite reason: they can provide the density and diversity where more advanced, complex, "non-standard" activities can thrive. A hundred years ago, cities were centers of assembly-line production, but today urban economies prize the kind of skills and tasks that involve face-to-face interaction, personal contact and serendipity.

A [National Bureau of Economic Research working paper](#) released this past winter provides an important, data-driven look at how the types of skills required for urban work have shifted over the last century and a half. Specifically, the report — from by economists [Guy Michaels](#) of the London School of Economics, Oxford's [Ferdinand Rauch](#), and [Stephen J. Redding](#) of Princeton University — looked at how so-called "interactive" skills have become more important over time. Over the past 120 years, the authors found, jobs requiring "thought, communication, and inter-social activity" have become increasingly associated with dense and productive cities. And perhaps most interestingly, their research finds that this shift began far earlier than most observers would expect, long before post-1970 deindustrialization and the rise of the tech-driven knowledge economy of the 1980s, 1990s and 2000s put these changes in national headlines. It turns out it was the growth of much earlier high-tech industries — the telephones, subways, and cars of the country's early communications and transportation industries — that propelled the kind of "interactive," people-centered work that we associate with the knowledge economy, the center of today's urban economy.

The study is based on an analysis of 3,000 verbs used to describe some 12,000 actual jobs listed in historical and contemporary editions of the [Dictionary of Occupational Titles](#). The researchers combined this with more standard economic indicators to understand how this shift maps onto the economic performance of American cities over the past 120 years.

The table below, from the study, shows the verbs that were most and least correlated with employment in metropolitan areas at two decade intervals from 1880 to 2000.

Table 2: Verbs Most and Least Strongly Correlated with Metro Area Employment Shares

Panel A: Verbs Most Strongly Correlated with Metro Area Employment Shares							
Rank	1880	1900	1920	1940	1960	1980	2000
1	Thread	Thread	File	File	Document	Identify	Develop
2	Stretch	Stitch	Distribute	Bill	Schedule	Document	Determine
3	Interfere	Telephone	Record	Take	File	Advise	Analyze
4	Hand	Sew	Notice	Compile	Record	Concern	Factor
5	Ravel	Hand	Telephone	Distribute	Distribute	Report	Review
6	Sew	Assist	Bill	Pay	Compile	Schedule	Confer
7	Braid	Visit	Envelope	Letter	Notice	Develop	Advise
8	Visit	Describe	Document	Notice	Identify	Analyze	Report
9	Receive	Number	Learn	Record	Send	Determine	Concern
10	Sack	Stamp	Number	Send	Notify	Notify	Plan
Panel B: Verbs Least Strongly Correlated with Metro Area Employment Shares							
Rank	1880	1900	1920	1940	1960	1980	2000
1821	Conduct	Abstract	Counsel	Delegate	Accord	Power	Restrain
1822	Teach	Tread	Discuss	Enlist	Feed	Pour	Cut
1823	Channel	Pinch	Hear	Labor	Escape	Erect	Power
1824	Sound	Assign	Assign	Tread	Hook	Clean	Massage
1825	Rule	Settle	Teach	Assign	Traverse	Massage	Remove
1826	Matter	Matter	Matter	Approve	Tread	Pump	Feed
1827	Drill	Tunnel	Consolidate	Extract	Loosen	Cut	Clean
1828	Tread	Sound	Rule	Tunnel	Range	Feed	Pump
1829	Tunnel	Rule	Tunnel	Malt	Activate	Move	Move
1830	Pinch	Sole	Sound	Establish	Turn	Turn	Turn

Notes: Coefficients estimated from a regression of the share of occupation-sector employment in metro areas on the frequency with which a verb is used for an occupation and verb-sector-year fixed effects (regression (21) in the paper). A separate regression is estimated for each verb and verbs are sorted by their estimated coefficients normalized by the standard deviation for the verb frequency. Verbs are from the time-invariant occupational descriptions from the 1991 Dictionary of Occupations (DOTs).

The differences over time are striking. In 1880, the top verbs associated with jobs in metro areas include “thread,” “stretch,” “sew,” and “braid” (perhaps a tribute to clothes, shoe, and rope manufacturing). Among the least-used verbs are “teach,” “conduct,” and “rule.” In this early period, cities were centers of specialized manufacturing processes, while more dynamic jobs were often centered in rural areas. By 2000, the pattern is reversed. The most common verbs (“develop,” “determine,” “analyze”) are strongly suggestive of knowledge-driven management. The least-used verbs (“restrain,” “cut,” “power”) are strongly suggestive of work on a factory floor — which there is less and less of in most cities. Now, cities are centers for interactive economic activities, while more specialized activities have shifted to outlying areas.

This lead the authors to conclude that we have witnessed a major shift over the past century in the kinds of work that is centered in cities. By 2000, there was a strong correlation between a city’s population density and its share of “interactive” occupations. And the cities with the greatest relationship between population density and knowledge- and people-centered jobs are also just what you’d expect: Boston and New York do well, while small places like Anniston, Alabama, and Mansfield, Ohio, sit at the bottom of the list.

This is in line with my own research and that of others, which have shown that jobs requiring knowledge and social skills tend to concentrate in much larger cities and metros. In contrast, jobs and tasks that require more standard physical skills have tended to cluster in much smaller cities and metros. Writing in *The Atlantic* a few years ago, I noted that jobs requiring the highest levels of social skills, in other words the jobs that require the most interaction, tended to cluster in the largest cities and metros areas, even more so than jobs requiring greater knowledge or cognitive skills.

This unique study helps deepen our understanding of cities as cauldrons of human interaction, as mobilizers of face-to-face contact and serendipitous interaction, as opposed to containers of specialized tasks, industries, and capabilities. Cities, after all, are complex interactive systems whose dense and diverse makeup enable creative human beings to combine and recombine their talents and ideas in new and novel ways that generated new knowledge, new innovations and new ways of working and living.

Top image: Sewing room in a large shoe factory, Syracuse, N.Y., courtesy New York Pubic Library and Goodluz/Shutterstock.com

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