

# Pittsburgh's Evolving Steel City

## Forging a More Diverse and Ever Cleaner Industrial Future



Once evident by the billowing smoke of steel giants, the heart of Pittsburgh's economic engine today pulses largely unseen in a mix of nationally recognized university research centers, small manufacturers, high-tech startups, medicine, and professional and service sectors. And in what many hope is the catalyst for a new industry, the region's first petrochemical plant will soon begin transforming ethane from the region's abundant shale gas into polyethylene resin for plastics manufacturing. Against the backdrop of these industrial evolutions, Pittsburgh has shifted from one of the nation's most notorious polluted cities to a leader in pollution control and high-tech advancements.

## The Rise and Fall of an Industry Icon

Situated at the confluence of the Monongahela and Allegheny Rivers and nestled within the Allegheny Mountains, Pittsburgh was initially valued as a city of both commerce and industry. Pittsburgh's premier manufacturing facility was a glass mill that opened in the late 1700s. In the next hundred years before Pittsburgh's rapid rise to the epicenter of steel making, its manufacturing sector grew to include boat building, textile manufacturing, iron and steel production, and steam engine and boiler works. By 1840, iron and iron products were the number one industry.

If not for industrialist Andrew Carnegie bringing the Bessemer steel-making process to Pittsburgh in the 1870s, Pittsburgh's industrial moniker may have forever remained "Iron City." With a more efficient manufacturing process and abundant coal resources, Pittsburgh's steel industry exploded, creating rails for the transcontinental network and expanding products to include steel plate, pipes and structural steel. From 1870 to 1910, Pittsburgh's population grew at a rate twice as fast as the entire nation, as immigrants poured into Pittsburgh via Ellis Island to work in the steel mills.<sup>1</sup>

While Pittsburgh remained a world leader in steel production for many years, the steel industry eventually began its inevitable migration west of Pennsylvania. Nonetheless, with increased demand for steel during World War I, and the growth of the auto industry and World War II, Pittsburgh's steel production

continued to account for nearly half of national output into the mid-1950s.<sup>2</sup>

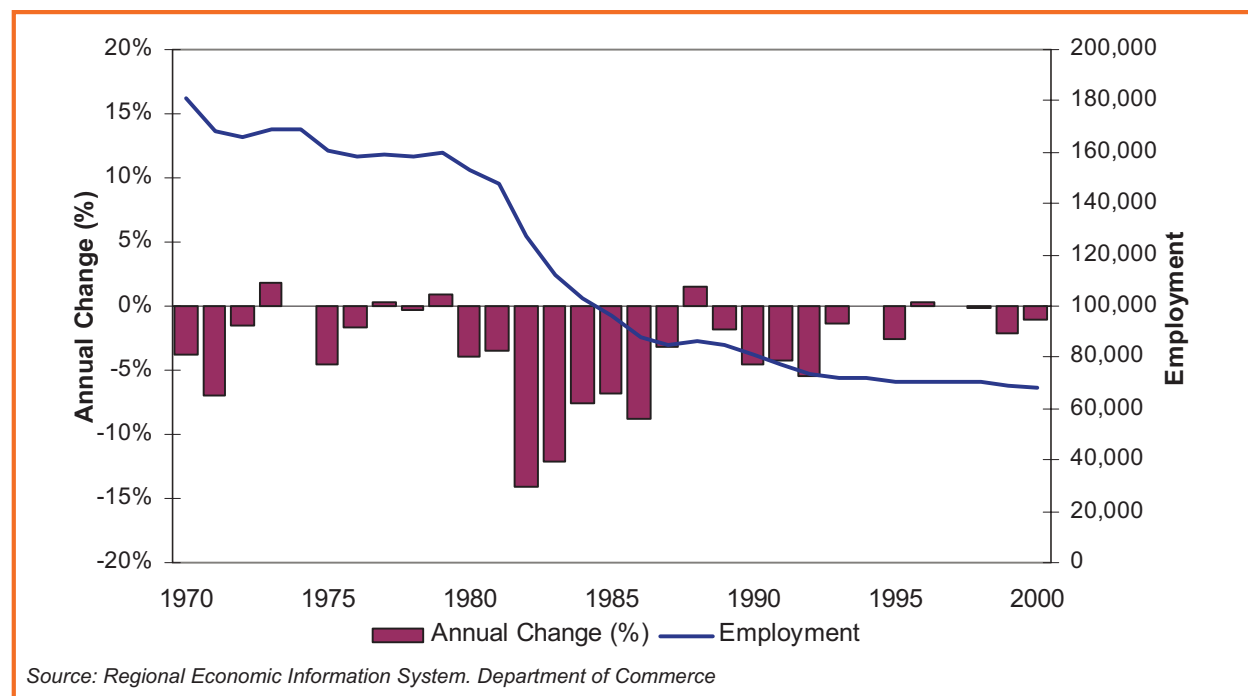
Amid foreign competition, labor union strikes, and changes in the core technology used to manufacture steel, Pittsburgh's industry declined over the remainder of the 20th century. By the 1980s, more than 75 percent of the steel-making capacity in the Pittsburgh region was shuttered.<sup>3</sup> The steel industry losses accounted for a significant portion of the region's lost manufacturing jobs—158,000—between 1970 and 1990.<sup>4</sup> In these same two decades, the region lost more than 289,000 residents.<sup>5</sup> Pittsburgh became part of the nation's rust belt.

## Clearing the Air

The abundance of soft coal for heating homes and fueling industrial furnaces, combined with the city's unique topography, created an air pollution problem that plagued the city long before and long after the rise of steel making.

To many of the city's early residents, the smoke was a symbol of prosperity. To visitors, it was another matter. On a visit to the city in 1884 to promote his masterpiece, *The Adventures of Huckleberry Finn*, Mark Twain said of his trip to Mount Washington: "With the moon soft and mellow ... we sauntered about the mount and looked down on the lake of fire and flame. It looked like a miniature hell with the lid off."<sup>6</sup>

While public calls for smoke control came as early as 1804,

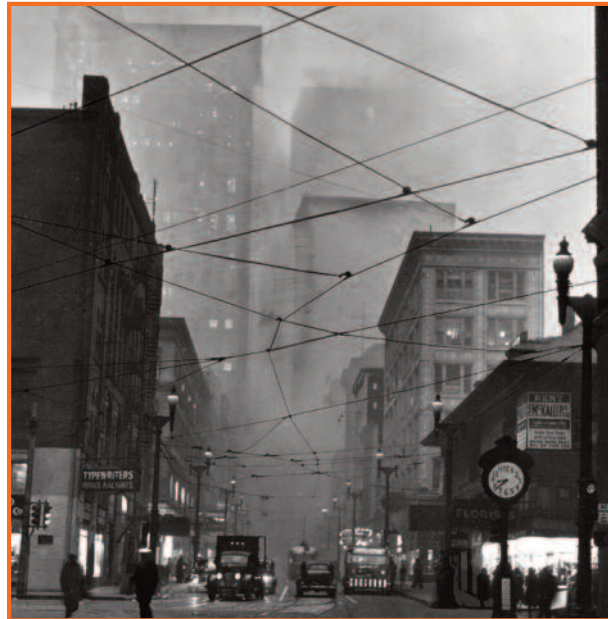


The decline in Pittsburgh's manufacturing jobs is attributed in large part to losses in the steel industry. After steep drops in the early 1980s, an overall decline has continued, but at a rate closer to the U.S. as a whole. Shown are manufacturing employment changes in Allegheny County, excerpted from "Allegheny County Economic Trends," Allegheny Places, 2005.

the huge growth of industry and lack of concern for smoke levels kept pollution high for nearly another century.<sup>7</sup> Largely to quell occasional public outcries, the city passed several smoke control ordinances in the 1890s and early 1900s; however, the ordinances were weakly enforced.

Beginning in the 1940s, the city's commitment to clear the air intensified. While World War II delayed implementation of a strict smoke control ordinance passed in 1941, it also seemed to strengthen resolve to address the problem because the increased industrial activity exacerbated the smoke issue. Over the next decade, homes were required to end coal burning for heating, and natural gas was piped into neighborhoods. Diesel engines replaced coal firing in locomotives and river boats, and industries began replacing worn out equipment with modern facilities. By 1948, downtown visibility improved 67 percent, and by 1954, the city received 89 percent more sunshine.<sup>8</sup>

In 1957, the Allegheny County Health Department took over the duties of the City Smoke Control Bureau. Regulations enacted in 1960 created the Department's Bureau of Air Pollution Control and established the strongest particulate control regulation in the nation.<sup>9</sup> With the help of local engineering houses, manufacturers captured more and more of the remaining pollution from industry stacks.

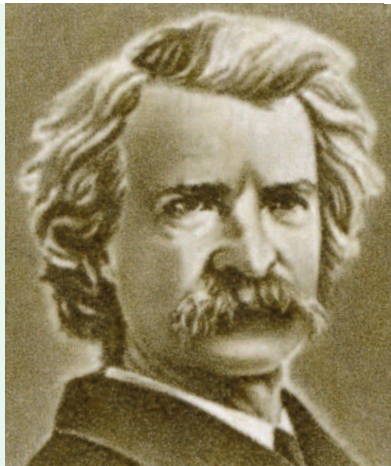


Pollution was once so bad in Pittsburgh that street lamps and headlights were in use by noon.

By the mid-1970s, 65 percent of the particulate emissions and 57 percent of the sulfur dioxide emissions occurring when the U.S. Clean Air Act was passed in 1970 had been eliminated.<sup>10</sup> By the late 1970s, frequent air pollution alerts had largely subsided.<sup>11</sup>



An artist's rendition of Shell's planned ethane cracker—situated about 30 miles northwest of Pittsburgh along the Ohio River—harkens back to postcards of the many steel mills nestled between the City's rivers and steep hillsides. Shown below are former blast furnaces of the Jones and Laughlin Steel Company a few miles south of Pittsburgh along the Monongahela River.



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## On the Horizon

While Pittsburgh is still home to US Steel and other Fortune 500 companies that helped shape the region, it is rapidly becoming a hub for education, medicine, small manufacturing, robotics, and research. Small steel manufacturers, some revitalized by the demands of the energy extraction industry, now make Pittsburgh payrolls alongside the likes of Google, Apple, Uber, and Facebook. And hi-tech investors are ever poised to scoop up the latest spinoffs from Carnegie Mellon University's brain trust.

By all accounts, Pittsburgh's post-steel economy and environment are thriving. In 2015, Pittsburgh was listed among the 11 “most livable cities in the world” by *Metropolis Magazine*.

The year 2016 was a banner year for capital investment—more than \$10 billion—in manufacturing and energy.<sup>12</sup> And just this year, Pittsburgh was ranked third out of 100 metro areas for prosperity, according to Brookings Institution data.

With Pittsburgh's steel heritage proudly displayed—from the uniforms of our beloved Pittsburgh Steelers to the treasured landmarks of the Rivers of Steel National Heritage Area (<https://www.riversofsteel.com/about/>)—the city's future looks bright indeed. Pittsburgh's diverse and clean economic engine, along with the legacy of art, culture, and education sown by generous industrial giants like Carnegie, make the Steel City a place like no other. **em**

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### Acknowledgment:

The source for much of the air quality history in this article is attributed to Roger Westman (1945–2016), who served as Manager of the Allegheny County Health Department's Air Quality Program from 1994 to 2008. Roger is remembered fondly by his friends and colleagues at the Department.

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