

The BioForge Manufacturing Center and Economic Development in Hazelwood: Prospects and Challenges

Sreya Abraham, Catie Creiman, Junyi He, and Ilia Murtazashvili

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America's Rust Belt is often defined by deindustrialization, particularly the collapse of steel, but manufacturing remains alive and is shifting toward the bioeconomy. In Hazelwood—a once steel-centered Pittsburgh neighborhood—the BioForge Manufacturing Center, backed by the University of Pittsburgh and the Richard King Mellon Foundation, embodies this transition. In the near term, encouraging small-scale entrepreneurship, including Black-owned businesses, and construction jobs through innovative worker-training programs can drive inclusive growth. Over the long term, BioForge and the broader tech focus of Hazelwood Green Industrial Park offer both opportunities and challenges to ensure that residents benefit from emerging tech jobs.

The Bioeconomy and Rust Belt Revitalization

The Rust Belt, once known for its manufacturing prowess, refers to the region of the United States that extends from New York to Wisconsin, along the Great Lakes. Today the region is known more for the perils of deindustrialization, especially the decline in automobile manufacturing and coal and steel production. Some of the negative consequences of deindustrialization include declining populations, increases in unemployment, and rising crime in many middle-class communities across the Rust Belt. The opioid epidemic has also been a challenge in many of these communities, along with what economists Anne Case and Angus Deaton call “deaths of despair,” which includes deaths from overdose.¹

Although manufacturing has declined, it is also transforming communities. This is the case in Hazelwood, once home to steel mills owned by the Jones and Laughlin (J&L) Steel Company. The situation

The Rust Belt series responds to ongoing questions about how to revitalize postindustrial communities in the United States. It is supported by the John Templeton Foundation.

in Hazelwood changed as American steel companies began outsourcing their manufacturing in response to increasing international competition and the automation of steel production. LTV Steel closed its last mill in Hazelwood in 1997, but by that time, many jobs had already disappeared. After the steel mill closed, Hazelwood was left with a hollowed-out structure and a host of environmental and ecological challenges.

The transformative manufacturing component includes the bioeconomy and the knowledge economy, including artificial intelligence and robotics—the latter of which is associated with the original decline of the Rust Belt through the automation of jobs once performed by humans. Despite the challenges of deindustrialization, Hazelwood is optimistic about new investments in the tech economy and high-tech manufacturing.

An important aspect of Hazelwood’s transformation is the BioForge Manufacturing Center. The groundbreaking for the center was in 2024, near the site of Hazelwood’s last steel mill, which has been refurbished to house a host of tech businesses. The BioForge Manufacturing Center is part of the new economy of public health. It offers a vision for the future in which precision medicine drives innovation. In this vision, medical treatments move from an era defined by the use of chemical drugs to one in which gene and cell therapies are used to treat multiple and diverse health conditions and where the ability to rapidly and efficiently shift between therapy productions is critical to success. The scale is astounding, as these processes might need to deliver anywhere from 100,000 to 1 billion therapies at one time.²

Construction on the \$225 million BioForge facility began in 2024 and is scheduled for completion in 2027. The facility is a two-story building of approximately 185,000 square feet and is funded by the University of Pittsburgh in partnership with the University of Pittsburgh Medical Center, with up to \$100 million in support from the Richard King Mellon Foundation. The founding anchor tenant is ElevateBio, a global leader in commercial gene and cell therapy manufacturing.

The BioForge Manufacturing Center is a quintessential example of the type of manufacturing that drives the bioeconomy. According to the 2022 White House Executive Order on the bioeconomy, the term bioeconomy refers, in the broadest sense, to “economic activity derived from biotechnology and biomanufacturing.”³ The Congressional Research Service clarified that it includes economic activity based on “products, services, and processes derived from biological resources,” including microorganisms,⁴ while the National Institute of Standards and Technology emphasizes that the bioeconomy consists of economic activity derived from the life sciences, including biotechnology and biomanufacturing.⁵ By any of these definitions, the BioForge Manufacturing Center, with its focus on life sciences and gene and cell therapy, is part of this new bioeconomy.

This policy brief considers both short- and long-term opportunities presented by the bioeconomy and the BioForge Center in particular. The brief emphasizes the need to understand opportunities for minority-owned businesses, a key area of economic growth. The most significant implications of this brief are that the BioForge facility presents many short-term opportunities, but important constraints must also be addressed, especially the need to ensure favorable regulations for small businesses and changes in zoning to enable denser development. From a longer-term perspective, although tech opportunities are significant, the goals are to improve community well-being and health. Hence, a significant complementary investment in workforce development

and educational opportunities appears critical to ensuring that Hazelwood residents have opportunities to work in BioForge and in the broader tech-centric ecosystem of Hazelwood Green Industrial Park.

Economic and Demographic Features of Hazelwood

Pittsburgh is known for its robust neighborhoods. Not only is Hazelwood one of those neighborhoods, but it is also a microcosm of how deindustrialization transformed the Factory Belt into the Rust Belt. Before becoming a steel town, Hazelwood was an upscale suburb of Pittsburgh. In the mid-19th century, the growth of railroads and steel production led to the development of a working-class community. The prospect of work in the steel mill attracted migrants and immigrants, including many Black migrants seeking economic opportunities.

Deindustrialization was apparent by the 1960s. In the 1970s, American industry, including steel production, was significantly affected by unemployment and inflation. In communities with mills, deindustrialization typically initiated a long process of population decline. At its peak, Hazelwood had more than 13,000 residents. As jobs disappeared, people left in search of jobs elsewhere. When Hazelwood's last mill closed in 1997, the population had been shrinking for decades. Between the 1960s and 2000, Greater Hazelwood's population shrank by nearly 60 percent. Currently, Hazelwood has around 5,000 residents and about half the median household income as Pittsburgh.

Pittsburgh, which has a stable population and a revitalized economy led by the education and healthcare sectors, as well as substantial investment in tech, has done well compared to other Rust Belt cities, such as Columbus, Dayton, and Detroit. Hazelwood, however, demonstrates that the revitalization has been uneven.

Compared to Pittsburgh as a whole, Hazelwood has a smaller share of people in the workforce, higher unemployment, and a substantially lower median household income. According to 2017 demographic data from the city government, Hazelwood has a higher proportion of children and individuals over 50 than the city average, but a lower percentage of young adults ages 18–34. Moreover, just 56 percent of Greater Hazelwood residents between the ages of 16 and 64 are employed, either full or part time, versus 79 percent of Hazelwood residents within the same age range. The neighborhood also has a greater proportion of single-parent households at 50.4 percent, compared with Pittsburgh's 37.1 percent.⁶

Economically, Hazelwood struggles with lower median household incomes, and a significant portion of its residents live below the poverty level. Many households face a high cost burden, spending more than 30 percent of their income on housing and utilities. The neighborhood's average median household income is slightly more than half of the city's (\$25,440 versus \$44,092), and 47 percent of households in Greater Hazelwood earn less than \$20,000 a year, compared with only 26 percent of households throughout the city. Employment opportunities within the neighborhood are scarce, leading to a low workforce participation rate and, for many residents, travel outside the community for work.

Hazelwood residents lag in obtaining bachelor's degrees. Moreover, nearly 300 Greater Hazelwood residents of workforce age lack a high school diploma or GED. Only 12 percent of Hazelwood residents have

earned a degree in higher education, which is lower than the national average of 21 percent, further limiting economic opportunities.

Hazelwood Green and the BioForge Facility

The BioForge Manufacturing Center shows how communities can transform from the old to the new manufacturing economy—in this case, from steel to precision medicine. BioForge is also part of a larger revitalization effort for the former J&L space. Hazelwood Green Industrial Park, which the space is now called, is situated on 178 acres along the Monongahela River near the Hot Metal Bridge, an iconic bridge that was once used by the railroad. Hazelwood Green is one of several initiatives to revitalize Pittsburgh’s historic waterfront districts. BioForge is among the University of Pittsburgh’s Anchor Initiatives. Anchor Initiatives seek to leverage the university’s expertise as a leader in economic activities in southeastern Pennsylvania, and they are a key part of this revitalization.

Hazelwood Green is also significant for its role in revitalizing the Rust Belt. “Eds and meds,” economic activities linked to universities and healthcare, are often significant sources of economic development.⁷ In



BioForge “Last Beam” Ceremony. Photo by Ilia Murtazashvili.



Mill 19. Photo by Ilia Murtazashvili.

Pittsburgh, revitalization is often described this way. BioForge is a quintessential example of the synergy between eds and meds.

The “eds” side includes the University of Pittsburgh and Carnegie Mellon University, two leading global research universities with significant institutional support for community economic development and community engagement. Carnegie Mellon’s activities in Hazelwood are led by the Manufacturing Futures Institute, an affiliate of Carnegie Mellon that is housed in Mill 19, a 265,000-square-foot manufacturing complex.⁸ Other innovative institutions and companies in Mill 19 include the Advanced Robotics for Manufacturing Institute (also an affiliate of Carnegie Mellon University), the autonomous vehicle company Motional, Catalyst Connection, and YKK AP.

“Eds and meds” also describes the BioForge, which leverages the university’s role as an economic anchor in southwestern Pennsylvania in the areas of buying, building, and hiring locally; community engagement; placemaking; and workforce development.⁹ An event titled “Revitalizing American Industry: Place-Based Innovation for Economic Development,” sponsored by the Brookings Institution, the University of Pittsburgh, and Carnegie Mellon University, brought together key partners on April 24, 2024. BioForge’s founding CEO, Ken Gabriel, explained how BioForge hopes to address cost barriers for medicines and foster collaboration, as well as stimulate new startups, with an initial focus on cell and gene therapies.¹⁰

The University of Pittsburgh’s Office of Engagement and Community Affairs, in collaboration with academia, industry, and workforce development representatives, has presented a report addressing the

growing regional demand for life sciences workers. The report proposes making these job opportunities accessible to community members regardless of their educational background. Key findings of the report include the following:

- Identification of life sciences jobs that offer family-sustaining wages and are accessible to individuals without four-year degrees
- Prediction of nearly 7,000 job openings in medical devices, research, and medical laboratories by 2030, along with an additional 36,000 jobs in related fields
- Emphasis on the need for strategic planning, collaboration, and funding for training and placement programs to connect community members to these opportunities

This initiative is part of the University of Pittsburgh's broader effort to contribute to the Greater Hazelwood Neighborhood Master Plan, focusing on employment and workforce development in the life sciences sector.

Increasing Opportunities for Black-Owned Small Businesses

"Make Greater Hazelwood into a hub for entrepreneurs and small businesses."

—Greater Hazelwood Neighborhood Master Plan, Goal 4

One of the foundations of Hazelwood is its strong economic development plan, led by the Hazelwood Initiative (HI). Its mission is to build a stronger Hazelwood through inclusive community development. HI pursues this mission through community engagement, business district revitalization, and affordable housing. HI's activities include communicating regularly with the community, preserving and developing affordable housing, revitalizing the Second Avenue business district, and protecting low-income residents from displacement. HI seeks to secure buildings that once served community needs but are now vacant. HI recognizes that increasing affordable housing and protecting neighborhood assets are key to the community's revitalization. A community development corporation, HI has the increased capacity and partnerships to purchase and renovate residential and commercial properties; organize stakeholders to build consensus and guide planning; and, ultimately, place development in the hands of the community.

The specifics are described in the Greater Hazelwood Neighborhood Master Plan, which includes strengthening small-business opportunities as one of its goals.¹¹ The plan for small businesses includes providing educational opportunities for community members to learn about property leasing, partnering with financial institutions to provide guidance on securing financing for commercial property purchases, creating opportunities for local and minority-owned businesses through incubators that offer below-market rates, and sponsoring initiatives to support flexible, low-cost retail space. The plan includes opportunities for retail, restaurant, and shared spaces. Affordable and low-risk options include pop-up shops and "container parks" that combine food uses, gallery space, and office space, among other things, and offer indoor and outdoor programming and events. The plan also calls for investment through a capital fund (technical assistance), a retrofit program (to retrofit businesses to thrive), and associated job-training initiatives.

The revitalization efforts in Hazelwood present a significant short-term opportunity to boost Black-owned small businesses in the area. With the development of the BioForge project and the anticipated influx of workers and residents, demand for local services and amenities is growing, thereby creating fertile ground for new restaurants, retail shops, and service-oriented businesses. Additionally, community-focused initiatives and grants, like those from the Heinz Endowments and the Claude Worthington Benedum Foundation, can provide vital support for entrepreneurs. By leveraging these opportunities, Black-owned businesses can thrive, contributing to the economic diversity and resilience of Hazelwood.

One of the challenges facing Hazelwood is how to connect BioForge with organizations already dedicated to improving opportunities for small businesses. People of Origin Rightfully Loved and Wanted (P.O.O.R.L.A.W.), a 501(c)(3) nonprofit organization located in Hazelwood, is playing a pivotal role in increasing opportunities for Black-owned small businesses. Its comprehensive programs and services focus on education, housing, employment, workforce development, racial justice, and community advocacy. P.O.O.R.L.A.W.'s workforce development initiatives are specifically designed to create skilled job candidates within Hazelwood.¹² The organization offers community-based job placement and skills training for, among others, union commercial drivers, cleaning workers, childcare providers, baristas, culinary arts specialists, and landscapers. These efforts not only empower individuals, but also stimulate local entrepreneurship and encourage the establishment and growth of Black-owned businesses. Through tailored support, P.O.O.R.L.A.W. helps to ensure that the revitalization of Hazelwood includes equitable opportunities for its Black residents, thereby contributing to a more inclusive and vibrant local economy.

Challenges to Short-Term Opportunities

Hazelwood residents face several challenges in seizing short-term opportunities, particularly in entrepreneurship. Economic constraints, including low median household incomes and high housing costs, limit the availability of disposable income for business investments. Employment opportunities within the neighborhood are scarce, leading to a low workforce participation rate and necessitating travel outside the community for work. Educational barriers also play a role, with lower rates of bachelor's degree attainment hindering access to higher-paying jobs and entrepreneurial knowledge. Environmental challenges such as pollution, lead contamination, and poor air quality affect residents' health and deter potential investors. Additionally, significant portions of the neighborhood are unsuitable for development because of undermined land and landslide-prone areas. Infrastructure and transportation issues, including a limited public transportation network and aging infrastructure, further complicate business operations and customer access. Social and community issues, such as perceived crime rates, and systemic barriers, such as political disenfranchisement, also stifle local initiatives.

Cities can support small businesses by enacting favorable regulations. Consider food trucks. Although such businesses are only a small segment of entrepreneurship, they illustrate how regulations can empower business opportunities. Regulations that restrict and limit food trucks are an everyday form of protectionism in many cities. Fortunately, several politicians succeeded in changing the protectionist rules in Pittsburgh. In 2015, City Councilman Dan Gilman proposed rules, cosponsored by Councilman Corey

O'Connor, to make the city more food truck friendly.¹³ At the time, food trucks could not park at meters, stay in the same spot for more than 30 minutes, or operate within 500 feet of a competing business. During his campaign for mayor, then-Councilman Bill Peduto made making Pittsburgh a “food truck friendly city” one of his key initiatives.¹⁴

Community Kitchen Pittsburgh demonstrates the significance of food truck entrepreneurship. Its mission is to “use food as the foundation to change lives and strengthen communities.”¹⁵ To that end, Community Kitchen’s food truck has been a mainstay at Hazelwood Green.¹⁶ In the summer of 2024, Hazelwood Local announced plans to have the food truck at events, including its Movie Night on the Lawn and Summer Sounds, as well as at Hazel Grove Brewing’s Neighborhood Happy Hour. Importantly, the food truck is around for at least four hours at a time—something that would not have been allowed before Pittsburgh’s laws were changed to encourage food truck entrepreneurs.

Longer-Term Opportunities and Challenges

The type and level of education required for many tech jobs presents a constraint in Hazelwood. Many jobs, particularly in fields such as robotics, artificial intelligence, or bioeconomics, require high levels of training and expertise. Although opportunities for STEM (science, technology, engineering, and mathematics) training exist, it is unclear whether these opportunities will be sufficiently available to Hazelwood residents. The primary challenges Hazelwood residents face include lower aggregate education levels and a smaller proportion of working-age adults compared to younger and older generations. However, the significant number of children in Hazelwood presents an opportunity for long-lasting educational initiatives that could pay off in the future. The presence of high-tech industries such as BioForge and Mill 19 could inspire local children to develop an interest in these fields, potentially motivating them to pursue undergraduate and graduate degrees.

Many so-called STEM jobs will not be on the cutting edge of technology, nor will they require extremely high skill levels. Therefore, increasing education and training for Hazelwood residents who are not aiming for the frontier research jobs might be a more feasible short-term goal (5–10 years).

Regulatory barriers also pose a significant constraint to economic development. Much of Hazelwood’s land is zoned as “parks” or “hillside,” and population growth necessitates inclusive zoning to allow for more high-density land use.

Investment presents another challenge. Communities thrive when they offer appealing amenities to their residents. Hazelwood Green boasts several attractions, including open-air concert and green spaces. However, Hazelwood itself needs more amenities, outside of new developments, to attract and retain residents and businesses. Addressing these challenges is crucial for fostering sustainable long-term growth and opportunities in Hazelwood.¹⁷

Lack of easy access to public transportation is another lower-level challenge for Hazelwood, because commuters who live outside of Hazelwood Green must drive and park in lots to use public transportation. City buses go to Hazelwood Green, but residents of surrounding neighborhoods, including Oakland, which is home to the University of Pittsburgh and Carnegie Mellon, must transfer one or more times to access the city buses.

Additional challenges will arise as the population grows. As more people settle and work in Hazelwood, the development of vacant land for apartment buildings and commercial activities could reduce green spaces and negatively affect the environment. Ensuring environmentally sustainable development is an issue that developers must not ignore.

Gentrification is a persistent challenge. New residents with higher incomes can be a boon for business, but they also drive up housing costs, threatening affordability for lower-income residents. Indeed, in meetings with the University of Pittsburgh and community members, some participants expressed concerns about gentrification.¹⁸ If the high-income tech workers who work in Hazelwood Green begin to move into the surrounding areas, the demand for upscale housing prices will put pressure on current community members. One of the objectives of Hazelwood's Master Plan is to "determine and achieve an affordability goal" for Greater Hazelwood.¹⁹ As BioForge and Hazelwood Green realize their economic potential, meeting this goal will be important.

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About the Authors

Sreya Abraham, Catie Creiman, and Junyi He are graduates of the School of Public and International Affairs (SPIA) at the University of Pittsburgh. They completed this project while participating in the graduate program. Ilia Murtazashvili is a professor in SPIA and codirector of the Center for Governance and Markets at the University of Pittsburgh.

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