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# As top innovation hub expands, can straining local infrastructure keep pace?

*Cambridge's Kendall Square, a global center for biotech and tech firms, faces housing and transit challenges*

By **Patrick Sisson** | Nov 6, 2018, 12:37pm EST



MIT's plans for Kendall Square in Cambridge, Mass., include construction of housing, office, research, and retail space on the site and adjacent lots along and behind Main Street. | Boston Globe via Getty Images

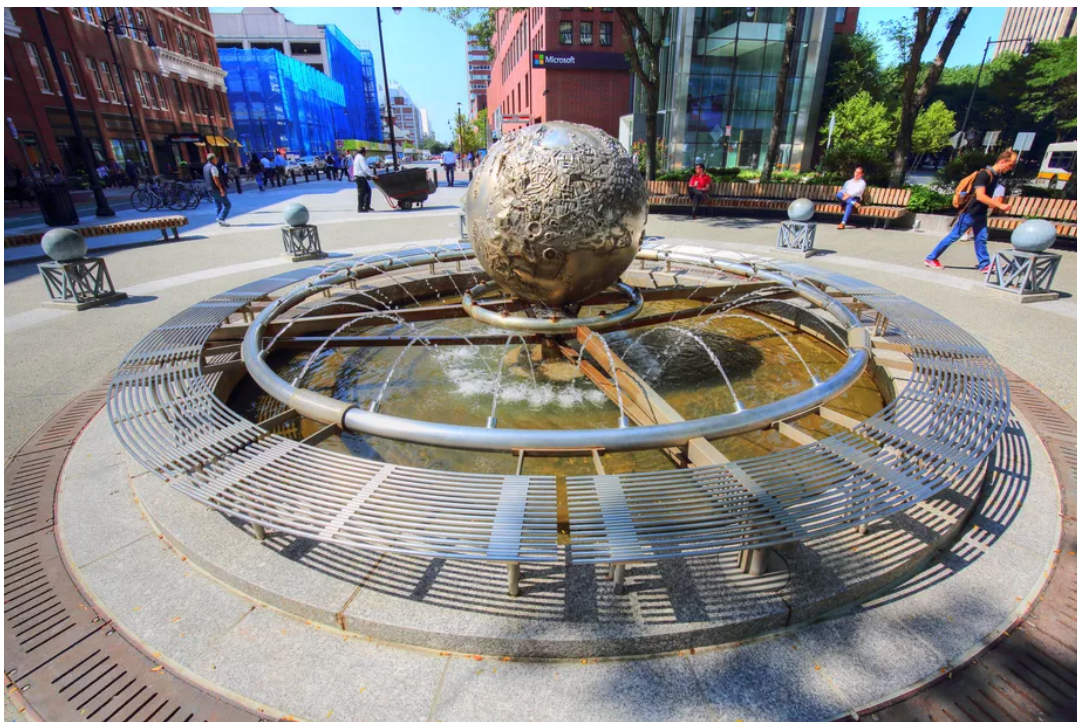
In Cambridge, Massachusetts, some of the most valuable real estate in the city of 113,000 can be found clustered around the Kendall Square station along Boston's metro, the T. This cluster of labs, research centers, and corporate offices, located within a 10-minute walk of the rail station, has been called "the most innovative square mile on earth," according to a Boston Consulting Group report from 2009, and a birthplace of the biotech industry.

Adjacent to the Massachusetts Institute of Technology (MIT), Kendall Square and its cluster of professors and Ph.D.s "is to science what New York is to finance, what Paris is to culture, what Washington is to government," says Jay Bradner, president of the Novartis Institutes for Biomedical Research. According to CBRE, commercial rental

rates in Cambridge, at \$82.23 a square foot, nearly match those in Midtown Manhattan, which average \$82.51.

Home to some of the nation's greatest universities, the brainpower of the Boston metropolitan area has been a boon to the region. But Kendall Square, the site of 62 public companies with a combined market value of about [\\$170 billion](#), stands apart. It's one of the reasons [Massachusetts ranked third in the nation for venture capital deals](#) in 2018.

Kendall Square shows few signs of slowing down: MIT's massive [Kendall Square Initiative](#), a billion-dollar-plus investment in neighborhood placemaking, centered around a cluster of six new buildings and adding 1.8 million square feet of offices and housing, is currently underway. [Boeing recently signed on](#) to open an autonomous flight research center in one of the new towers.



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But, in many ways, this model of the innovation economy is beginning to show signs of strain: Can Kendall Square, like other innovation centers across the country, update its physical infrastructure at a pace that supports such rapid growth?

According to Barry Bluestone, a professor at the public policy and urban affairs school at Northeastern University, Kendall Square's growing innovation economy has



accelerated inequality and exacerbated transportation and affordability challenges, echoing complaints heard in the San Francisco Bay Area.

“The cost of housing has exploded, and makes it almost impossible for working families to live here,” says Bluestone. “And getting in and around Kendall Square is almost impossible. The success of the economy has put tremendous pressure on the highway system and the T.”

There’s a common catchphrase about Kendall Square that reflects some of the neighborhood’s challenges: “You can’t cure cancer stuck in traffic.” It’s true traffic has become a heavier burden for Boston-area residents: Area commuters who travel more than 90 minutes to and from work increased by 50 percent between 2005 and 2016. But YeSeul Kim, vice president of the Kendall Square Association, a local business-development group, goes one step further. Transit issues threaten the very competitiveness that makes it worth enduring a long drive to work.

“We can’t sustainably maintain an innovation district if we don’t address these issues now,” she says. “I really do believe if we don’t solve this, it’ll impact a [future] innovation that could change the course of humanity.”



Part of the 43 acres of the Kendall Square area of Cambridge that were set to be cleared in 1964 to make way for NASA Electronic Research Center and private industrial development. | Boston Globe via Getty Images

## From a proposed NASA tech center to biotech’s birthplace

Arguably the biggest player in Kendall Square, and the source of much of the talent that drives the area's innovation economy, MIT has invested significant resources in solving some of these infrastructural challenges.

For instance, the Kendall Square Initiative will expand the Volpe Transportation Center, helping to ease the traffic gridlock in the area; create new housing to ease Cambridge's decade-long affordability crisis; and add extensive new office and lab space for startups and multinationals looking to gain proximity to this ideas hub. Julie Wagner, senior fellow at the Brookings Institution and an expert in innovation districts, says the new developments in Kendall Square help create a diverse, 24/7 neighborhood, not a "one-dimensional center of commerce."

Other developers are making similar moves: [Boston Properties](#) has proposed an 18-story tower at 325 Main Street that would potentially house new Google offices.

According to Robin Scheffler, an MIT historian currently working on a book about the history of Kendall Square, unless the neighborhood can increase capacity, companies will look for space elsewhere, or locate in some of the satellite hubs around the Boston Area. "The fear of higher costs may eventually cut against the benefits of co-locating," he says.

[Kendall Square's](#) evolution and transformation into a center for innovation and research was anything but certain. In 1960, when Cambridge reached out to MIT's then-president James Killian for help developing the area, the city, which was once a manufacturing hub, had just lost its last big employer, Lever Brothers. At the time, corporations and planners thought innovation happened in manicured, modernist, suburban campuses—like the [326-acre Warren Tech Center](#) General Motors opened in Michigan—not cities. Silicon Valley later replicated this model, with high-profile buildings-in-the-green like Facebook's Frank Gehry-designed headquarters and Apple's shiny new [spaceship of a corporate campus](#) in Cupertino, California.

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Despite those trends, Kendall Square, which embraced its more urban context, nearly took off in the '60s. Thanks to powerful representation in Congress and the White House, via native son John F. Kennedy, Cambridge was groomed to become the home of a NASA technical center. A development agency even began clearing space and developing within Cambridge until a round of budget cuts in 1969 scuttled the project and turned the area into a collection of abandoned industrial sites and parking lots nicknamed "Nowhere Square." The Volpe Transportation Center, a consolation prize, was a poor substitute for space-age technology.

Unbeknownst to many at the time, Kendall Square had all the attributes for success; it was just ahead of its time. When MIT began investing in the type of research that would create the biotech boom in the late '70s, and entrepreneurs and startups started looking for new office space adjacent to the talent-rich university in the '80s, Kendall Square, with its plentiful parking lots and empty industrial space, beckoned.

As [Carnegie Mellon would later do for Pittsburgh](#), Kendall Square provided the fertile ground where [university expertise and innovation](#), as well as entrepreneurship and venture capital, could meet and create new companies. Innovators like Biogen and Alexandria Real Estate Equities Inc. developed new companies, as well as the office and research space needed for future expansion.

Later, this innovation infrastructure—practically next door to the academic labs that would pioneer cutting-edge developments such as the Human Genome Project and Crispr experiments—would become the home to companies such as Takeda Pharmaceutical and Novartis AG.

It exemplified what a Brookings report called the "anchor plus" model of innovation, where major "anchor" institutions, in this case the universities and medical centers of greater Boston, attracted mixed-use development downtown. It's arguably the forefather of other massive investments in innovation, such as [Cornell's Roosevelt Island Tech Campus in New York City](#) or [Brooklyn's Navy Yard](#) project.

As the innovation economy in Kendall Square continues to expand—[investment in Massachusetts biopharmaceutical companies tripled](#) between 2008 and 2017, reaching \$3.1 billion annually—continued growth is about more than just talent. MIT's Scheffler says it's also about space and geography, and the politics of development between "town and gown," Cambridge and MIT.

“The future of the innovation model is a matter of politics and community responsibility as much as it is a question of technical advances,” says Scheffler.

### **You can't innovate your way out of traffic**

MIT's new Kendall Square Initiative comes just as these issues of affordability, accessibility, and transportation have come to the fore.

Between roughly 2000 and 2010, MIT embarked on an ambitious expansion plan, spending \$1.4 billion on new buildings by high-profile architects like Frank Gehry, Steven Holl, and Fumihiko Maki. This time around, with the development of some of the last remaining open parcels in Kendall Square, development is a little more subdued. The university spent eight years reviewing its plans and goals with the Cambridge community and getting local buy-in.

Taken as a whole, the plan delivers urbanist-approved solutions—new housing, increased density, new streetscapes, and an updated transportation center. But does it offer enough of these solutions to truly solve the problem?

Northeastern's Bluestone feels it's critically important for the future of the city to build out more space for startups in Kendall Square. But it also requires that Boston's city government pay much more attention to transportation and housing. The city needs to build more housing for young adults and millennials, and take pressure off the older housing stock, says Bluestone.

“We don't have to build it on top of Kendall Square,” he says, “but we do need to build it on land that becomes available near transit.”

Communities need to understand both the benefits and challenges of these innovation centers, says Brookings's Wagner. In strong real estate markets like the Boston region, or San Francisco, progress within innovation districts can be viewed negatively as the market is already hot, and their growth places even further pressures on families.

“What concerns me is that communities will argue for ‘no progress’ out of fear of gentrification, when innovative growth helps strengthen and diversify regional economies, not to mention contribute to the tax base, which funds things such as schools and social services,” she says. “In some places, the growth of innovation districts is controversial because innovative growth is viewed as exclusionary growth”



Bluestone also feels transit doesn't get enough attention. As rising prices push workers farther and farther from jobs in Cambridge, transit-oriented housing development becomes that much more important. The city also needs to [build rail links](#) between lines in the north and south sections of the Boston area. After studying transit and job patterns, Bluestone found that roughly 80 percent of workers tend to work and commute within the northern or southern halves of Boston, meaning the job market for many Bostonians is geographically segregated. As Kendall Square and new office development in the city's [Seaport District](#) continues to ramp up, this kind of transit linkage is critical to connect workers to jobs.

"Major institutions like MIT have educated the next generation," he says, "but they also created serious housing and transportation problems."

Similar problems have plagued Silicon Valley and the Bay Area, where a lack of public transit has created long commutes and necessitated [fleets of tech buses](#) taking workers between the city to tech campuses. [According to a report](#) from regional urbanist think tank SPUR, 28 percent of new Bay Area office construction between 2010 and 2015 went up within half a mile of a transit line, and 75 percent of regional workers still drive to work. Add punishing commutes to sky-high housing costs—in Silicon Valley's San Mateo county, [one housing unit was added for every 3.2 jobs](#)—and it's easy to see why a lack of investment in transit and in housing is hurting development in the Bay Area.

According to Kim at the KSA, transportation has also been one of the organization's top priorities, alongside increasing racial diversity. Transportation issues continue to be a pain point for many Kendall Square employers.

"Longer commutes disproportionately affect low-income workers," says Kim. "What does it mean having to switch between three different buses to get to Kendall Square, or to having to deal with reduced late-night hours on the T if you're working late? This is a system wide-issue."

In response, the KSA has held meetings and events to discuss the issue and has advocated for increased transit service. Two weeks ago, the organization held a [Future of Transportation showcase](#), featuring electric scooters, e-bikes, and other new technology, and it will hold a transportation summit next year.

But technology by itself won't solve the problem. Investment and public funding need to focus on the basics if Boston's evolving tech centers are going to continue to expand

to their fullest potential.

“We can’t sustainably maintain an innovation district if we don’t address these issues now,” says Kim, “because if we don’t work on them now, where will we be in 10 years?”