



HEALTH CARE & HIGHER EDUCATION

Higher education and health care remain the prime engines of Philadelphia's economy, accounting for 33% of jobs citywide and 20% of Center City's employment – 61,000 jobs downtown. Since 2009, this sector has added jobs at all skill levels at the rate of 2% per year.

Thomas Jefferson University remains Center City's largest employer with 14,040 employees downtown. Penn Medicine, Drexel University and Children's Hospital of Philadelphia (CHOP), anchors of the University City economy, have been steadily migrating toward the Schuylkill River, increasing their presence downtown, leasing both office and medical space, and in the case of CHOP, adding a major new building in Center City adjacent to the South Street Bridge. Their combined number of jobs downtown has risen to 9,876.

Jefferson has been carrying out a major expansion over the last five years, merging with Philadelphia University and other institutions, growing their annual operating budget from \$1.1 billion to over \$5 billion. In 2018, Jefferson launched the world's first international medical degree in partnership with the Catholic University in Rome, enabling graduates to practice medicine in both the U.S. and the European Union.¹

At Penn Medicine, innovations in cancer treatment have secured FDA approval. Dr. Carl June, the Richard Vague Professor in Immunotherapy, has pioneered a treatment for leukemia in which a patient's white blood cells are extracted, genetically reprogrammed to fight cancer, and reintroduced into the immune system. Clinical trials, many involving children, have succeeded in destroying cancer cells after traditional treatments had failed.

U.S. News and World Report once again ranked CHOP as the country's best Pediatrics Department and third best children's hospital overall, nationally.

In fall 2017, Center City's 14 colleges and universities reported total enrollment of 33,913 students. Adjacent to Center City, Drexel, Penn, Temple, and University of the Sciences enrolled an additional 78,341 students. Well-connected by public transit, thousands of these students live, shop and socialize downtown. Of the 29,059 students who graduated in 2017, 67% of their degrees were in health, business or STEM (science, technology, engineering, and math).

1: <https://www.jefferson.edu/university/news/2018/11/12/thomas-jefferson-university-launches-worlds-first-international-medical-degree.html>

HEALTH CARE & HIGHER EDUCATION

Philadelphia's research institutions are driving innovation in diverse fields of health care. According to the National Science Foundation's Higher Education Research and Development Survey, combined research spending at Drexel, Temple, Jefferson, and Penn totaled \$1.9 billion in 2017, up from \$1.8 billion in 2016. Those four institutions, along with CHOP, launched a total of 29 startups in 2017 and applied for 391 patents. Penn's research and development expenditures ranked fourth in the nation in 2017. Overall, Philadelphia's \$992 million in National Institutes of Health grants in 2017 put the city in third place nationally behind Boston and New York, representing more than half of Pennsylvania's \$1.8 billion in NIH grants.

The University City Science Center, Pennovation Center and the Drexel Innovation District are all part of strategic initiatives to expand Philadelphia's ability to translate academic research into economic development. However, Philadelphia has some catching up to do. In the Boston area, the Massachusetts Institute of Technology *alone* launched 25 startups, applied for 470 patents and generated \$49.4 million in active licenses. Boston's \$2.1 billion in NIH grants total more than the amount awarded in the entire state of Pennsylvania. Nine of the country's

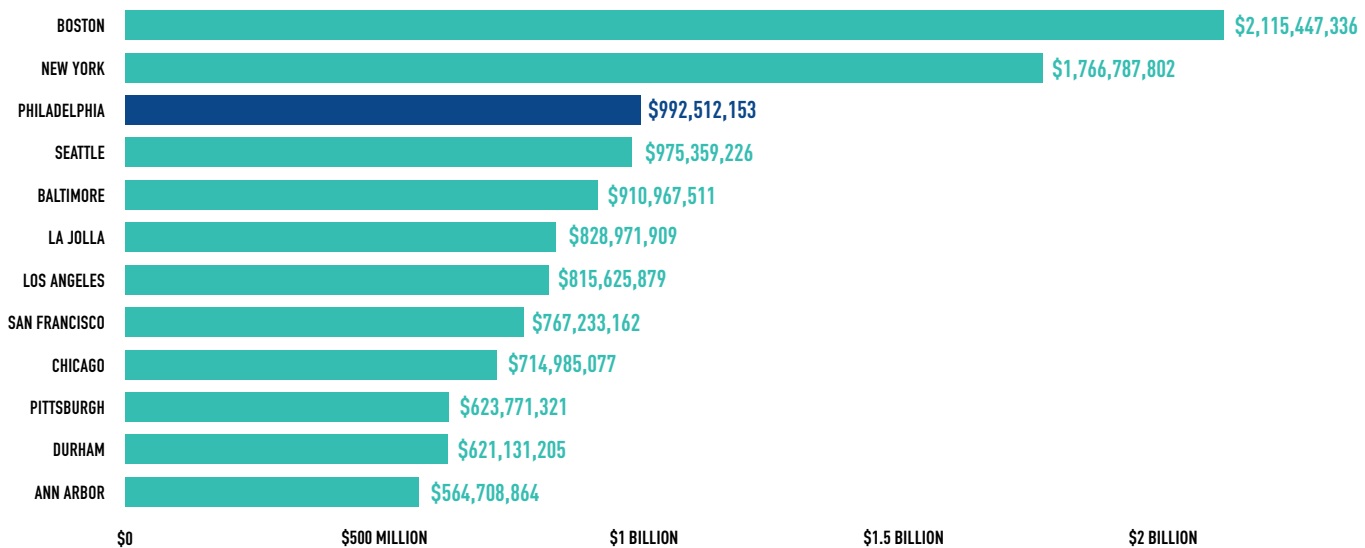
top 30 pharmaceutical companies are geographically clustered around MIT's Cambridge campus.

Increased local venture capital investments in the Greater Philadelphia area can help lift the region up from its sixth-place position among the nation's biopharma clusters, behind Boston, San Francisco, New York, San Diego and Washington, D.C.²

The proliferation of coworking spaces has also facilitated growth in Philadelphia's educational and medical sectors, with Boston's Cambridge Innovation Center (CIC), now open in new University City Science Center space at 3675 Market Street. CIC's record of funding minority startups, building innovation hubs, and developing mentorship programs can yield significant dividends for Philadelphia.³ Philadelphia's education and health care institutions have long been major generators of jobs and have produced graduates who serve as a powerful lure to employers seeking talent. As Philadelphia's research institutions strengthen connections with venture capital, commercialize new products and connect with more local suppliers, Philadelphia has a significant opportunity to boost business formation and job growth across the region.

PHILADELPHIA'S \$992 MILLION IN NIH FUNDING PLACES THE CITY THIRD NATIONALLY, BEHIND BOSTON AND NEW YORK

NATIONAL INSTITUTES OF HEALTH FUNDING, 2018



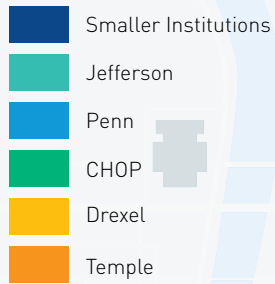
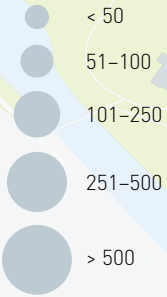
Source: U.S. Department of Health & Human Services, National Institutes of Health

2: <https://www.genengnews.com/a-lists/top-10-u-s-biopharma-clusters-6/>

3: <https://cic.com/philadelphia/about>

**CENTER CITY HIGHER
EDUCATION AND MEDICAL
INSTITUTION EMPLOYMENT**

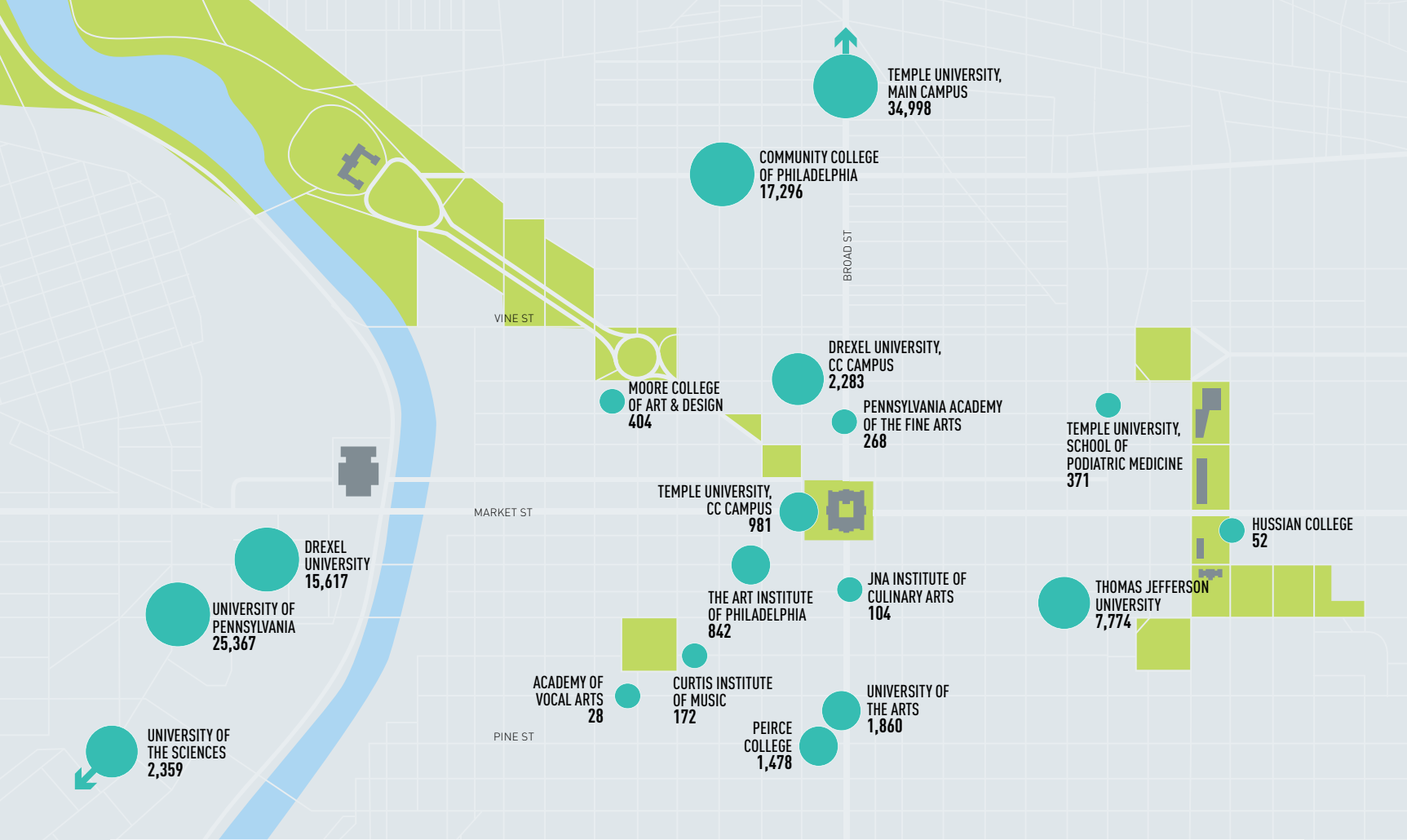
EMPLOYEES:



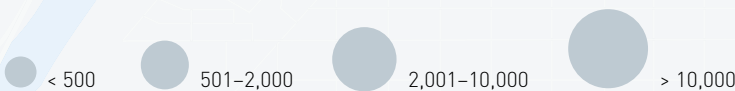
Source: Children's Hospital of Philadelphia; Drexel University; Penn Medicine; Temple University; Thomas Jefferson University; Individual Institutions



**EDUCATION AND HEALTH CARE ACCOUNTS FOR 20%
OF CENTER CITY'S EMPLOYMENT, 61,000 JOBS.
JEFFERSON, DOWNTOWN'S LARGEST PRIVATE EMPLOYER,
ACCOUNTS FOR 23% OF THESE JOBS**



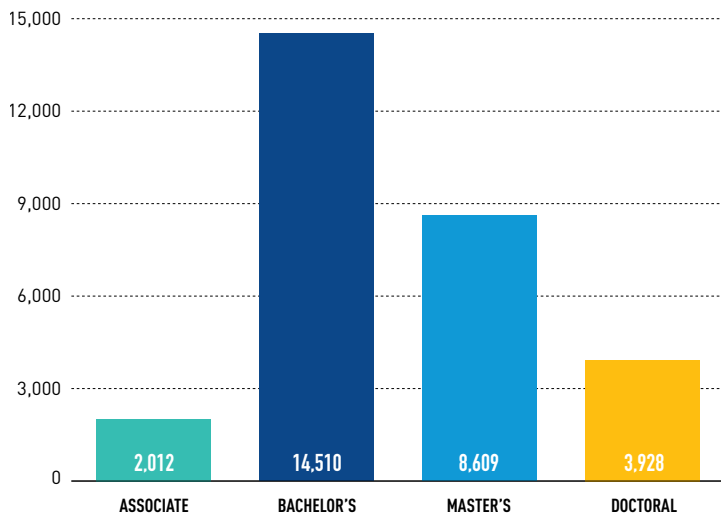
HIGHER EDUCATION ENROLLMENT, FALL 2017



112,254 STUDENTS ARE ENROLLED IN HIGHER EDUCATION INSTITUTIONS IN AND ADJACENT TO CENTER CITY

Source: National Center for Educational Statistics, Integrated Postsecondary Education Data System; Temple University Fact Book 2017-2018; Drexel University, Office of Institutional Research, Assessment & Effectiveness

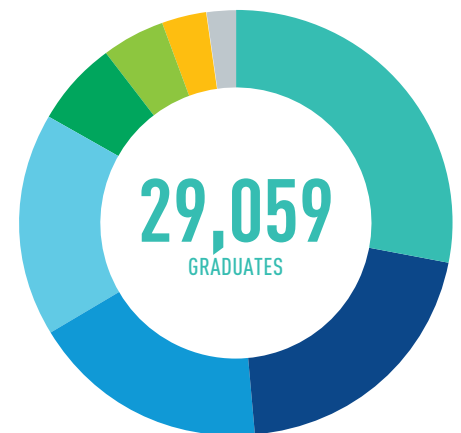
DEGREES CONFERRED BY PHILADELPHIA COLLEGES AND UNIVERSITIES, 2017



Source: U.S. Department of Education, National Center for Education Statistics

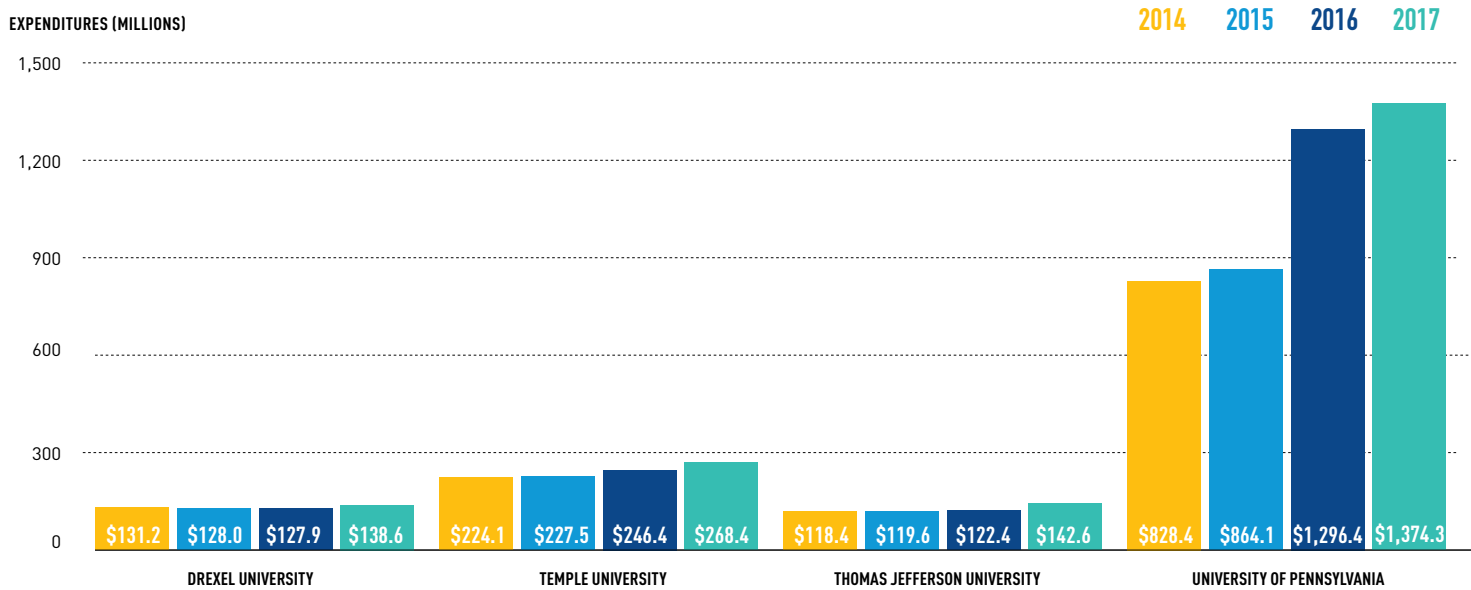
DEGREES CONFERRED BY TYPE, 2017

- 28% HEALTH FIELDS
- 21% STEM
- 18% BUSINESS
- 17% LIBERAL ARTS
- 6% VISUAL AND PERFORMING ARTS
- 5% EDUCATION
- 3% LEGAL PROFESSIONS AND STUDIES
- 2% OTHER



Source: U.S. Department of Education, National Center for Education Statistics

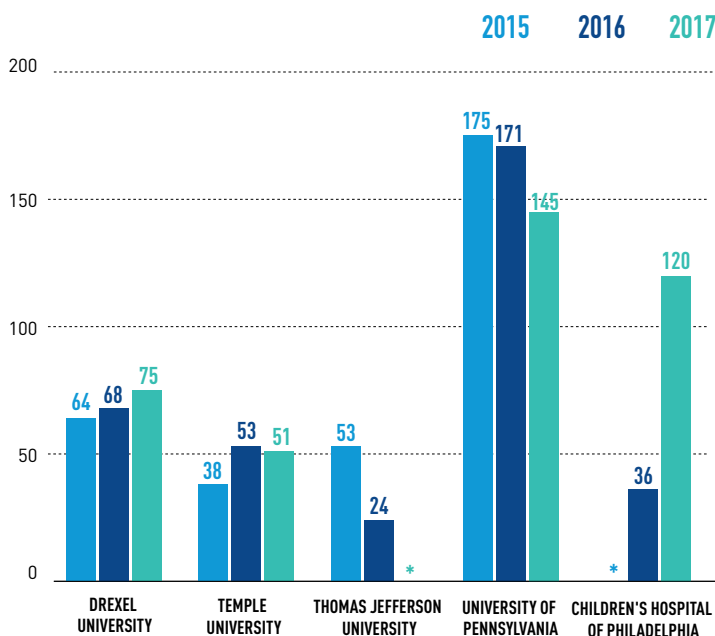
RESEARCH EXPENDITURES AT CENTER CITY AND ADJACENT UNIVERSITIES



Source: National Science Foundation, National Center for Science & Engineering Statistics, Higher Education R&D Survey

4 MAJOR INSTITUTIONS ACCOUNTED FOR \$1.9 BILLION IN RESEARCH SPENDING IN 2017, WITH PENN STEADILY INCREASING ITS SHARE

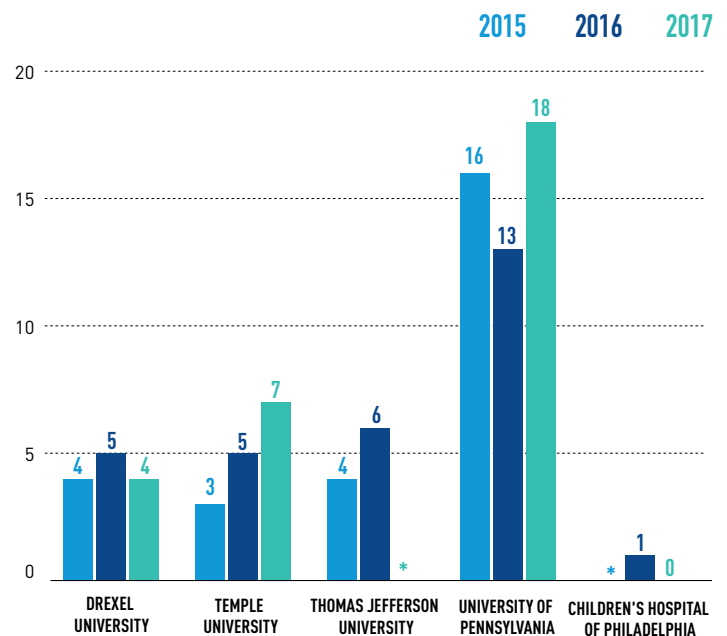
NEW PATENT APPLICATIONS



*Institution not in data

Source: Association of Technology Managers, Licensing Activity Survey 2017

STARTUPS



Source: Association of Technology Managers, Licensing Activity Survey 2017