The Anchored University

The Economic Impact of the University of Pennsylvania

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economics | strategy | insight

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1. Introduction

1.1. Purpose of Report

The purpose of this report is to quantify the economic impact of the University of Pennsylvania (Penn) on the local, regional, and state economy. Penn generates economic value through its annual operations, capital investments, student and visitor spending it draws into the region, and the increased purchasing power of alumni whose education and credentials from Penn enhance their earning potential.

Econsult Solutions, Inc. (ESI) has conducted economic impact studies for Penn in 2005, 2010, 2015, and 2020, playing a critical role in shaping the University's messaging to a broad range of stakeholders. Before 2005, Penn collaborated with McKinsey & Company to produce an economic impact study conducted in 2000. As a result, there are 25 years of retrospective data available for comparison. The framing of Penn's economic impact over the past 25 years highlights its sustained growth and evolving role as a driver of regional and state development. By conducting regular studies every five years, one notes a clear trajectory of Penn's expanding influence. This 25-year lens offers a comprehensive view of Penn's long-term progress, showing not just how the University has adapted to shifting economic conditions but also how it has become a more powerful force in local and state economies. Through these studies, Penn demonstrates its capacity to weather societal challenges while continually increasing its contributions to the economic and social wellbeing of its communities. This sustained analysis provides a compelling narrative of Penn's growth, reinforcing its position as a key Anchor Institution and a vital player in the region's ongoing development. With Penn's continued expansion, this latest study will provide fresh evidence of Penn's increasing impact on three concentric geographic levels: Philadelphia, the Penn Region[1], and the Commonwealth of Pennsylvania. Amid growing scrutiny of higher education, and as households question the value of a degree and local governments challenge the tax-exempt status of academic institutions, this study underscores Penn's vital role as an Anchor Institution, driving economic growth and regional progress while addressing societal challenges.

1.2. About the University of Pennsylvania

The University of Pennsylvania, established in 1740, is a globally renowned Ivy League institution, a leading research university, and a world-class health system, serving as a critical Anchor Institution and economic engine for Philadelphia, the Commonwealth of Pennsylvania, and the greater Penn Region. As the largest private employer in Philadelphia and one of the largest in the state, Penn attracts exceptional students, faculty, staff, administrators, and healthcare professionals from around the world.

[1] The 14-County Penn Region includes Bucks, Chester, Delaware, Lancaster, Montgomery and Philadelphia Counties in Pennsylvania; Burlington, Camden, Gloucester, Mercer, Middlesex and Salem Counties in New Jersey; New Castle County in Delaware; and Cecil County in Maryland.

Penn's educational mission creates immense value, not only for its students and alumni but for the broader state and regional economy. In today's knowledge-driven global marketplace, Penn's investment in human capital is essential to fostering a vibrant regional economy and supporting key industries, such as healthcare, technology, and finance. Additionally, the innovations and contributions of Penn's alumni, professors, and researchers have a far-reaching impact worldwide, while maintaining strong ties to Philadelphia, Pennsylvania, and the larger Penn Region. With groundbreaking advancements in fields like medicine, business, and social policy, Penn continues to influence global thought leadership while driving economic growth at home.

1.3. Economic Engine, Community Catalyst and Regional Anchor

Although Penn is a not-for-profit institution dedicated to its core mission of education, research, medical care, and service, its size and influence make it a powerful economic engine for Philadelphia, the Commonwealth of Pennsylvania, and the greater Penn Region. As one of the largest employers in the region and a major purchaser of goods and services, Penn plays a critical role in Greater Philadelphia's competitiveness, attracting human talent, investment, and visitors that strengthen the regional workforce and stimulate economic opportunity. With its expansive reach, Penn serves as a vital partner for workforce development and regional economic growth, shaping the local economy.

The University's economic impact is evident across multiple dimensions, from student, patient, visitor, and athletic spending that fuels local businesses, to the increased earning potential of Penn graduates, which boosts household incomes and contributes to a more competitive labor market. Additionally, the innovation generated by Penn's research breakthroughs positions the region as a hub for cutting-edge advancements, particularly in healthcare, technology, and life sciences.

As highlighted in this report, Penn's current contributions to the local, regional, and state economy are significant. By driving talent attraction, fostering innovation, and enhancing economic vibrancy, Penn has been a cornerstone of the Greater Philadelphia region's economy. With ongoing expansions, Penn continues to elevate its economic impact, further cementing its role as an essential driver of regional progress.

1.4. The Anchored University

An Anchor Institution is defined as a place-based organization, typically a large employer such as a university, hospital, or cultural institution, that is permanently rooted in its local community through significant investments in real estate, infrastructure, and human capital, making it highly unlikely to relocate; and possessing a vested interest in the community's wellbeing. The University of Pennsylvania exemplifies an Anchor Institution in Philadelphia, as it is not only one of the city's largest private employers, but it also drives economic development through its procurement practices, real estate investments in University City, educational partnerships with local schools, and healthcare services through the Health System network. As an Anchor Institution deeply rooted in West Philadelphia, Penn's impact extends far beyond traditional measures of academic excellence.

From its founding as part of Benjamin Franklin's vision for a more prosperous Philadelphia, Penn has remained steadfast in its resolve to driving positive change through education, innovation, and economic opportunity. The University's decisions about hiring, purchasing, investing, and developing real estate are made with careful consideration of their potential to lift up surrounding communities and create lasting economic value for the region.

Today, this resolve to local investments and partnerships is more vital than ever. As Philadelphia's largest employer[2], a powerhouse of research and innovation, and a magnet for global talent, Penn's growth fuels the region's prosperity. Yet the University's true measure of success lies not just in the scale of its economic impact, but in how that impact transforms lives and communities. Through strategic partnerships, intentional spending with local and diverse businesses, workforce development initiatives, and the success of its graduates, Penn demonstrates daily what it means to be an engaged urban university—one that grows by growing its community, and succeeds by creating opportunity for others. This dedication to shared prosperity and inclusive growth remains at the heart of Penn's identity and will continue to shape its future as Philadelphia's indispensable Anchor Institution.

In Principle and Practice[3]

This strategic framework—launched in Fall 2023—outlines Penn's vision and roadmap in its fourth century. The plan is structured around four key principles: The Anchored University (emphasizing Penn's people and Philadelphia roots), The Interwoven University (focusing on interdisciplinary excellence), The Inventive University (driving breakthroughs and addressing challenges), and The Engaged University (developing service-minded leaders and fostering dialogue across differences).

To implement these principles, the framework identifies five key practices: 1. accelerating interdisciplinary pursuits; 2. Leading on major challenges of our time; 3. growing opportunities while strengthening affinity; 4. deepening connections with neighbors and the world; and 5. fostering leadership and service. The framework emphasizes Penn's Franklinian heritage of combining theory with practice, while remaining adaptable to future changes. These practices will serve as Penn's North Star, providing a clear and steadfast guide for shaping its future direction. Through its innovative “Draw Down the Lightning” grants, Penn seeks to ignite transformative action, aligning its community with the university's most ambitious goals and addressing its most urgent priorities.

[2] Pennsylvania Department of Labor and Industry. *Top 50 Employers: Philadelphia County, Pennsylvania*. Commonwealth of Pennsylvania, 2024, https://www.pa.gov/content/dam/copapwp-pagov/en/dli/documents/workstats/top-50/Philadelphia_County_Top_50.pdf.
[3] University of Pennsylvania. In Principle and Practice: https://in-principle-and-practice.upenn.edu/.

> "Penn is *anchored*… Everything at Penn is anchored by our people and our campus. From this origin, we branch out to partner with, and improve life, for our neighbors, our city, and the world. We are anchored in history; anchored in Philadelphia; anchored by our values; and anchored by the legacy of our alumni."
>
> - J. Larry Jameson, MD, PhD, interim president

1.5. Drivers of Local Economic Impacts

As an Anchor Institution that attracts people and resources from all over the world, Penn plays a crucial role in the regional economy. Penn's specific economic contributions can be broken into four distinct categories:

1. Penn's annual operations, which include procurement and employee wages, as well as research and innovation expenditures, which are outlined separately in section 3
2. Penn's capital investments, including new construction and major renovation projects
3. Ancillary spending by students, visitors, Athletics attendees, and patients
4. The wage premium enjoyed by Penn alumni, who pay taxes and spend a portion of their added earnings in the local economy



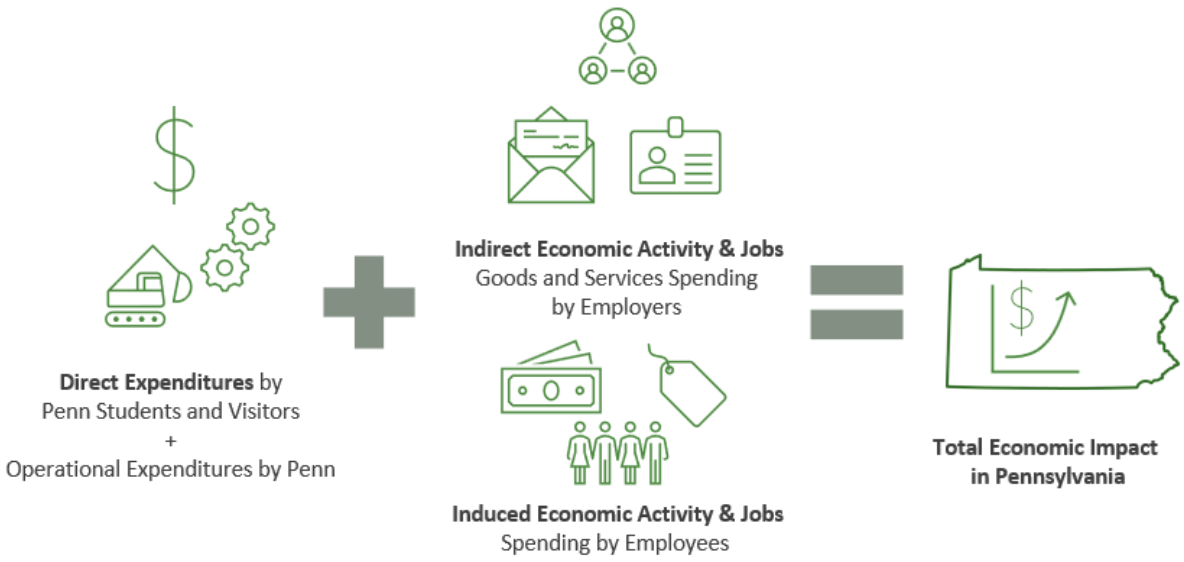
1.6. Report Scope and Methodology

Econsult Solutions, Inc. (ESI) utilizes standard economic modeling techniques to assess the direct economic activity generated by Penn and translates that activity into overall economic output, employment, earnings, and tax revenue impact. Detailed information on the approach and methodology employed is provided in the appendices of this report.

The study covers Penn as a consolidated entity, including both the Academic component (university) and Health System information. Data inputs regarding Penn's institutional activity were provided by the University and supplemented with verified information from public sources and necessary assumptions. Utilizing the most recent and appropriate datasets, often from fiscal year 2024, each input was carefully assessed. Where possible—and in cases where methodology is comparable—25 years of impact was assessed, utilizing past economic impact studies, conducted every 5 years, starting in 2000.

To assess capital investments, activity levels were averaged over the past five fiscal years to provide a more representative view of typical annual activity. This approach accounts for the uneven nature of capital expenditures, offering a clearer and more accurate annualized perspective on Penn's spending on capital investments. Thus, the analysis represents the current annualized level of activity for Penn, rather than the impact for any specific fiscal year.

Graphic Illustration 1.1: Economic Impact Methodology



The economic impact of Penn encompasses three distinct types of effects. Direct impacts are the immediate results of Penn's spending and activities, such as salaries paid to faculty and staff, purchases of research equipment, spending by students and visitors, or construction of new campus facilities. Indirect impacts occur when Penn's direct spending ripples through the supply chain—for example, when Penn's food service vendors purchase ingredients from local farms, or when construction contractors buy materials from Pennsylvania suppliers. Induced impacts arise when Penn's employees and contractors spend their wages in the local economy, such as when professors dine at Philadelphia restaurants, researchers purchase homes in the region, or maintenance staff shop at local retail stores. Together, these three layers of impact create a multiplier effect that amplifies Penn's economic contribution throughout Philadelphia, the Penn Region, and Pennsylvania. Throughout the study, fiscal revenues are recorded separately, following each economic impact category.

ESI employs IMPLAN modeling software to estimate these indirect and induced impacts, which are then combined with the direct activity to determine total economic impacts. IMPLAN is a sophisticated economic modeling system that analyzes how money flows through an economy. At its core, IMPLAN tracks how money moves between different sectors of the economy, like a giant spreadsheet showing all the economic relationships. When one industry spends money, IMPLAN tracks that spending ripple out to affect other industries. IMPLAN breaks this spending movement down into 546 different industry sectors based on NAICS (North American Industry Classification System) codes. For each sector, it calculates the regional purchase coefficient (RPC), which measures the proportion of local demand for a good or service that is met by local suppliers.

When modeling Penn's impact, IMPLAN takes Penn's direct spending data and:

1. Maps it to the appropriate industry sectors;

2. Applies the local RPCs to determine how much spending stays in the region;

3. Uses its matrix of industry relationships to calculate the indirect impacts as that spending ripples through local supply chains;

4. Calculates induced impacts as employees spend their wages locally; and

5. Aggregates all these effects to show total impact on output, employment, and labor income

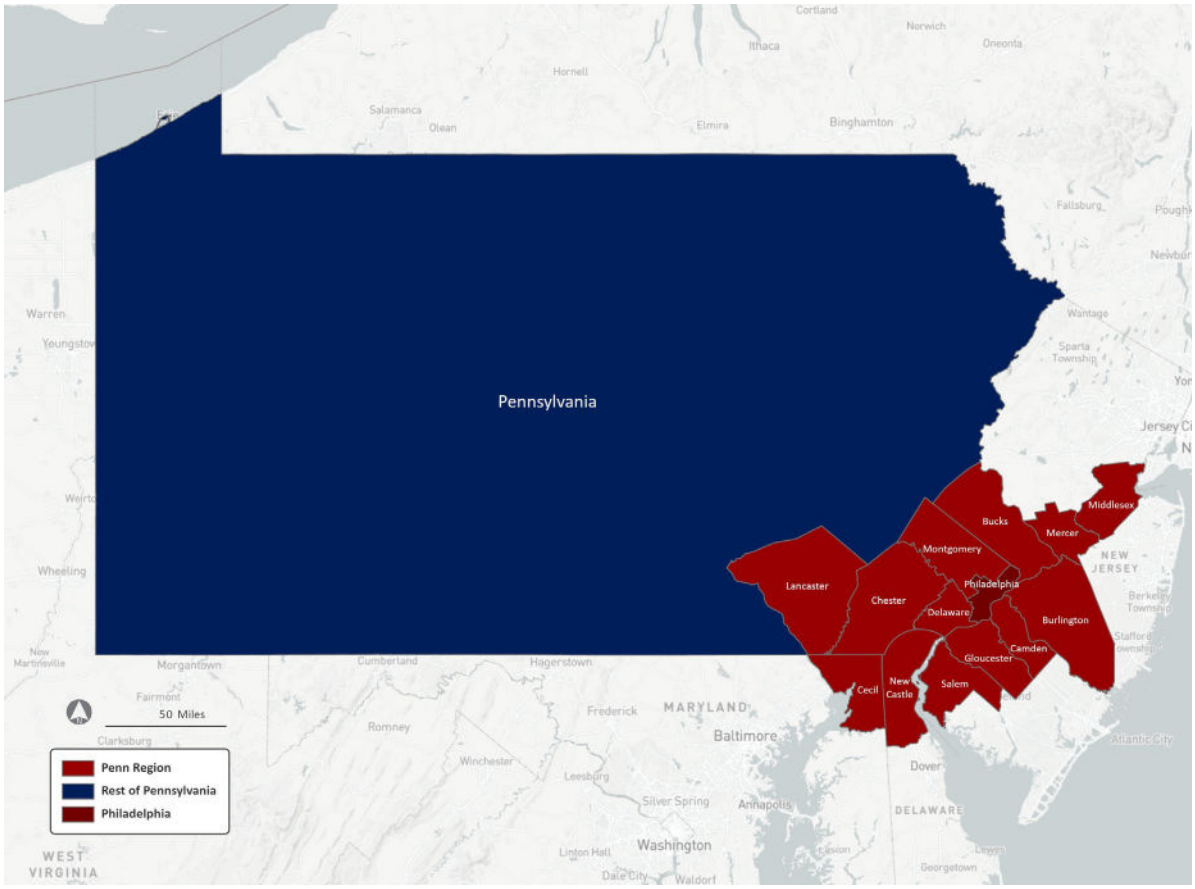
IMPLAN incorporates leakage, which is the flow of money leaving a local economy through imports or taxes, to provide a realistic analysis of economic impacts within a specific area. Its advanced modeling capabilities make it a trusted tool for economic impact analysis, widely used by governments, universities, and consulting firms to assess how changes in one sector influence the broader economic system. This reliability has established IMPLAN as a standard in the field.

For the Penn economic impact study, the economic impacts are assessed at three concentric geographic levels:

- **The City of Philadelphia**
- **The 14-County Penn Region:** Includes Bucks, Chester, Delaware, Lancaster, Montgomery and Philadelphia Counties in Pennsylvania; Burlington, Camden, Gloucester, Mercer, Middlesex and Salem Counties in New Jersey; New Castle County in Delaware; and Cecil County in Maryland.[4]
- **The Commonwealth of Pennsylvania**

[4] The Penn Region is defined as 14-county to reflect official 11-county MSA plus adjacent counties where Penn has significant direct footprint in the form of hospital facilities.

Map 1.1: Geographies of Interest



Source: Econsult Solutions, Inc. (2024)

1.7. Report Organization

- **Section 2** quantifies the economic impact of Penn's consolidated annual operations, which encompasses significant direct employment and spending on various goods and services. This spending ripples through the regional and state economies, amplifying its impact. Additionally, this section shines a spotlight on Penn's innovation-based economic development, including the impact of sponsored research, commercialization of research via the Penn Center for Innovation (PCI), and Pennovation Works, which is Penn's incubator.
- **Section 3** describes Penn's capital expenditures and translates that footprint into economic impact.
- **Section 4** estimates the ancillary spending by Penn students and visitors, including those who visit the region due to Athletics programming and events. Their commensurate effect on local economic output, employment supported, and tax revenues generated are analyzed.

- **Section 5** estimates the aggregate wage premium enjoyed by Penn alumni living and working in the region, and the positive impact of a portion of that additional household earnings being spent in the regional economy.
- **Section 6** explores *Penn & Philly*, an integrated digital storytelling initiative that showcases Penn's deep ties to Philadelphia through a dedicated website and coordinated social media presence. This multimedia platform illuminates Penn's multifaceted investments in the city, bringing to life the stories of partnership, innovation, and community impact that connect the University with its home city.
- **Section 7** provides an in-depth analysis of the impact created by Penn Vet's New Bolton Center, located in Chester County, PA.
- **Section 8** provides a big-picture view of the aggregate annual economic impact of the University of Pennsylvania.

2. Economic Impact from Annual Operations

2.1. Section Overview

As Philadelphia's premier Anchor Institution, Penn makes a substantial contribution to the local, regional, and state economy primarily through its sizable and expanding annual operations. Penn has an annual operating expense of more than $15 billion—a figure that reflects the University's positive economic contribution to the City of Philadelphia, the 14-county Penn region, and the Commonwealth of Pennsylvania. The economic impact is largely dependent on where expenditures are allocated, i.e., spending in Pennsylvania positively affects its economy, while out-of-state spending has no substantial impact.

Employing tens of thousands and operating with a multi-billion-dollar budget, Penn's contributions manifest through robust economic activity, job creation, and tax revenues. What makes Penn particularly impactful is that much of the financial resources fueling this growth, such as tuition payments, research grants, and venture capital, are sourced from outside the region. In this way, Penn acts as a vital "importer" of not only knowledge and innovation, but also dollars that are then circulated within the local economy. Penn then contributes to the regional economy, particularly through its commitment to sourcing goods and services locally. This direct economic impact ripples throughout the economy, creating opportunities and enhancing several tax revenues at both local and state levels. More information regarding Penn's local and diverse spending can be found in Appendix B.

A large portion of Penn's consolidated operating expenditures is allocated toward employee wages and benefits, which constitutes 56 percent of all the expenses. Excluded from local economic impact are depreciation and financing costs amounting to $658 million, since depreciation does not involve actual expenditures, and financing costs likely do not benefit the local or state economies.

In total, Penn's consolidated annual operations generate over $18.9 billion in economic output within the City of Philadelphia; $28.6 billion within the Penn region; and $21.5 billion within the Commonwealth of Pennsylvania. Their consolidated operations further support 111,600 full-time jobs with $12 billion in direct, indirect, and induced compensation within the Commonwealth.

2.2. Direct Operating Footprint

Penn's consolidated annual operations encompass its core activities in education, research, and service, extending across the university and Health System. The consolidated institution employs over 68,000 full-time, part-time, adjunct, and seasonal staff, including teaching, administrative, medical, and support personnel, with a primary concentration in Philadelphia and significant presence across various counties in Pennsylvania and New Jersey through the Health System. Employee compensation, amounting to $8.4 billion, forms a major part of Penn's consolidated budget and generates significant economic ripple effects, boosting employment, housing, and home ownership across multiple industries, including arts and entertainment, and healthcare. In total, Penn's consolidated operating expenditures, which include both the university and the Health System, reached an estimated $15.1 billion in FY 2024, reinforcing its

status as a major economic driver for Philadelphia, the broader Penn region, and the Commonwealth. To accurately assess the direct, indirect, and induced economic impact, it is essential to consider the composition and location of these expenditures, as spending within Pennsylvania, has a more direct impact on the State economy than out-of-state expenditures.

To adjust for items in the consolidated budget that do not result in direct economic expenditures—such as depreciation—certain deductions must be made. For example, Penn's consolidated FY 2024 budget included depreciation expenses, which do not directly circulate through the economy and are therefore excluded from the economic impact model. Once these adjustments are made, the remaining operating expenditures reflect the funds that flow through the local economy. These are used to model the total direct, indirect, and induced economic effects. In FY 2024, Penn's total consolidated modelable operating budget amounted to $14.3 billion. Since the university and Health System operate in areas beyond Philadelphia, not all of these expenditures occur within the City. Therefore, the model considers expenditures in each geographic region—and in the absence of such, substitutes employee headcount as a proxy, for division of expenditures. The consolidated modelable operating budget was $11.6 billion for Philadelphia, $13.8 billion for Pennsylvania, and $14.3 billion for the broader Penn Region (Table 2.1).[5]

Table 2.1: Summary of Penn Consolidated Annual Operating Expenditures, FY 2024

	Included in Model	Academic	Health System	Consolidated
Employees		34,857	33,441	68,298
Compensation and benefits ($M)	Yes	$2,684	$5,715	$8,399
Depreciation and amortization ($M)	No	$242	$417	$658
Interest on indebtedness ($M)	No	$55	$88	$143
Other expenses ($M)	Yes	$1,547	$4,385	$5,931
Total Expenses ($M)		$4,527	$10,604	$15,131
Total Modeled Expenses ($M)		**$4,230**	**$10,099**	**$14,330**
Modeled Expenses within Philadelphia ($M)		**$4,188**	**$7,373**	**$11,561**
Modeled Expenses within Pennsylvania ($M)		**$4,230**	**$9,594**	**$13,825**
Modeled Expenses within the Penn Region ($M)		**$4,230**	**$10,099**	**$14,330**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

[5] As an example, Penn Vet's New Bolton Center is located in Chester County, outside of Philadelphia but still within Pennsylvania and the Penn Region. Penn Medicine has numerous facilities outside of Philadelphia but still within Pennsylvania and the Penn Region, including Penn Medicine Lancaster General Hospital.

2.3. Penn Operations Leading to Economic Impact

Consolidated direct operational spending has a substantial influence on the local and regional economy by stimulating business growth and supporting higher employment levels across various industries. The overall economic impact is a combination of direct spending by Penn, the indirect effects generated by purchases from a wide range of suppliers, and the induced spending as Penn employees spend their wages within their communities. These indirect and induced effects expand as the geographic scope widens, driven by increased purchasing and recirculation within larger areas, which also amplifies the multiplier effect.

The total annual economic impact within Philadelphia is $18.9 billion[6], comprised of (Table 2.2):

- Direct impact of $11.6 billion, which includes Penn's spending on salaries, research equipment, and patient care costs
- Indirect and induced impact of $7.4 billion, which includes business-to-business expenditures within the supply chain, such as catering company purchases of raw food materials (indirect); and employee spending at Philadelphia restaurants and stores (induced)
- 81,200 direct, indirect, and induced jobs[7] with $9.2 billion in employee compensation

The total annual economic impact within Pennsylvania is $21.5 billion, comprised of (Table 2.3):

- Direct impact of $13.8 billion, which demonstrates additional direct impacts beyond Philadelphia and throughout the Commonwealth, such as spending with vendors throughout the State; and some salaries that are located outside of Philadelphia, within the Commonwealth
- Indirect and induced impact of $7.7 billion, which demonstrates the supply chain extending to other cities within Pennsylvania (indirect), and Penn employees living and spending in suburban areas (indirect)
- 111,600 direct, indirect, and induced jobs with $12.2 billion in employee compensation

The total annual economic impact within the Penn Region is $28.6 billion, comprised of (Table 2.4):

- Direct impact of $14.3 billion, which demonstrates additional direct impacts into the 13 counties surrounding Philadelphia, including counties within Pennsylvania, New Jersey, and Maryland, indicating direct spending with broader supplier networks; and employees commuting from the larger surrounding 14-county region.

[6] Sums may not total due to rounding.

[7] Direct jobs include positions directly created and paid for by Penn itself. These are employees on Penn's payroll, such as professors, nurses, administrators, and facilities staff. Indirect jobs are created through Penn's purchasing and contracting—when Penn buys supplies or services, this supports jobs at vendor companies, which include medical equipment manufacturers, construction contractors, and food service providers. Induced jobs are created by Penn employees spending their wages in the local economy. As Penn's direct employees spend money on housing, restaurants, retail, etc., this creates additional jobs in those sectors..

- Indirect and induced impact of $14.3 billion, which demonstrates the supply chain extending throughout the 14-county region, and Penn employees living and spending in further suburban areas (indirect) in select counties within New Jersey, Maryland, Delaware, and Pennsylvania.
- 120,600 direct, indirect, and induced jobs with $13 billion in employee compensation

Table 2.2: Annual Economic Impact of Penn's Consolidated Operations within Philadelphia

Impact Type	Academic	Health System	Consolidated
Direct Output ($M)	$4,188	$7,373	$11,561
Indirect and Induced Output ($M)	$2,026	$5,338	$7,365
Total Output ($M)	**$6,215**	**$12,711**	**$18,925**
Employment (FTE) Supported	**39,500**	**41,700**	**81,200**
Employee Compensation ($M)	**$3,255**	**$5,961**	**$9,216**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

Table 2.3: Annual Economic Impact of Penn's Consolidated Operations within Pennsylvania

Impact Type	Academic	Health System	Consolidated
Direct Output ($M)	$4,230	$9,594	$13,825
Indirect and Induced Output ($M)	$2,105	$5,595	$7,700
Total Output ($M)	**$6,335**	**$15,190**	**$21,525**
Employment (FTE) Supported	**44,700**	**66,900**	**111,600**
Employee Compensation ($M)	**$3,606**	**$8,577**	**$12,182**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

Table 2.4: Annual Economic Impact of Penn's Consolidated Operations within the Penn Region

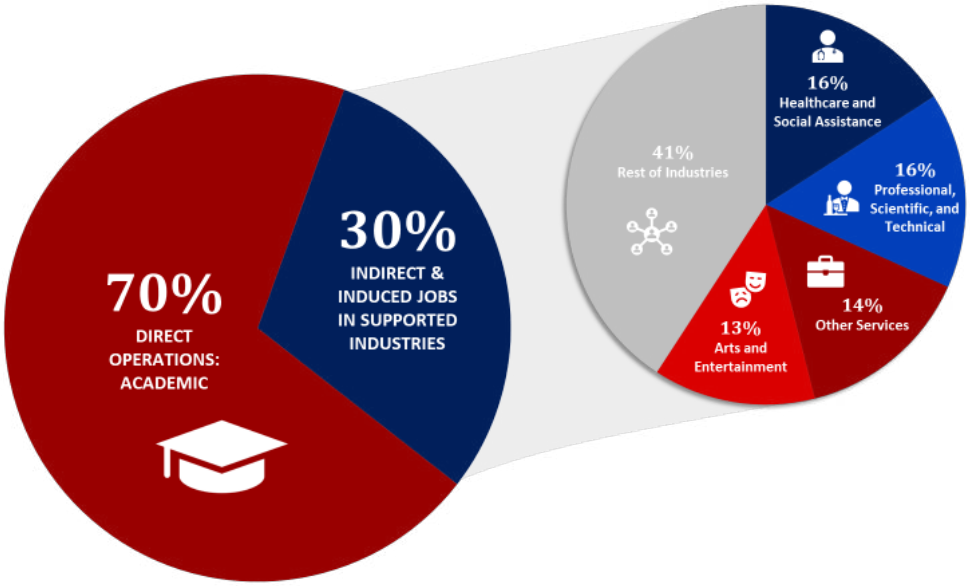
Impact Type	Academic	Health System	Consolidated
Direct Output ($M)	$4,230	$10,099	$14,330
Indirect and Induced Output ($M)	$3,423	$10,857	$14,281
Total Output ($M)	**$7,654**	**$20,957**	**$28,610**
Employment (FTE) Supported	**46,100**	**74,500**	**120,600**
Employee Compensation ($M)	**$3,703**	**$9,247**	**$12,951**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

2.4. Industry Distribution of Economic Impact from Annual Operations

Penn's daily operations, which involve purchasing goods and services and the circulation of income generated by its workforce, have far-reaching effects on multiple industries. For Academic operational expenditures, the direct impacts are primarily concentrated within the education sector (direct employment at the university constitutes 70 percent of overall jobs created by Penn Academic operational expenditures). The indirect and induced impacts spread across a wide range of sectors. These sectors include healthcare and social assistance; professional, scientific, and technical services; and arts and entertainment (Graph 2.1).

Graph 2.1: Industry Distribution of Employment Generated by the University's Academic Annual Operations within Pennsylvania[8]

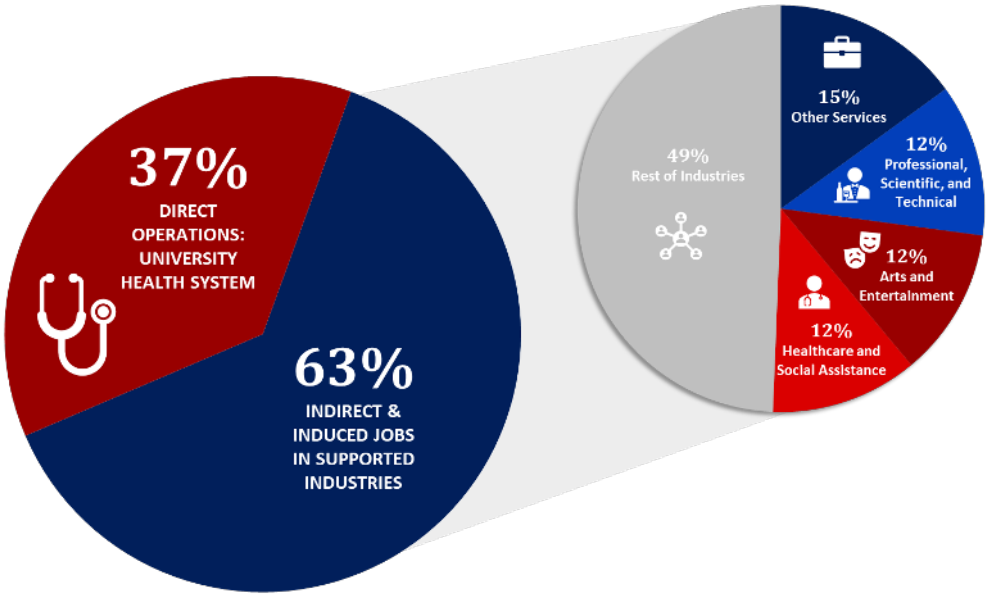


Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024)

Within the Health System, 37 percent of jobs created by operational expenditures are within the Health System itself. Indirect impacts employ workers in the arts and entertainment; professional, scientific, and technical services; and healthcare and social assistance (Graph 2.2).

[8] The smaller graph to the right represents the industry breakdown of the indirect and induced jobs, which comprise 30% of the jobs created by Academic operations.

Graph 2.2: Industry Distribution of Employment Generated by the Health System's Annual Operations within Pennsylvania[9]



Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024)

2.5. Tax Revenue Impact from Annual Operations

Although Penn is a not-for-profit and legally tax-exempt, it is still responsible for tax revenue to the local jurisdictions where it is based. While non-profit institutions are exempt by the IRS of paying property tax on land used to fulfill their mission, Penn does contribute significantly to Philadelphia's and Pennsylvania's tax bases via wage, sales, business, and other taxes (Tables 2.5 and 2.6); as well as via amusement and tourist taxes such as hospitality, hotel, parking, and occupancy taxes (Table 2.7).

Due to consolidated operational expenditures, Penn's operations are responsible for almost $493 million annually in tax revenue to the City of Philadelphia (Tables 2.5 and 2.6). Within the Commonwealth of Pennsylvania, Penn generates almost $336 million in fiscal revenue, via wage, sales, and business taxes (Table 2.7).[10]

Table 2.5 shows the tax revenues for the City of Philadelphia from the economic impact of Penn's consolidated annual operations, including direct, indirect and induced tax generation. Table 2.6 shows the remainder of the direct taxes paid by Penn to the City of Philadelphia from their consolidated operations activity. Table 2.7 shows the tax revenues for Pennsylvania from the economic impact of Penn's annual operations for direct, indirect and induced expenditures. Lastly, Table 2.8 demonstrates

[9] The smaller graph to the right represents the industry breakdown of the indirect and induced jobs, which comprise 63% of the jobs created by the Health System operations.
[10] Sums may not total due to rounding.

the combined estimated annual tax revenues within Philadelphia and the Commonwealth of Pennsylvania.

Table 2.5: Estimated Annual Tax Revenue Impact from Penn Consolidated Annual Operations within the City of Philadelphia ($ Millions)[11]

Tax Type	Academic	Health System	Consolidated
Wage Tax	$126.4	$124.5	$250.9
Sales Tax	$3.3	$7.8	$11.1
Business Tax	$7.7	$20.5	$28.2
Other Taxes	$7.3	$94.0	$101.3
Total	**$144.7**	**$246.8**	**$391.5**

Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024). City of Philadelphia CAFR (2022), Pennsylvania CAFR (2022)

Table 2.6: Breakdown of 'Other Taxes' Category from the Estimated Annual Tax Revenue Impact from Penn Consolidated Annual Operations within the City of Philadelphia ($ Millions)[12]

Tax Type	Academic	Health System	Consolidated
Amusement Tax	$0.1		$0.1
Business Privilege Tax	$0.1		$0.1
Hospital Tax		$90.1	$90.1
Hospitality Tax	$0.1		$0.1
Hotel Tax	$1.1		$1.1
Liquor Tax			$0.0
Parking Tax	$3.4	$2.9	$6.3
Real Estate Tax	$2.1	$1.0	$3.2
Use and Occupancy Tax	$0.4		$0.4
Total ($M)	**$7.3**	**$94.0**	**$101.3**

Source: University of Pennsylvania (2024)

[11] Employee-paid taxes include wage taxes paid by employees via payroll deductions, as well as a portion of sales tax, from employees' personal purchases. University-paid taxes include business tax, plus a portion of sales tax, as well as other taxes.
[12] The 'Other Taxes' category includes all taxes paid directly by the University of Pennsylvania to the City of Philadelphia, excluding wage, sales, and business taxes.

Table 2.7: Estimated Annual Tax Revenue Impact from Penn Consolidated Annual Operations within the Commonwealth of Pennsylvania ($ Millions)

Tax Type	Academic	Health System	Consolidated
Wage Tax	$103.2	$147.5	$250.7
Sales Tax	$18.1	$45.1	$63.2
Business Tax	$6.1	$16.4	$22.4
Total	**$127.3**	**$209.0**	**$336.3**

Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024). City of Philadelphia CAFR (2022), Pennsylvania CAFR (2022)

Table 2.8: Estimated Combined Annual Tax Revenue Impact from Penn Consolidated Annual Operations within Philadelphia and the Commonwealth of Pennsylvania ($ Millions)

	Tax Revenue Impact Within Philadelphia			Tax Revenue Impact Within Pennsylvania			Total
Tax Type	**Academic**	**Health System**	**Consolidated**	**Academic**	**Health System**	**Consolidated**	**Consolidated**
Wage Tax	$126.4	$124.5	$250.9	$103.2	$147.5	$250.7	$501.6
Sales Tax	$3.3	$7.8	$11.1	$18.1	$45.1	$63.2	$74.3
Business Tax	$7.7	$20.5	$28.2	$6.1	$16.4	$22.4	$50.6
Other Taxes	$7.3	$94.0	$101.3				$101.3
Total ($M)	**$144.8**	**$246.8**	**$391.5**	**$127.3**	**$209.0**	**$336.3**	**$727.8**

Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024). City of Philadelphia CAFR (2022), Pennsylvania CAFR (2022)

2.6. Innovation-Based Economic Development

2.6.1. Section Overview

As one of the nation's top research universities, Penn understands its vital role in not only anchoring its local community but also driving a regional ecosystem of knowledge and innovation that fuels both economic vitality and global competitiveness. With an annual research and development (R&D) expenditure averaging $1.37 billion[13], Penn's research efforts span medicine, technology, business, and science, aiming to improve lives and foster growth at a local, state, and global level. This massive R&D investment generates immediate economic impact through direct spending, which flows into various sectors of the economy, and through Penn's extensive research infrastructure—including 195 research centers and more than 5,000 research faculty.[14]

While Penn's operational activities contribute to the economic impacts detailed in Section 2, this represents only part of the story. The University's role in driving regional growth extends far beyond direct economic calculations. Through its expansive research enterprise and innovation initiatives—particularly the Penn Center for Innovation (PCI) and Pennovation Works—Penn creates powerful hubs of knowledge and talent that catalyze broader economic development. These innovation ecosystems foster breakthrough discoveries, attract top researchers, and accelerate commercialization of new technologies, generating ripple effects throughout the Greater Philadelphia economy that traditional operational metrics alone cannot fully capture. This multifaceted innovation ecosystem is a key reason Penn plays an outsized role in the region's competitiveness, helping to position Philadelphia as a leader in the global knowledge economy.

2.6.2. Direct Operating Footprint

The University of Pennsylvania acts as a major net importer of research funding through its $1.37 billion annual research enterprise. This external funding comes primarily from federal sources like the National Institutes of Health (NIH) and the National Science Foundation (NSF), private corporations, and nonprofit foundations. These research dollars generate significant local economic impact through direct spending on research staff salaries, purchase of equipment and supplies from local vendors, investment in research facilities and infrastructure, and support for technology commercialization through PCI. The multiplier effect of this external funding creates additional economic activity as money circulates through Philadelphia's economy via employee spending, business-to-business transactions, and new venture creation. This makes Penn a key driver of regional economic growth beyond its immediate campus boundaries.

Penn's leadership in interdisciplinary research draws international attention, further cementing its role as a global player in knowledge production and innovation. As an Anchor Institution of Philadelphia, this level of talent development and research then draws in companies, seeking to find talent. Due in large part to Penn's efforts—as well as by partner organizations such as Ben Franklin Technology Partners—

[13] Value based on 4-year average, FY2021-FY2024
[14] "Research and Innovation." University of Pennsylvania, www.upenn.edu/research-and-innovation?form=MG0AV3. Accessed 17 Oct. 2024.

Philadelphia was designated as a federal tech hub in 2023.[15] Penn has also played an outsized role in designating Philadelphia as a major life sciences hub, which is now recognized as one of the leading U.S. cities for life sciences, according to CBRE's 2024 report.[16]

2.6.3. Sponsored Research

One of Penn's most significant strengths is its robust connection to major research funding sources, making it a premier destination for securing competitive grants. This financial support is a key driver of Penn's prominence as a research institution and a catalyst for Philadelphia's economic vitality. By successfully attracting more than $1 billion in research funding annually, Penn enriches the local economy, sustains jobs, and boosts the tax base—injecting resources into the region that would otherwise be allocated elsewhere. The influx of national research grants fortifies Penn's interdisciplinary network of knowledge, enabling breakthrough scientific discoveries and innovative commercial ventures that amplify the region's global competitiveness.

A substantial portion of Penn's research funding comes from the National Institutes of Health (NIH), with the University receiving an average of $660 million per year between 2021 and 2024. Other key contributors include government agencies, providing around $257 million annually. Foundations and non-profits, which supply an average of $202 million, make up nearly 15 percent of the total research budget. Furthermore, contributions from the commercial and industrial sectors account for approximately 16 percent of Penn's research funding, bringing in an average of $225 million each year (Table 2.9 and Graph 2.3). These diverse funding streams allow Penn to maintain its role as a leader in innovation and economic impact.

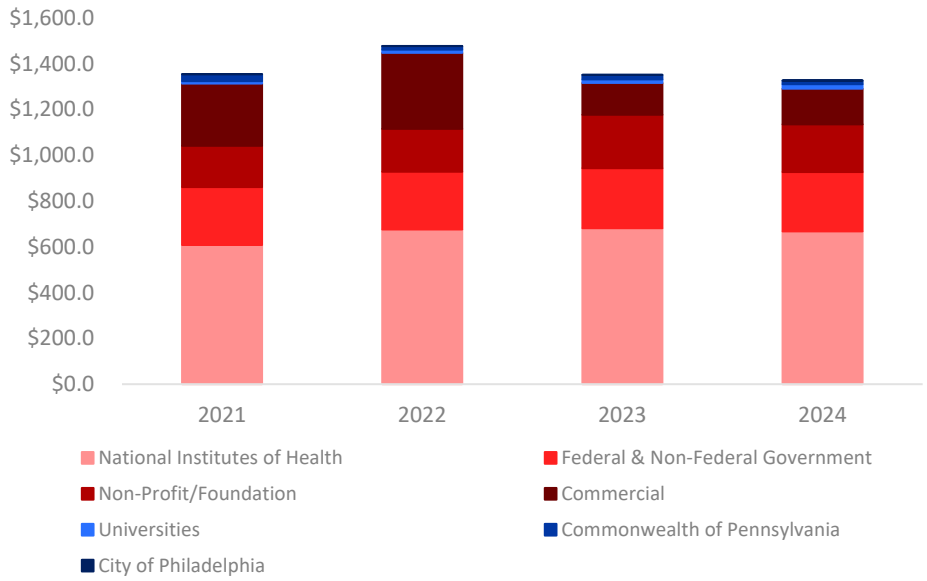
Table 2.9: Penn Consolidated Research Funding Sources, 2021-2024 ($ Millions)

Funding Source	2021	2022	2023	2024
National Institutes of Health	$608.2	$675.6	$681.1	$667.7
Federal & Non-Federal Government	$252.9	$252.7	$262.1	$259.0
Non-Profit/Foundation	$180.4	$187.0	$233.4	$207.9
Commercial	$271.7	$332.0	$139.5	$156.2
Universities	$10.6	$13.8	$15.0	$19.6
Commonwealth of Pennsylvania	$30.0	$15.2	$19.6	$15.3
City of Philadelphia	$0.4	$0.7	$0.8	$1.4
Total Research Funding ($M)	**$1,354.3**	**$1,477.0**	**$1,351.5**	**$1,327.0**

Source: University of Pennsylvania (2024

[15] "Philadelphia Region Designated a Federal Tech Hub for Life Sciences." Penn Center for Innovation, 16 Oct. 2023, https://pci.upenn.edu/philadelphia-region-designated-a-federal-tech-hub-for-life-sciences/. Accessed 17 Oct. 2024.
[16] "Philadelphia's Life Sciences Community Ranks Among the Best." Discover PHL, https://www.discoverphl.com/blog-post/philadelphias-life-sciences-community-ranks-among-the-best/#:~:text=Philadelphia's%20Life%20Sciences%20Community%20Ranks,at%20the%20Pennsylvania%20Convention%20Center. Accessed 17 Oct. 2024.

Graph 2.3: Penn Consolidated Research Funding Sources, 2021-2024 ($ Millions)



Source: University of Pennsylvania (2024)

2.6.4. Economic Impact from Sponsored Research

Penn's expenditures in research activities creates conditions for sustained activity that advances human knowledge and drives the innovation economy. It also represents the drawing in of funds from outside the region to support economic activity within the region. Specifically, Penn's 2024 level of research funding generated:

- $2.5 billion in total annual output[17] within Philadelphia, supporting 9,400 direct, indirect, and induced jobs and $875 million in employee compensation;
- $2.9 billion in total annual output within the Penn Region, supporting 11,200 direct, indirect, and induced jobs and $996 million in employee compensation; and
- $2.8 billion in total annual output within the Commonwealth of Pennsylvania, supporting 10,800 direct, indirect, and induced jobs and $964 million in employee compensation.

[17] Direct output includes employee salaries and Procurement spending, including laboratory supplies. Indirect output includes spending by vendors with other suppliers, to procure research supplies. Induced output includes the spending of employees, whether at restaurants, retail stores, or purchasing a book on best research practices.

Table 2.10: Economic Impact from FY2024 Penn Consolidated Research Funding

Impact Type	Philadelphia	Penn Region	Pennsylvania
Direct Output ($M)	$1,327	$1,327	$1,327
Indirect and Induced Output ($M)	$1,150	$1,539	$1,438
Total Impact ($M)	**$2,477**	**$2,866**	**$2,765**
Employment Supported (FTE)	**9,400**	**11,200**	**10,800**
Employee Compensation ($M)	**$875**	**$996**	**$964**

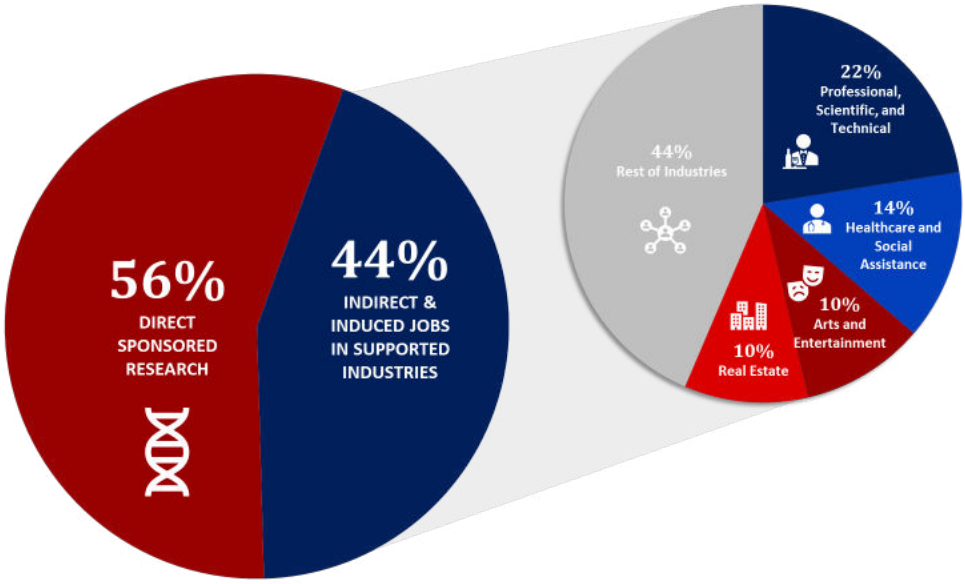
Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

As the region's premier Anchor Institution, Penn continuously reinforces Philadelphia's position as a leader in the global knowledge economy. Through its research, Penn drives sustained economic growth, supports an extensive workforce, and nurtures the entrepreneurial ecosystem, helping to ensure the long-term prosperity of the city, the state, and the surrounding region. Penn's leadership in fostering scientific discoveries and commercialized technologies keeps the area competitive on both national and international stages, laying the groundwork for future generations of innovators and entrepreneurs.

2.6.5. Industry Distribution of Economic Impact from Sponsored Research

Penn's consolidated research funding in fiscal year 2024 generated a significant employment impact across various sectors of the economy. The employment distribution shows that 56 percent of jobs were created through direct sponsored research positions, while the remaining 44 percent came from indirect and induced jobs in supported industries. When examining this indirect employment impact more closely, the largest share went to Professional, Scientific, and Technical fields, accounting for 22 percent of the indirect jobs. Healthcare and Social Assistance followed with 14 percent of indirect employment (Graph 2.4). The data illustrates how Penn's research funding not only creates immediate research positions but also stimulates job growth across a diverse range of supporting sectors in the broader economy.

Graph 2.4: Industry Distribution of Employment Generated from FY2024 Penn Consolidated Research Funding[18]



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

2.6.6. Sponsored Research Generates Tax Revenue

Research at Penn boosts various local and state tax bases, creating tax revenues for various government jurisdictions each year. Penn's research activities generated substantial tax revenue for both Philadelphia and the Commonwealth of Pennsylvania. At the city level, Philadelphia collects $39 million annually in municipal tax revenue. For the state of Pennsylvania, the fiscal impact amounts to $47 million in state tax revenue.[19] Combined, Penn's consolidated research activities contribute a combined annual total of $86 million in tax revenue across both jurisdictions due to research initiatives, demonstrating significant fiscal benefits for both local and state governments (Table 2.11).

[18] The smaller graph to the right represents the industry breakdown of the indirect and induced jobs, which comprise 44% of the jobs created by the Penn consolidated research funding.
[19] Employee-paid taxes include wage taxes paid by employees via payroll deductions, as well as a portion of sales tax, from employees' personal purchases. University-paid taxes include business tax, plus a portion of sales tax, as well as other taxes.

Table 2.11: Local and State Tax Revenue Impact from FY2024 Penn Consolidated Research Funding ($ Millions)

Tax Type	Philadelphia	Pennsylvania
Income	$26	$19
Sales	$3	$21
Business	$9	$8
Total	**$39**	**$47**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022), City of Philadelphia CAFR (2022), Commonwealth of Pennsylvania CAFR (2022)

2.6.7. Penn Center for Innovation

The Penn Center for Innovation (PCI) serves as the University of Pennsylvania's hub for technology commercialization and entrepreneurial activity. As Penn's intellectual property management and corporate alliance office, PCI plays a vital role in translating cutting-edge research and innovations from Penn's laboratories into market-ready products, services, and ventures that can benefit society. The Center facilitates partnerships between Penn researchers and industry, manages the University's intellectual property portfolio, and provides resources and support for faculty and student entrepreneurs looking to launch startups based on Penn technologies.

PCI By the Numbers, FY 2024:

354 Invention Disclosures

851 Patent Applications Filed

125 US Patents Issued

619 Commercialization Agreements

$466.2M Licensing Revenue

$95M SRA Revenue

12 Startup Formations

$633.1M Raised by Startups

30 Programs Hosted

111 Press Mentions

PCI's impact extends beyond simple technology transfer, which is defined as sharing data, inventions, or technical knowledge between organizations to make scientific and technological advancements accessible for broader use and further development. PCI helps to create an innovation ecosystem that strengthens both Penn's and Philadelphia's knowledge economy. By connecting academic research with commercial opportunities, PCI helps generate revenue streams that can be reinvested in future research while also creating jobs and economic activity in the region. This aligns with Penn's role as an Anchor Institution, as successful commercialization of university innovations often leads to company formation and job creation in the Philadelphia area. The Center's work includes everything from helping researchers patent their discoveries to connecting them with investors and industry partners who can help bring these innovations to market.

Through its various programs and initiatives, PCI not only protects and commercializes Penn's intellectual property but also fosters an entrepreneurial culture across campus that encourages researchers to think about the practical applications and societal impact of their work. This

entrepreneurial mindset, combined with PCI's expertise in technology transfer and commercialization, helps ensure that Penn's research investments generate returns not just in terms of academic knowledge, but in tangible benefits for the economy and society at large.

10 Years of Innovation Impact

Over the past decade, PCI has transformed into a national leader in university technology commercialization. Within the span of 10 years, PCI rose from 24th to 1st place in national rankings for annual licensing income, while executing over 7,000 commercialization agreements and securing more than $1B in sponsored research funding. PCI has also supported the formation of over 300 startups based on Penn innovations. These achievements stem from the pioneering research conducted by Penn's faculty, staff, and students.



2.6.8. Economic Impact from PCI

PCI stands as a powerful engine of economic growth and innovation, generating substantial impact for both the University of Pennsylvania and the Greater Philadelphia region. In FY2024, PCI attracted more than $561 million in revenue for the Center, of which $466 million was due to licensing revenue[20]; and $95 million due to sponsored research agreements. This annual revenue produces economic ripple effects by facilitating the commercialization of cutting-edge research, creating new ventures, and attracting external investments, which in turn generate local employment, stimulate entrepreneurial activity, and enhance the region's competitive standing in the global economy. PCI's FY2024 revenue generated (Table 2.12):

- $1 billion in total annual output within Philadelphia, supporting almost 4,000 direct, indirect, and induced jobs and $370 million in employee compensation;
- More than $1.2 billion in total annual output within the Penn Region, supporting over 4,500 direct, indirect, and induced jobs and $364 million in employee compensation; and
- Almost $1.2 billion in total annual output within the Commonwealth of Pennsylvania, supporting almost 4,600 direct, indirect, and induced jobs and $353 million in employee compensation.

[20] A large portion of the licensing revenue was due to royalties the university collected from COVID vaccines, utilizing mRNA research carried out by Penn researchers.

Table 2.12: Economic Impact from FY2024 PCI Revenue

Impact Type	Philadelphia	Penn Region	Pennsylvania
Direct Output ($M)	$561	$561	$561
Indirect and Induced Output ($M)	$486	$664	$608
Total Impact ($M)	**$1,047**	**$1,225**	**$1,169**
Employment Supported (FTE)	**3,985**	**4,520**	**4,555**
Employee Compensation ($M)	**$370**	**$364**	**$353**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

2.6.9. Tax Revenue Impact from PCI

The Penn Center for Innovation (PCI) generates direct tax revenue for both Philadelphia and Pennsylvania primarily through its licensing income and technology commercialization activities. This core revenue stream creates measurable tax impacts through PCI's direct operations and expenditures. While PCI's work catalyzes broader economic activity across the region's innovation ecosystem—from startup formation to venture capital attraction to facility development—these induced effects create additional tax revenues that are tracked separately from PCI's direct fiscal impact.

Beyond PCI's direct tax contribution, the Center's role in commercializing Penn technologies helps create a multiplier effect that expands the region's tax base over time. The life sciences sector provides a prime example: as Penn-affiliated startups establish research and manufacturing operations locally, they generate additional wage, business, and property tax revenues. Similarly, PCI's success in attracting venture capital and corporate investment to Philadelphia creates further tax benefits through various channels.

At the city level, Philadelphia collects $16 million annually in municipal tax revenue. For the state of Pennsylvania, the fiscal impact amounts to $20 million in state tax revenue. Combined, PCI's expenditures lead to a combined annual total of $36 million in tax revenue across both jurisdictions (Table 2.13).

Table 2.13: Local and State Tax Revenue Impact from FY2024 PCI Revenue ($ Millions)

Tax Type	Philadelphia	Pennsylvania
Income	$11	$8
Sales	$1	$9
Business	$4	$3
Total	**$16**	**$20**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022), City of Philadelphia CAFR (2022), Commonwealth of Pennsylvania CAFR (2022)

2.6.10. Pennovation Works

Pennovation Works, which opened its doors in 2016, represents Penn's bold vision for transforming a 23-acre former industrial site along the Lower Schuylkill River into a dynamic innovation ecosystem. Anchored by the 58,000-square-foot Pennovation Center, this innovation district provides cutting-edge laboratory, office, and industrial space for startups, established companies, and Penn-affiliated research groups. The site serves as a physical manifestation of Penn's commitment to fostering innovation and entrepreneurship, creating a unique environment where academic researchers, entrepreneurs, and industry partners can collaborate to turn groundbreaking ideas into market-ready solutions.

The impact of Pennovation Works extends beyond its physical facilities. As a strategic component of Penn's innovation infrastructure, it helps attract and retain talented researchers and entrepreneurs in Philadelphia while providing crucial space for companies to scale their operations locally. The site's success in nurturing ventures across multiple sectors—from robotics and life sciences to energy and manufacturing—demonstrates how universities can leverage their real estate assets to create innovation hubs that benefit both the institution and the broader community. Pennovation Works has become a vital link in Philadelphia's innovation corridor, connecting Penn's academic campus with the growing commercial and research activities along the Lower Schuylkill, while creating new opportunities for economic development in surrounding neighborhoods.

2.6.11. Economic Impact from Pennovation Works

The expenditures from operations and activities at Pennovation Works generates economic impact in the local, state and regional economies. These operational expenditures resulted in the following impact:

- $8.2 million in total annual output within Philadelphia, supporting 30 direct, indirect, and induced jobs and $2.9 million in employee compensation;
- $9.5 million in total annual output within the Penn Region, supporting 35 direct, indirect, and induced jobs and $3.3 million in employee compensation; and
- $9.1 million in total annual output within the Commonwealth of Pennsylvania, supporting 35 direct, indirect, and induced jobs and $3.2 million in employee compensation.

Table 2.14: Economic Impact from FY 2024 Expenditures of Pennovation Works

Impact Type	Philadelphia	Penn Region	Pennsylvania
Direct Output ($M)	$4.4	$4.4	$4.4
Indirect and Induced Output ($M)	$3.8	$5.1	$4.7
Total Impact ($M)	**$8.2**	**$9.5**	**$9.1**
Employment Supported (FTE)	**30**	**35**	**35**
Employee Compensation ($M)	**$2.9**	**$3.3**	**$3.2**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

Spotlight: Pennovation Works Capital Investments

Pennovation Works represents a strategic investment in Philadelphia's innovation infrastructure, where capital expenditures on facilities and equipment generate both immediate economic impacts and lay the groundwork for future growth. Each dollar invested in Pennovation's physical infrastructure strengthens its capacity to attract and retain innovative companies, support cutting-edge research, and facilitate technology commercialization. These investments create a virtuous cycle: upgraded facilities and new amenities attract more tenants and research activities, which in turn generate revenue that can be reinvested in the campus, while also increasing the site's economic impact on the surrounding community. The commitment to ongoing capital improvements—from laboratory fit-outs to shared equipment platforms—ensures that Pennovation remains competitive as an innovation hub while creating the physical foundation needed for startups and research ventures to scale their operations locally. This approach to strategic reinvestment helps cement Philadelphia's position in the innovation economy while creating lasting assets that will continue to generate economic and social returns for the region well into the future.

Pennovation Works spent $105.4 million on capital investments in FY2024, yielding an annual economic impact of:

- $162.5 million in total annual output within Philadelphia, supporting 750 direct, indirect, and induced jobs and $56.7 million in employee compensation;
- $207.1 million in total annual output within the Penn Region, supporting 915 direct, indirect, and induced jobs and $68.7 million in employee compensation; and
- $196.9 million in total annual output within the Commonwealth of Pennsylvania, supporting 880 direct, indirect, and induced jobs and $65.9 million in employee compensation.

Table 2.15: Economic Impact from FY 2024 Capital Expenditures of Pennovation Works

Impact Type	Philadelphia	Penn Region	Pennsylvania
Direct Output ($M)	$105.4	$105.4	$105.4
Indirect and Induced Output ($M)	$57.1	$101.8	$91.5
Total Impact ($M)	**$162.5**	**$207.2**	**$196.9**
Employment Supported (FTE)	**750**	**915**	**880**
Employee Compensation ($M)	**$56.7**	**$68.7**	**$65.9**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

2.6.12. Pennovation Works Generates Tax Revenue

The presence and operations of Pennovation Works generate meaningful tax revenue for both the City of Philadelphia and the Commonwealth of Pennsylvania through several key tax streams. For Philadelphia, Pennovation's activities generate $87,000 in income tax, $11,400 in sales tax, and $29,900 in business tax revenue, totaling $128,300 in municipal tax revenue. At the state level, Pennsylvania

collects $61,900 in income tax, $69,800 in sales tax, and $25,600 in business taxes, amounting to $157,300 in state tax revenue. Combined, Pennovation's direct operations contribute $285,600 in annual tax revenue across both jurisdictions (Table 2.16).

Table 2.16: Local and State Tax Revenue Impact from FY2024 Pennovation

Tax Type	Philadelphia	Pennsylvania
Income	$87,000	$61,900
Sales	$11,400	$69,800
Business	$29,900	$25,600
Total	**$128,300**	**$157,300**

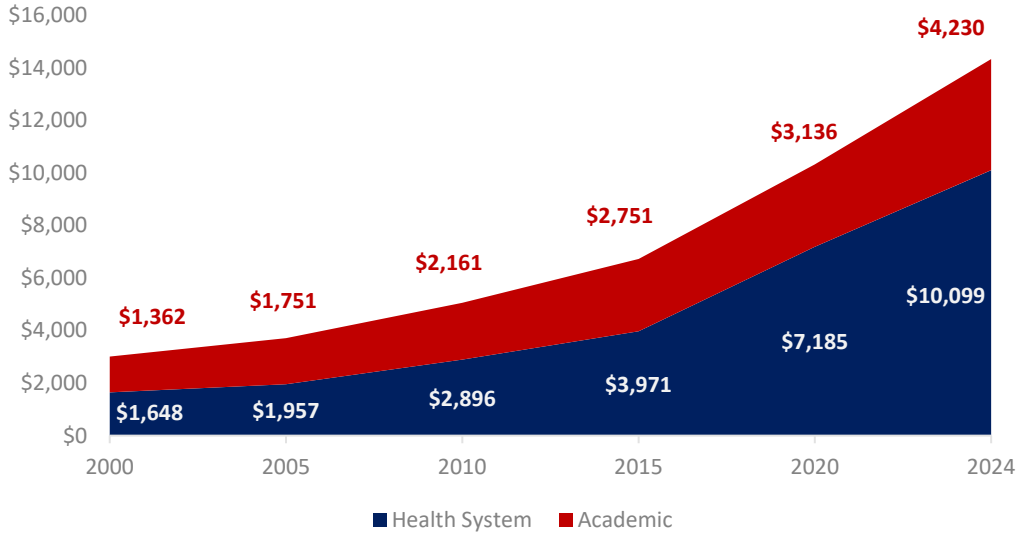
Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022), City of Philadelphia CAFR (2022), Commonwealth of Pennsylvania CAFR (2022)

2.7. Growth of Economic Impact from Operations Since 2000

Over the past 25 years, Penn has significantly contributed to the economic growth of Philadelphia, the Commonwealth of Pennsylvania, and the greater Penn Region. The university, alongside the Health System, creates and sustains thousands of jobs, generating billions in direct and indirect economic activity. This level of activity supports local businesses and fosters job creation across sectors beyond education and healthcare.

Between 2000 and 2024, Penn's consolidated operating budget experienced significant growth. The Health System's operating expenditures are now six times more than they were in 2000, while the university's overall spending in 2024 was three times higher than it was in 2000. As a private institution, this growth in the operating budget has been primarily driven by private and non-local revenue sources, such as research grants, tuition from out-of-town students, and medical costs. Graph 2.5 shows the growth trend of Penn’s consolidated budgets over 25 years.

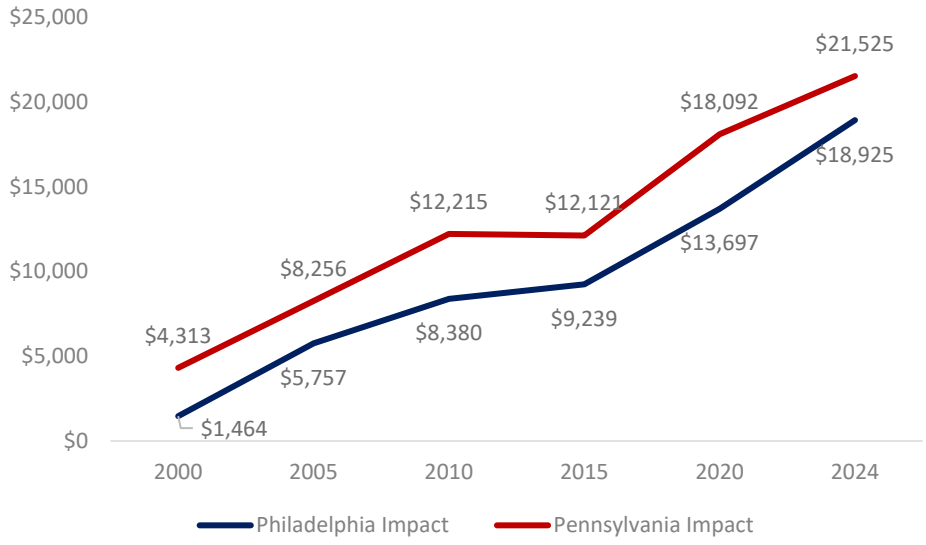
Graph 2.5: Penn Annual Consolidated Operating Expenditures, 2000-2024



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Since 2000, Penn's subsequent consolidated economic impact due to operations increased from $1.5 billion to $18.9 billion within Philadelphia. Statewide, Penn's consolidated economic impact started at $5.6 billion in 2005 and rose to $21.5 billion in 2024 (Graph 2.6). This growth, in part driven by the expansion of medical facilities and services, has further elevated the University's role as an economic powerhouse. As operational spending has risen, so has Penn's ability to generate greater indirect and induced economic impacts, which benefit industries like hospitality, real estate, and professional services across the region. These effects underscore the long-term, dynamic economic influence of the University within its local and state economies.

Graph 2.6: Growth of Economic Impact at Penn: 2000 to 2024



Source: McKinsey & Company (1999), Econsult Solutions, Inc. (2024)

ESI

3. Economic Impact from Capital Investments

3.1. Section Overview

Penn invests in campus capital projects and improvements each year. In FY2024, the University invested almost $1.1 billion in new buildings and renovations. These capital expenditures serve as a major boost to the local construction industry while also contributing to local government revenue by way of taxes.

Penn's consolidated capital investments are more than just contributions to its physical infrastructure; they represent a strategic commitment to community engagement, job creation, and neighborhood revitalization. As Penn expands its educational and healthcare facilities, these capital projects create significant job opportunities across various industries, from construction and manufacturing to professional services and supply chain partners. These investments not only support economic growth but also directly contribute to improved public resources, including health services, educational opportunities, and the enhancement of local business ecosystems. With over a billion dollars in annual capital expenditures, Penn has a deep and lasting impact on the economic stability and quality of life in Philadelphia and the broader Penn Region.

Penn's consolidated capital investments result in $2.2 billion in total economic impact within the Penn Region, supporting 8,700 full-time jobs with $563 million in employee compensation. In Philadelphia, this generates $19 million in local tax revenues.

3.2. Direct Capital Investments

Penn's role as a pivotal Anchor Institution in Philadelphia and the surrounding region is strengthened through its strategic consolidated infrastructure investments, which are vital to fostering a premier global community of scholars, researchers, and innovators. The ambitious construction and development initiatives undertaken by Penn exemplify and advance the institution's longstanding commitment to academic excellence and groundbreaking innovation.

Penn Connects is a comprehensive 30-year land use and urban design strategy launched in 2006 to enhance the University of Pennsylvania's position as a leading urban research institution. The initiative has evolved through multiple phases, beginning with *Penn Connects* 1.0's focus on creating civic spaces, establishing development zones, and improving campus connectivity. After successfully completing Phase 1, *Penn Connects* 2.0 expanded the vision by incorporating the 23-acre Pennovation Works site and emphasizing sustainability goals. Now in its third iteration, *Penn Connects* 3.0 continues the campus transformation with numerous ongoing projects including the Quad renovation, Amy Gutmann Hall, the Ott Center for Track and Field, and the Vagelos Laboratory for Energy Science and Technology, as well as the expansion of Weitzman Hall.[21] Throughout all phases, the strategy has maintained its core objectives of enhancing teaching, research, and clinical care while fostering community engagement and sustainable development.

[21] University of Pennsylvania. "Campus Construction Update." Penn Facilities and Real Estate Services, https://facilities.upenn.edu/about/news/campus-construction-update-0. Accessed 17 Oct. 2024.

Over the past 5 years, Penn has on average invested over $1 billion annually in capital projects, including acquisitions, new construction, and major renovations (Table 3.1). ESI used average capital expenditures to calculate economic impact because large projects often cause significant year-to-year fluctuations in spending. Averaging smooths out these variations, providing a more consistent and reliable measure of annualized economic impact due to capital expenditures.

Table 3.1: Penn Consolidated Capital Expenditures, FY 2020–FY 2024 ($ Millions)

Fiscal Year	Academic	Health System	Consolidated
2020	$343	$1,055	$1,398
2021	$290	$668	$958
2022	$206	$662	$868
2023	$344	$437	$781
2024	$605	$470	$1,075
		5-Year Average	**$1,016**

Source: University of Pennsylvania (2024)

In FY2024, Penn's consolidated capital investments totaled $1.1 billion, with $605 million allocated to academic projects and $470 million to Health System initiatives (Tables 3.2 and 3.3). These capital investments made towards Penn's infrastructure highlight the University's dedication to growth and development, as well as cultivating an excellent student experience, and contributing to cutting-edge research efforts.

Table 3.2: Academic Capital Investments, FY2024 ($ Millions)[22]

Academic FY2024 Spending	Cost ($M)
Translational Research Lab Acquisition	$89
Vagelos Lab for Energy Science and Technology	$66
Quad Renovation	$64
Amy Gutmann Hall	$46
College Hall Renovation	$36
Ott Center for Track and Field	$33
Franklin Field Team Operations Upgrade	$18
All Others[23]	$254
University Total	**$605**

Source: University of Pennsylvania (2024)

[22] Numbers may not sum to totals due to rounding.
[23] "All Others" includes smaller projects less than $1 million.

Table 3.3: Health System Capital Investments, FY2024 ($ Millions)

Health System FY2024 Spending	Cost ($M)
3600 Civic Center Blvd Overbuild	$155
Penn Presbyterian Medical Center Parking Garage	$21
Public Health Management Corporation Cancer Center	$19
Lancaster General Hospital Expansion	$16
Penn For Finance Supply Chain Management Application	$12
Pavilion at Hospital of the University of Pennsylvania	$1
All Others[24]	$246
Health System Total	**$470**

Source: University of Pennsylvania (2024)

The capital expenditures for FY2020 to FY2024 were adjusted for inflation, and economic impact modeling was thereby conducted using the inflation-adjusted average capital spending for those 5 years—representing a typical year of investment, and providing a basis for analyzing the annualized economic contribution from capital spending over this period (Table 3.4).

Table 3.4: FY2020 to FY2024 Capital Investments, Adjusted for Inflation ($ Millions)

Fiscal Year	Academic	Health System	Inflation Factor	Consolidated and inflation-adjusted
2020	$343	$1,055	1.21	$1,692
2021	$290	$668	1.13	$1,083
2022	$206	$662	1.06	$922
2023	$344	$437	1.03	$803
2024	$605	$470	0	$1,075
			5-Year Inflation-Adjusted Average	**$1,115**

Source: Econsult Solutions, Inc. (2024), University of Pennsylvania (2024)

Table 3.5 captures an average using an inflated adjustment for localized direct spending, estimating $1.1 billion in consolidated capital investments within Philadelphia and an additional $17 million across the broader Penn Region.

[24] "All Others" includes smaller projects less than $1 million.

Table 3.5: Average Consolidated FY2020 to FY2024 Capital Investments, Adjusted for Inflation and Designated by Geography of Direct Impact ($ Millions)

Average FY2020 to FY2024 Capital Investments	**$1,115**
Capital Investments in Philadelphia ($M) - Regionally Exclusive	$1,099
Capital Investments in Penn Region ($M) - Regionally Exclusive	$17

Source: Econsult Solutions, Inc. (2024), University of Pennsylvania (2024)

3.3. Economic Impact from Capital Investments

Penn's capital investments for FY2020 to FY2024 averaged almost $1.02 billion annually for the consolidated entity, and an average of $1.12 billion when adjusted for inflation to today's values. Direct expenditures across Pennsylvania reach $1.1 billion; and the direct expenditures of the larger Penn Region—excluding Philadelphia—add an approximate $17 million. These investments cover a range of projects, including construction costs for new facilities on and off-campus, renovation expenses, and essential material and service procurements. This level of spending impacts a broad network of local industries, from wholesalers and manufacturers to professional services providers and construction firms, reinforcing Penn's substantial economic footprint in the region.

In total, Penn's direct consolidated capital expenditures generate (Table 3.6):

- $1.7 billion in total annual output within Philadelphia, supporting 6,900 direct, indirect, and induced jobs and $457 million in employee compensation;
- $2.1 billion in total annual output within the Commonwealth of Pennsylvania, supporting 8,300 direct, indirect, and induced jobs and $541 million in employee compensation; and
- $2.2 billion in total annual output within the Penn Region, supporting 8,700 direct, indirect, and induced jobs and $563 million in employee compensation.

In the context of capital investments, direct economic impact is due to Penn's direct expenditures, predominantly in the construction industry; and direct employment includes those overseeing the construction projects. Indirect impact is due to those construction companies purchasing materials; and indirect employment includes the construction company employees. Induced economic impact takes place when those construction workers purchase a meal on the way home from work, and induced employment refers to the restaurant workers.

Table 3.6: Economic Impact from Annualized FY2020 – FY2024 Capital Investments within Philadelphia, the Penn Region, and Pennsylvania

Impact Type	Philadelphia	Penn Region	Pennsylvania
Direct Output ($M)	$1,099	$1,115	$1,115
Indirect and Induced Output ($M)	$596	$1,049	$952
Total Output ($M)	**$1,694**	**$2,164**	**$2,067**
Employment (FTE) Supported	**6,900**	**8,700**	**8,300**
Employee Compensation ($M)	**$457**	**$563**	**$541**

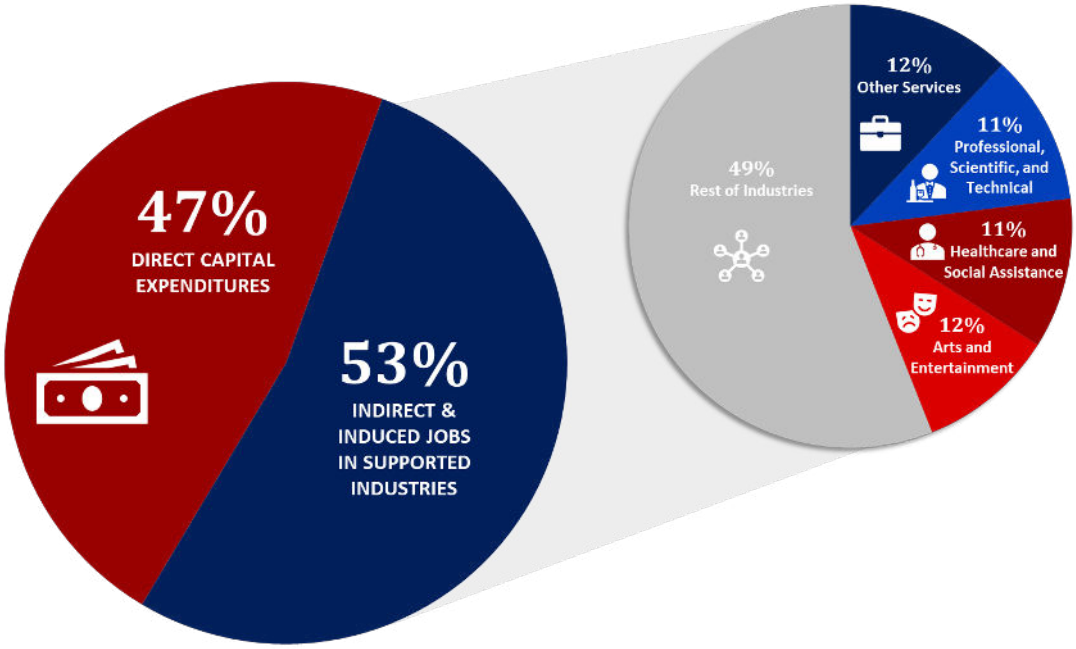
Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024)

3.4. Industry Distribution of Economic Impact from Capital Investments

The economic effects of Penn's capital investments extend across many industries, reaching far beyond the construction sector alone. While construction remains the primary beneficiary, other sectors, including services (excluding public administration), professional and scientific services, healthcare, and arts and administration, also see notable gains from both indirect supply chain activity and induced spending by employees. For instance, when contractors purchase materials like paint or hardware, local suppliers and retail stores benefit directly.

Graph 3.1 illustrates that approximately 53 percent of employment linked to Penn’s upcoming capital investments is spread across diverse industries in Pennsylvania, showcasing a broad distribution of benefits beyond construction alone.

Graph 3.1: Industry Distribution of Employment Generated by Penn Annualized FY 2020-FY 2024 Capital Investments within Pennsylvania[25]



Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024)

[25] The smaller graph to the right represents the industry breakdown of the indirect and induced jobs, which comprise 53% of the jobs created by Penn capital investments in Pennsylvania.

3.5. Capital Investments Generate Tax Revenue

Though Penn operates as a non-profit institution, its consolidated capital investments make a substantial contribution to tax revenues for both Philadelphia and Pennsylvania. These investments create construction jobs and bolster local construction companies and their suppliers, collectively generating income, sales, and business tax revenues at city and state levels. However, this capital spending at Penn supports a wide range of industries beyond construction, resulting in economic ripple effects across Philadelphia and Pennsylvania—creating additional fiscal impacts for Philadelphia and the Commonwealth. Overall, Penn's direct capital investments are projected to contribute approximately $19.0 million in tax revenue for Philadelphia and an additional $19.7 million for Pennsylvania (Table 3.7).

Table 3.7: Estimated Annual Tax Revenue Impact from Penn Consolidated Capital Investments within the City of Philadelphia and the Commonwealth of Pennsylvania, ($ Millions)

Tax Type	Philadelphia	Pennsylvania
Income/Wage Tax	$15.8	$12.6
Sales Tax	$0.9	$5.2
Business Tax	$2.3	$1.9
Total	**$19.0**	**$19.7**

Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024), City of Philadelphia CAFR (2022), Pennsylvania CAFR (2022)

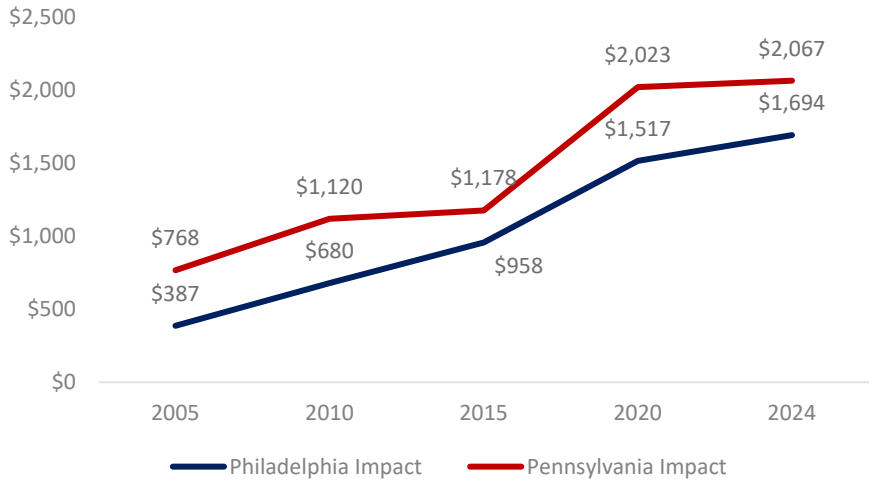
3.6. Growth of Economic Impact Due to Capital Investments

Since 2005, Penn has expanded its capital investments substantially, reflecting both its growth as a premier academic and research institution and its commitment to enhancing campus facilities and infrastructure. These investments have moved from large-scale individual projects to a more integrated, continuous approach supporting Penn's mission across education, healthcare, and research. In recent years, Penn's capital expenditures have included the development of new academic spaces, modernization of existing facilities, and the expansion of Penn Medicine's footprint, including state-of-the-art buildings and research centers that drive interdisciplinary innovation. This steady growth in capital spending reflects Penn's vision for long-term impact on campus functionality and its ability to adapt to technological and educational advancements.

The monetary expansion of these consolidated capital investments, now averaging over a billion dollars annually, shows Penn's role as a substantial economic anchor in Philadelphia and the Commonwealth. By supporting numerous local industries, from construction and manufacturing to wholesale trade, these expenditures not only create immediate employment opportunities but also generate broader economic benefits through tax revenues and induced spending. This sustained level of capital investment has significantly influenced the local economy, setting the stage for Penn's continued role in

fostering economic resilience and growth across the region. Graph 3.2 demonstrates the incredible growth in capital investments at Penn over the past 20 years.[26]

Graph 3.2: Economic Impact from Capital Investments at Penn: FY2005 to FY2024 ($ Millions)

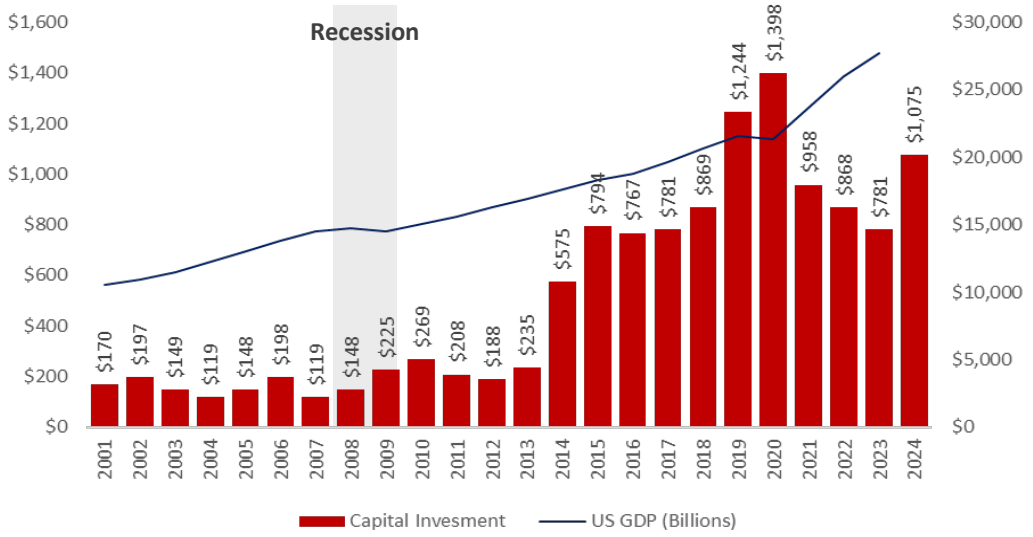


Source: Econsult Solutions, Inc. (2024)

Philadelphia's economy has been on an overall upward trend in the past two decades, a reflection of the city's overall economic growth. However, there were periods of economic decline. The 2008-2009 recession—due to the financial crisis—affected sectors such as finance, real estate and manufacturing. A little more than a decade later, Philadelphia's economy experienced decline due to the pandemic, and subsequent social distancing restrictions impacted activities such as hospitality, retail, and transportation. Throughout this time, Penn has continued to increase its capital investments within Philadelphia, acting as a driver of economic growth within the region (Graph 3.3).

[26] In the 2000 economic impact study—conducted by McKinsey & Company—the economic impact of capital investments was not calculated separately. Therefore, Graph 4.2 displays the growth of impact over time, starting in 2005.

Graph 3.3: Distribution of Capital Spending by Penn and U.S. GDP, FY2001 to FY2024 ($ Millions)



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), U.S. Bureau of Economic Analysis (2024)

ESI

4. Economic Impact from Ancillary Spending by Students, Patients, Visitors, and Athletics

4.1. Section Overview

Penn's presence as a premier institution generates substantial economic benefits beyond its direct operational and capital investments through significant ancillary spending in the region. When students, patients, visitors, and sports enthusiasts spend money off-campus—whether at local restaurants, retail stores, hotels, or entertainment venues—they create economic opportunities that support thousands of jobs and generate significant tax revenues for both Philadelphia and Pennsylvania. While core spending like tuition and housing is captured in Penn's operational impact, the additional off-campus spending by Penn's national and international student body and visitors creates vital economic opportunities for local businesses, particularly in retail, hospitality, and food service sectors.

Based on conservative estimates combining Penn's direct data and research-based assumptions, this ancillary spending generates a considerable economic impact within the City of Philadelphia, the Commonwealth of Pennsylvania, and the Penn Region. **In aggregate, the economic impact of ancillary spending by students, visitors, patients, and Athletics is $471 million in total output within the Penn Region, supporting 5,100 jobs and generating $135 million in employee compensation each year.**

4.2. Direct Student Spending

Students' economic impact on Penn's surrounding region extends beyond tuition payments to include significant off-campus or "ancillary" spending on necessities and entertainment. This spending, which does not flow directly to Penn and is therefore distinct from the operational impact detailed in Section 2, represents either new economic activity from out-of-state students or retained spending from local students who might otherwise have attended universities outside the state. According to Penn's Student Registration & Financial Services office, annual student budgets in FY2024—consisting of tuition, housing, and other costs associated with attending Penn—total $89,028 for on-campus students, $88,892 for off-campus students, and $73,494 for commuting students.[27] Commuting students are defined as those living with family.

The analysis carefully distinguishes between spending that flows to Penn (such as on-campus housing payments and tuition) and true ancillary spending in the community. For instance, while off-campus housing payments by non-commuter students are counted as ancillary spending as they represent new economic activity, rent paid by resident commuter students is excluded since they would likely incur those housing costs regardless of Penn enrollment. The model does, however, account for commuter students' additional food and retail purchases made while attending Penn (Table 4.1).

[27] Student Registration and Financial Services at the University of Pennsylvania. Undergraduate Cost of Attendance. University of Pennsylvania, 2024, https://srfs.upenn.edu/costs-budgeting/undergraduate-cost-attendance.

Table 4.1: Estimated Annual Aggregate Ancillary Student Spending by Student Type

Student Type	Per Student Ancillary Spending	Aggregate Ancillary Spending ($M)
On-Campus	$4,000	$22.7
Off-Campus	$18,200	$324.9
Commuters	$3,100	$16.3
Total		**$363.9**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

The analysis accounts for geographic distribution of student spending, recognizing that not all expenditures remain within the immediate area, particularly given online shopping patterns. A portion of this spending exits the region immediately, thus lacking a multiplier effect within the regional economy. To address this, ESI's modeling approach conservatively incorporates only the retail margin (i.e., the difference between the purchase price for the retailer and the sales price for the customer). Of the estimated $364 million in annual student ancillary spending, approximately $328 million circulates within Philadelphia's economy, while $351 million is retained within both the Penn Region and the Commonwealth of Pennsylvania (Table 4.2). These figures reflect careful consideration of spending patterns across different geographic boundaries.

Table 4.2: Estimated Annual Aggregate Ancillary Student Spending Capture within Philadelphia, Penn Region, and Pennsylvania

Student Type	Number of students	Spending within Philadelphia ($M)	Spending within Pennsylvania ($M)	Spending within Penn Region ($M)
On-Campus	5,600	$17.5	$20.7	$20.7
Off-Campus	17,800	$300.1	$315.1	$315.1
Commuters	5,200	$10.2	$15.4	$15.4
	28,600	**$327.9**	**$351.3**	**$351.3**

Source: University of Pennsylvania (2024), IMPLAN (2022), Econsult Solutions, Inc. (2024)

4.3. Direct Patient Spending

The Penn Health System's role as a world-class healthcare provider draws significant patient and visitor spending to the region, creating substantial economic ripple effects throughout Philadelphia, Pennsylvania, and the greater Penn Region. When patients travel to Penn's medical facilities for treatment, whether for routine care or specialized procedures, they—along with their accompanying family members or caregivers—generate economic activity through spending on lodging, meals, transportation, and other necessities. This is particularly impactful when considering the Health

System's status as a leading academic medical center that attracts patients from across the nation and globe for specialized care, clinical trials, and innovative treatments. These medical visitors often stay for extended periods, especially for complex procedures or ongoing treatment regimens, resulting in sustained spending that supports local hotels, restaurants, retailers, and various service providers. The concentration of this spending in areas surrounding Penn's medical facilities creates particular economic vibrancy in University City and Center City Philadelphia, while the broader network of Penn Medicine locations throughout the region disperses these economic benefits across multiple communities in Pennsylvania and neighboring states.

For this study, ESI defines healthcare-related activity to include both inpatient and outpatient surgeries and admissions. Based on ESI's estimates, 5% of inpatient surgeries or admissions involve out-of-town visitors, while 11% of outpatient surgeries or admissions involve out-of-town visitors. The 11% estimate is derived from a 2019 Penn Medicine study conducted by ESI, which analyzed the geographic origins of patients. The assumption for inpatient visitors (5%) reflects the likelihood that fewer patients undergoing inpatient procedures are accompanied by visitors.

Visitor spending varies significantly between these groups due to the nature of the procedures. Inpatient surgeries often require overnight hospital stays, leading to higher visitor spending on accommodations such as hotels. In contrast, outpatient procedures typically involve shorter visits, with fewer associated overnight stays. Table 4.3 outlines the number of patients and estimated visitors by geographic region for FY2024.

Table 4.3: Annual Aggregate Patients, FY2024, by Location, Including Estimated Aggregate Visitors

Location	Number of Patients	Estimated Visitors
Philadelphia	316,006	27,700
Penn Region	210,855	18,483
Total	**526,861**	**46,183**

Source: University of Pennsylvania (2024); Econsult Solutions, Inc. (2024)

Aggregate visitor spending estimates were calculated for hospital visitors using estimated patient visitor counts from Penn. These figures were combined with detailed per-visitor spending profiles. Estimated geographic origin was utilized to determine spending captured within Philadelphia, the Penn Region, and the Commonwealth of Pennsylvania, omitting expenditures already in Penn's operating budget. The analysis reveals that Penn's hospital visitors account for approximately 46,000 visits annually, generating estimated ancillary spending of $2.1 million within Philadelphia, and $1.4 million within the Penn Region (Table 4.4).

Table 4.4: Estimated Annual Aggregate Spending by Hospital Visitors, FY2024, by Location

Location	Per Visitor Ancillary Spending - Inpatient	Per Visitor Ancillary Spending - Outpatient	Aggregate Ancillary Spending ($M)
Philadelphia	$275	$45	$2.1
Penn Region	$275	$45	$1.4
Total			**$3.5**

Source: University of Pennsylvania (2024); Econsult Solutions, Inc. (2024)

4.4. Direct Visitor Spending

Penn serves as a significant visitor destination throughout the year, drawing diverse audiences to both its campus and medical facilities from around the world. These visitors contribute substantially to Philadelphia's economy through spending that supports local employment and generates tax revenue for both the City and Commonwealth. The visitor population includes alumni, parents, sports enthusiasts, and cultural event attendees, as well as participants in various programs and camps. To accurately assess the economic impact of these visitors, detailed spending profiles were developed that account for various factors including visit purpose, trip duration, travel distance, event type, and visitor age, recognizing that different visitor categories have distinct spending patterns. This visitor spending analysis accounted for the following visitor types:

- Cultural and athletic event attendees, including visitors to Penn’s variety of cultural amenities, as well as sports events and facilities.
- Visitors of students, including both regular social visits and annual events like graduation and student move-in and move-out periods.
- Prospective students, who visit the University’s admissions office and tour the campus.
- Guests in residence, encompassing the variety of camps, conferences, and other events that bring visitors to Penn’s campus, particularly over the summer months.

Aggregate annual visitor spending estimates were calculated using attendance data and guest counts from Penn, including athletics, hospitality services, and cultural venues. These figures were combined with detailed per-visitor spending profiles broken down by industry sector. As with student spending analysis, conservative geographic adjustments were applied to determine spending captured within Philadelphia, the Penn Region, and the Commonwealth of Pennsylvania, excluding any expenditures already reflected in Penn's operating budget. The analysis reveals that Penn's campus attracts approximately 948,000 visits annually from visitors originating from within Philadelphia, the Penn Region, and Pennsylvania, with visitors from each geography having a unique spending profile. The estimated ancillary spending totals $68 million within Philadelphia (Table 4.5).

Table 4.5: Estimated Aggregate Annual Spending by Penn Visitors, by Geography[28]

Spending Location	Total Visitors to Campus	Per Visitor Spend - Philadelphia	Per Visitor Spend - Penn Region	Per Visitor Spend - Pennsylvania	Aggregate Visitor Spending ($M)
Philadelphia	947,776	$45	$85	$275	$67.8

Source: University of Pennsylvania (2020), Econsult Solutions (2020), U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

4.5. Direct Athletics Spending

Penn Athletics hosts numerous athletic and recreational events each year which attract both local and non-local attendees. Sports event attendees and visitors to Penn create significant economic impact to the region as they dine in local restaurants, shop at local stores, and in some cases, stay overnight within the state. Visitor spending represents net new dollars drawn into the state and generates subsequent spillover impacts supporting local businesses and jobs.

Overall, Penn attracts approximately 255,000 visitors to the region through its Athletics events. Table 4.6 demonstrates the number of Penn Athletics visitors broken out by sport and visitor category: local, day trip, and overnight visitors.

Table 4.6: Estimated Number of Visitors by Athletics Event Type and by Visitor Type

Sports Event	Visitors - Philadelphia	Visitors - Penn Region	Visitors - Pennsylvania	Total
Football	22,214	5,924	1,481	29,619
Men's Basketball	30,879	3,431	-	34,310
Women's Basketball	6,186	1,650	412	8,248
Wrestling	5,492	-	-	5,492
Penn Relays	39,880	49,851	9,970	99,701
Other Sports/Special Events	73,799	3,884	-	77,683
Total	**178,451**	**64,739**	**11,863**	**255,053**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Aggregate ancillary spending by various game spectators and participants yields approximately $17 million in spending within Philadelphia (Table 4.7).

[28] The geography is the origin of the visitor, not where the spending is occurring. For example, a visitor from Philadelphia spends $45, a visitor from the Penn Region spends $85, a visitor from elsewhere in Pennsylvania spends $275.

Table 4.7: Estimated Ancillary Spending by Athletics Spectators by Geography, Per Person and in Aggregate ($M)

Spending Location	Per Visitor Spend - Philadelphia	Per Visitor Spend - Penn Region	Per Visitor Spend - Pennsylvania	Aggregate Visitor Spending ($M)
Philadelphia	$45	$85	$275	$16.8

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

4.6. Economic Impact from Ancillary Spending by Students, Patients, Visitors, and Athletics

Ancillary spending by students, visitors to Penn students and events, patients, and Athletics events has a multiplier effect throughout the region, generating the following annual economic impacts (Table 4.8):

- $402 million in total output, supporting 2,300 jobs with $58 million in earnings within the City of Philadelphia.
- $471 million in total output, supporting 5,100 jobs with $135 million in earnings within the Penn Region.
- $474 million in total output, supporting 7,800 jobs with $207 million in earnings within the Commonwealth of Pennsylvania.

Table 4.8: Estimated Annual Economic Impact from Ancillary Spending by Students, Patients, Visitors, and Athletics

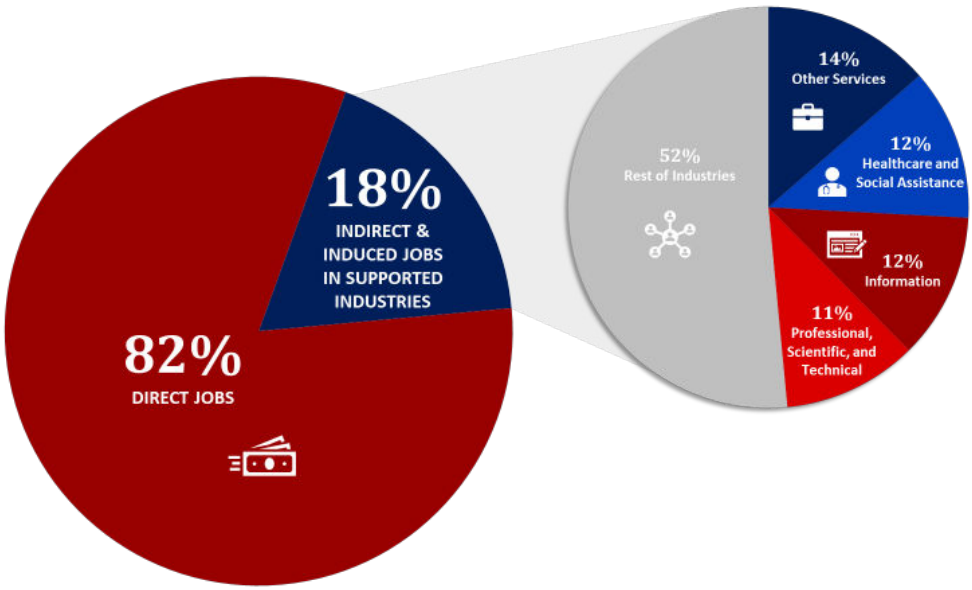
Impact Type	Philadelphia	Penn Region	Pennsylvania
Total Impact ($M)	**$402**	**$471**	**$474**
Employment Supported (FTE)	**2,300**	**5,100**	**7,800**
Employee Compensation ($M)	**$58**	**$135**	**$207**

Source: IMPLAN (2022), Econsult Solutions, Inc. (2024)

4.7. Industry Distribution of Economic Impact from Ancillary Spending by Students, Patients, Visitors, and Athletics

Spending by students and their visitors, Athletics attendees, other large-scale events, and visitors to the Health System directly impacts a number of industries, and in turn creates a multiplier effect that benefits additional industries. This influx of spending supports jobs in the Commonwealth in a wide range of sectors statewide, including hospitality and retail services, healthcare and social assistance, information, and professional, scientific, and technical services (Graph 4.1).

Graph 4.1: Industry Distribution of Employment Impact of Penn's Ancillary Spending within the Commonwealth of Pennsylvania[29]



Source: IMPLAN (2022), Econsult Solutions, Inc. (2024)

4.8. Ancillary Spending Generates Tax Revenue

In aggregate, ancillary spending by students and their visitors, Athletics attendees, patients, other large-scale events, and visitors to the Health System generate approximately $6.0 million in municipal tax revenues annually to Philadelphia; and approximately $9.3 million in tax revenues to the Commonwealth of Pennsylvania annually (Table 4.9).

Table 4.9: Estimated Aggregate Annual Tax Revenue Impact from Penn Ancillary Spending to the City of Philadelphia and the Commonwealth of Pennsylvania ($M)

Tax Type	Philadelphia	Pennsylvania
Income Tax	$2.0	$1.6
Sales Tax	$0.8	$4.8
Business Tax	$2.0	$1.8
Hotel Tax	$1.3	$1.1
Total ($M)	**$6.0**	**$9.3**

Source: IMPLAN (2022), Econsult Solutions, Inc. (2024)

[29] The smaller graph to the right represents the industry breakdown of the indirect and induced jobs, which comprise 18% of the jobs created by Penn ancillary spending..

4.9. Growth of Ancillary Spending in University City

Penn's ancillary spending impact on the regional economy has grown substantially over the past quarter century, driven by significant increases in both student and visitor spending. This growth reflects Penn's expanding national and international draw as a premier academic and medical institution, as well as its enhanced campus amenities and programming that attract more visitors for cultural events, sporting activities, and medical care.

West Philadelphia initiatives in the late 1990s and early 2000s focused on developing retail corridors transformed former parking lots on Walnut Street and academic buildings on Chestnut Street into thriving commercial spaces, creating a more dynamic urban environment. This strategic development has significantly increased local spending and economic activity. The increased population density and commercial development created a self-sustaining cycle of economic growth, establishing University City as a vital commercial district within Philadelphia.[30]

[30] University City District. "Thriving University City: A Key to the City's Growth." University City District, 2024, https://www.universitycity.org/news/thriving-university-city-key-citys-growth.

5. Economic Impact from Alumni Wage Premium

5.1. Section Overview

Penn's economic footprint extends far beyond its direct operations, capital investments, and ancillary spending. While the University draws students, visitors, and patients who contribute to the regional economy through their spending, one of Penn's most profound economic impacts stems from its core educational mission. Penn degrees carry significant prestige in the marketplace, translating into enhanced earning potential for graduates. This wage premium—the additional income Penn alumni earn compared to other degree holders—creates lasting economic value that ripples through Philadelphia, the broader Penn Region, and Pennsylvania as a whole. By empowering graduates with both world-class credentials and practical skills, Penn helps create a more prosperous and competitive regional economy.

Overall, Penn alumni achieve increased earning potential (i.e., the wage premium), contributing significantly to the economic prosperity of Philadelphia, the greater Penn Region, and the Commonwealth.

- Penn has almost **328,000 living alumni** who live around the world.
- **The almost 88,000 graduates living and working in the Penn Region are estimated to earn almost $2 billion more income than non-Penn alumni each year as a result of their Penn education.**[31]
- **This translates into an additional more than $2.2 billion in economic impact within the Penn Region economy annually, supporting 10,800 jobs with $723 million in employee compensation throughout the region.**

5.2. Defining Alumni Wage Premium

In a knowledge economy, the education and intellectual capabilities of workers are treated as assets that determine a company's productivity and output. Workers who are credentialed, have expertise in highly in-demand skills, and matriculate from an elite institution are more valued; and, in turn, receive higher wages for their work.

Wage premium analysis utilizes this framework to estimate the gain to the city, state, and regional economies. Additional earnings attributable to Penn within these geographies are estimated and translated into additional spending power within the local economy, which supports local employment and earnings. In aggregate, the additional earning potential means billions more dollars are circulating within the regional and state economy.

5.3. Direct Alumni Wage Premium

Penn's alumni can be found all across the United States, but data provided by Penn indicated that of the almost 328,000 plus living alumni, almost 61,000 live in the Penn Region; and over 65,000 live within

[31] Wage premium methodology located in Appendix D.

Pennsylvania. Of those living within the Penn Region, it is assumed that 71 percent are currently employed (as opposed to retired, unemployed, or otherwise out of the workforce).[32] For the purposes of this study, we will focus in on the working Penn alumni who live within Philadelphia; the Penn Region; and the Commonwealth of Pennsylvania. Applying the 71 percent proportion evenly across geographies and by degree obtainment at Penn, it is estimated that approximately 15,500 live in Philadelphia, 27,800 live within the Penn Region outside of Philadelphia, and 7,000 live within Pennsylvania (but outside of the Penn Region) (Table 5.1).

Table 5.1: Geographic Distribution of Penn Alumni in the Workforce

	Est. total Employed Alumni	Philadelphia	Penn Region (non-Philadelphia)	Pennsylvania (non-Penn Region)
Working alumni with bachelor's degree	19,800	5,700	11,300	2,800
Working alumni with advanced degree	28,300	9,800	16,500	4,200
Total Working Alumni	**48,100**	**15,500**	**27,800**	**7,000**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

An aggregate increase in earning potential within each geography can be estimated as a function of increases in the educational attainment of the workforce and the premium associated with that educational attainment level, as well as the premium associated with a Penn degree. Based on a combination of federal data sources, the average annual wage premium attributable to the increased educational attainment for Penn alumni is estimated to be almost $46,700 for bachelor's degree holders and $32,300 for advanced degree holders within Philadelphia (Table 5.2).

These premiums are applied to the volume of Penn degree holders estimated to be working within each geography by degree level. The resulting aggregate annual wage premium represents the additional household income generated by Penn alumni on account of the education and credentials they receive from Penn. This aggregate annual wage premium is estimated to sum to approximately $581 million within Philadelphia, $1.96 billion within the Penn Region, and $2.03 billion within Pennsylvania.[33]

[32] This assumption is based on the employment to population ratio reported by the U.S. Bureau of Labor Statistics for adults 25 or older with a college degree, which is 71 percent as of October 2024.
[33] The wage premium estimate is based on data regarding earnings levels 10 years from the graduation.

Table 5.2: Aggregate Annual Wage Premium Associated with Penn Alumni in the Workforce

Degree Level	Philadelphia	Penn Region (PA counties)	Penn Region (non-PA counties)	Pennsylvania (non-Penn Region)
Bachelor's Degree				
Volume of Working Alumni	5,700	9,600	1,700	2,800
Wage Premium	$46,700	$59,600	$56,700	$41,000
Total Working Alumni ($M)	$264	$572	$94	$116
Advanced Degree				
Volume of Working Alumni	9,800	14,500	2,000	4,200
Wage Premium	$32,300	$43,500	$43,100	$31,500
Total Working Alumni ($M)	$317	$631	$86	$132
Grand Total - Regionally Exclusive ($M)	$581	$1,203	$180	$247
Grand Total - Regionally Inclusive ($M)				
Philadelphia	**$581**			
Penn Region	**$1,964**			
Pennsylvania	**$2,031**			

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Georgetown University's comprehensive 2022 analysis of 4,500 colleges and universities powerfully validates the financial value of a Penn education. Their research demonstrates that Penn graduates not only recover their educational investment but secure substantial lifetime earnings premiums that set them apart in the marketplace. As illustrated in Table 5.3, this return on investment creates ripple effects far beyond individual prosperity—it generates broader societal and economic gains as alumni advance in their careers, invest in their communities, and contribute to regional growth.

Table 5.3: Return on Investment for an Average Penn Graduate Over a 10-, 15-, 20-, 30- and 40-Year Time Horizon[34]

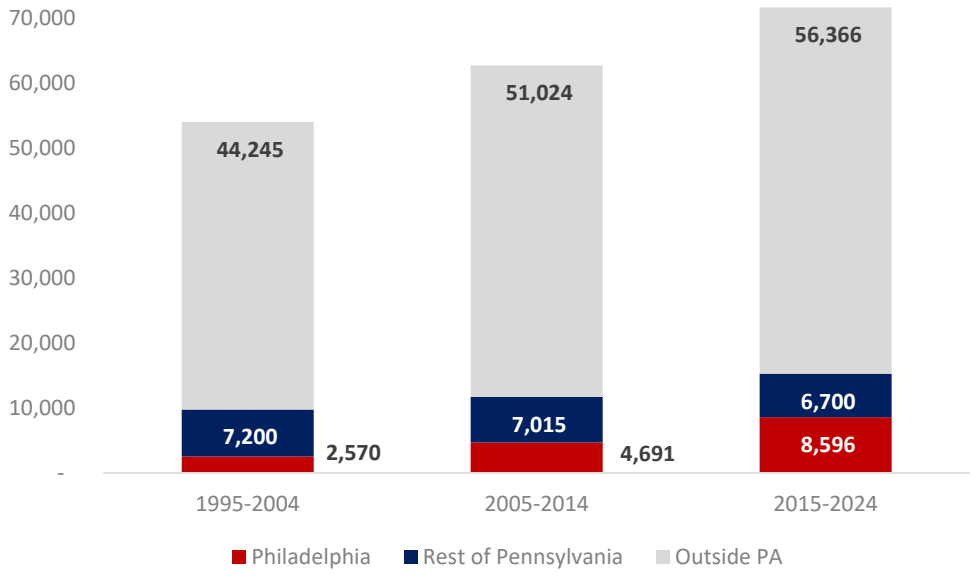
Time Horizon after Graduation	Net Present Value of Earnings
10-Year	$277,000
15-Year	$684,000
20-Year	$1,053,000
30-Year	$1,689,000
40-Year	$2,211,000

Source: Georgetown University (2022)

[34] Georgetown University conducted a study on the return on investment for over 4,500 colleges and universities, using data from the expanded College Scorecard. The study calculates the net present value by assigning that earnings 10 years after first attending are a reasonable proxy for future earnings, using the average annual net price provided by College Scorecard. https://cew.georgetown.edu/cew-reports/roi2022/

Graph 5.1 demonstrates the count of Penn alumni, by graduation year and location. While a majority of alumni live throughout the world, one can see the increasing number of alumni deciding to reside in Philadelphia.

Graph 5.1: Alumni by Graduation Year Located in Philadelphia and the Rest of Pennsylvania in 10 Year Tranches, 1995-2024



Source: University of Pennsylvania (2024)

5.4. Economic Impact from Alumni Wage Premium

This additional earning potential has both direct and consequential impacts to Penn alumni. The wage premium produced by Penn alumni produces a spillover impact to other local economies, both because alumni are able to contribute to these economies at a higher level and partly because alumni have more disposable income to spend within these economies.

The effects of this additional household spending are estimated to generate on an annual basis (Table 5.4):

- $600 million in total output within Philadelphia, supporting 2,800 induced jobs and $205 million in employee compensation;
- $2.2 billion in total output within Pennsylvania, supporting 10,800 induced jobs and $723 million in employee compensation; and
- $2.3 billion in total output within the Penn Region, supporting 11,300 induced jobs and $741 million in employee compensation.

Table 5.4: Annual Economic Impact Attributable to Penn Wage Premium Effects within Philadelphia, the Penn Region, and Pennsylvania

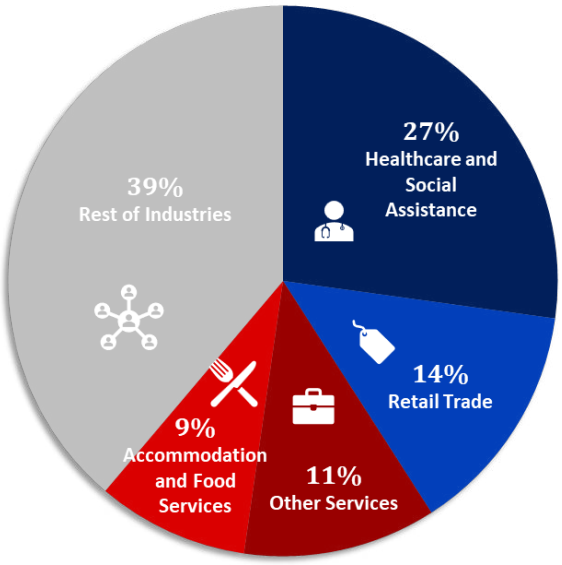
Impact Type	Philadelphia	Penn Region	Pennsylvania
Direct Wage Premium ($M)	$581	$1,964	$2,031
Total Impact ($M)	**$600**	**$2,248**	**$2,315**
Employment Supported (FTE)	**2,800**	**10,800**	**11,300**
Employee Compensation ($M)	**$205**	**$723**	**$741**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

5.5. Industry Distribution of Economic Impact from Alumni Wage Premium

The economic benefits of Penn's alumni wage premium flow through diverse sectors of the economy, with healthcare and social assistance capturing the largest share at 27 percent of the total impact. Retail trade accounts for 14 percent of the industry distribution, demonstrating how alumni spending power supports local businesses and commercial activity. Other services comprise 11 percent of the impact, while accommodation and food services represent 9 percent, showing how alumni earnings support hospitality and service industries throughout the region. This diverse distribution highlights how the enhanced earning power of Penn graduates creates ripple effects across the entire economic spectrum, from high-skilled professional services to everyday consumer spending that sustains local businesses and communities.

Graph 5.2: Industry Distribution of Employment Generated from Alumni Wage Premium



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

5.6. Alumni Wage Premium Generates Tax Revenue

In addition to economic impacts, Philadelphia and Pennsylvania benefit from additional tax revenue generated directly from the wage premium associated with Penn graduates. The higher wage premium paid to Penn alumni directly impacts personal income tax revenue and indirectly generates revenue in terms of income, sales, and business taxes collected from graduate spending. In the city of Philadelphia, $29.3 million is generated by the additional wages enjoyed by Penn alumni. In Pennsylvania, $84.8 million in state income taxes are generated directly and indirectly by Penn alumni (Table 5.5).

Table 5.5: Fiscal Impacts of the Wage Premium Associated with University of Pennsylvania in the City of Philadelphia and the Commonwealth of Pennsylvania

Tax Type	Philadelphia	Pennsylvania
Income Tax	$5.9	$14.0
Income Tax by Alumni	$20.1	$45.5
Sales Tax	$0.9	$18.5
Business Tax	$2.4	$6.8
Total ($M)	**$29.3**	**$84.8**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022), City of Philadelphia CAFR (2022), Commonwealth of Pennsylvania CAFR (2022)

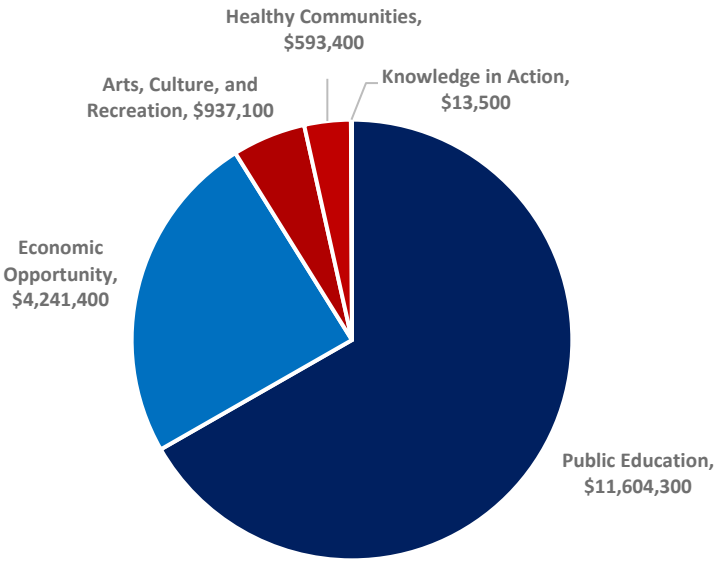
6. Spotlight: *Penn & Philly*

Penn & Philly is a dynamic digital platform showcasing the University of Pennsylvania's deep and multifaceted relationship with the city of Philadelphia. Through engaging multimedia storytelling, the platform highlights Penn's partnerships, innovations, and community impact initiatives. Organized by areas of focus, *Penn & Philly* invites readers to explore the university's contributions in ways that resonate with their interests. These areas spotlight the programs, people, and investments that Penn co-develops in collaboration with Philadelphia and its residents, emphasizing a shared commitment to progress and innovation.

In FY2024, Penn contributed almost $17.4 million[35] in contributions to organizations located in Philadelphia. Those areas of focus and subsequent aggregate contributions are (Graph 6.1):

- Public Education: $11.6 million
- Arts, Culture, & Recreation: $937 thousand
- Economic Opportunity: $4.2 million
- Healthy Communities: $593 thousand
- Knowledge in Action: $14 thousand

Graph 6.1: Aggregate Contributions to Philadelphia Organizations, FY2024, by Area of Focus[36]



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

[35] Detailed contributions are found in Appendix C.
[36] Tomorrow's Industries is the sixth area of focus for the Penn & Philly platform. While Penn conducts significant research activity toward this purpose, the institution did not donate monetary funds toward an organization solely focused on research—Penn carries out the research internally.

The University of Pennsylvania deeply integrates with Philadelphia to promote community growth and sustainability. Through partnerships with schools, nonprofits, and local businesses, Penn drives economic opportunity, public health, arts, education, and environmental initiatives, fostering civic engagement. *Penn & Philly* highlights this collaboration, illustrating how shared successes contribute to a more vibrant, inclusive Philadelphia.

7. Spotlight: Penn Vet New Bolton Center

7.1. Section Overview

Penn Vet, the University of Pennsylvania School of Veterinary Medicine, demonstrates significant economic and public health value to Pennsylvania. The institution plays several crucial roles, including serving as the research arm for Pennsylvania's agricultural industry, protecting public health, and supporting major agricultural sectors like poultry, dairy, and swine production. Penn Vet's research directly impacts the productivity and sustainability of Pennsylvania's $132.5 billion agricultural industry.[37] Although Penn is a private institution, Penn Vet receives state funding as Pennsylvania's only veterinary medical school. For that reason, Penn Vet was allocated $33 million in Commonwealth support in FY 2024-2025.

Through its New Bolton Center and Ryan Veterinary Hospital, Penn Vet serves as a critical line of defense against zoonotic diseases that can spread from animals to humans. The School's researchers and clinicians actively monitor for potential disease outbreaks and develop innovative treatments and preventive measures. This surveillance is particularly crucial given that approximately 75% of emerging infectious diseases in humans originate from animals, according to the Centers for Disease Control and Prevention.[38] Penn Vet's expertise proved especially valuable during recent public health challenges, including avian influenza outbreaks that threatened Pennsylvania's poultry industry and comprehensive COVID-19 research initiatives.

The School's impact extends beyond immediate agricultural and public health concerns. Penn Vet's research encompasses groundbreaking work in fields like cancer treatment, regenerative medicine, and neuroscience, with findings that advance both veterinary and human medicine. As the veterinary school ranks near the top of all veterinary schools in NIH funding per faculty member,[39] Penn Vet's research capabilities are enhanced by its unique integration with Penn's broader biomedical community, fostering innovations that benefit both animal and human health throughout Pennsylvania and beyond.

From an economic impact angle, this section homes in on the impact resulting from the New Bolton Center operations in Chester County—and does not include that of the Ryan Veterinary Hospital in Philadelphia. **The New Bolton Center yields a total annualized economic benefit of $104 million to Pennsylvania, supporting 635 jobs with $51 million in compensation.**

7.2. About Penn Vet

The University of Pennsylvania School of Veterinary Medicine (Penn Vet) is one of the world's premier veterinary schools, established in 1884. Penn Vet has two campuses, one urban and one rural. The

[37] "About The Pennsylvania Department of Agriculture." Commonwealth of Pennsylvania, https://www.pa.gov/en/agencies/pda/about-pda.html. Accessed 17 Oct. 2024.
[38] Morens, David M., et al. "Emerging and Reemerging Infectious Diseases: A Perpetual Challenge." Emerging Infectious Diseases, vol. 13, no. 1, 2007, https://wwwnc.cdc.gov/eid/article/13/1/06-0480_article. Accessed 17 Oct. 2024.
[39] University of Pennsylvania School of Veterinary Medicine. "General Overview: VMD-PhD Program." Penn Vet, https://www.vet.upenn.edu/education/dual-degree-programs/vmd-phd-program/general-overview. Accessed 17 Oct. 2024.

Philadelphia campus houses the Ryan Veterinary Hospital for companion animals, offering comprehensive specialty care services and advanced diagnostic capabilities, treating approximately 35,000 patients per year.

Penn Vet's second location is the New Bolton Center, situated on nearly 700 acres in Kennett Square, Pennsylvania. This campus serves as a large animal hospital and research facility, particularly known for its expertise in equine medicine and surgery; and includes the George D. Widener Hospital for Large Animals, one of the busiest large animal teaching hospitals in the country—treating approximately 7,000 patients annually. This facility is renowned for its sports medicine, imaging, and emergency care services for horses and other large animals like cattle, goats, and sheep.

Penn Vet's biomedical research program stands out for its comprehensive approach, encompassing basic, translational, and clinical research across diverse areas including cancer, immunology, infectious diseases, neuroscience, and regenerative medicine. The school leads in NIH funding per faculty member among veterinary schools and maintains a dual focus on improving both animal and human health through its research.

7.3. Direct Operating Footprint

For FY 2024-2025, Penn was allocated $33.4 million from the Commonwealth—$31.6 million allocated to Penn Vet; and another $1.8 million allocated to the Division of Infectious Diseases.

For the purposes of the economic impact analysis, the New Bolton Center's employee headcount was provided, including faculty and staff. Based upon an analysis of employment at the New Bolton Center, it was determined that the Center employs 479 employees of Penn's overall university employment count of 34,857 employees. Penn Vet overall operations expenditures were based on employment count, and subsequently a model was run, accounting for the Chester County location. The estimated annual operating expenditures for the Penn Vet New Bolton Center are approximately $58.1 million, with $36.9 million allocated annually toward employee compensation.

7.4. Economic Impact from the Penn Vet New Bolton Center

Based upon an estimated annual operating amount of $58 million, Penn Vet New Bolton yields an annual economic impact of (Table 7.1):

- $103 million in total annual output within the Penn Region, supporting 630 direct, indirect, and induced jobs and $51 million in employee compensation; and
- $104 million in total annual output within the Commonwealth of Pennsylvania, supporting 635 direct, indirect, and induced jobs and $51 million in employee compensation.

Penn Vet's presence in Chester County concentrates its economic impact in that region, unlike Penn's other operations which are primarily centered within Philadelphia.

Table 7.1: Economic Impact from FY 2024 Penn Vet New Bolton Center Operations

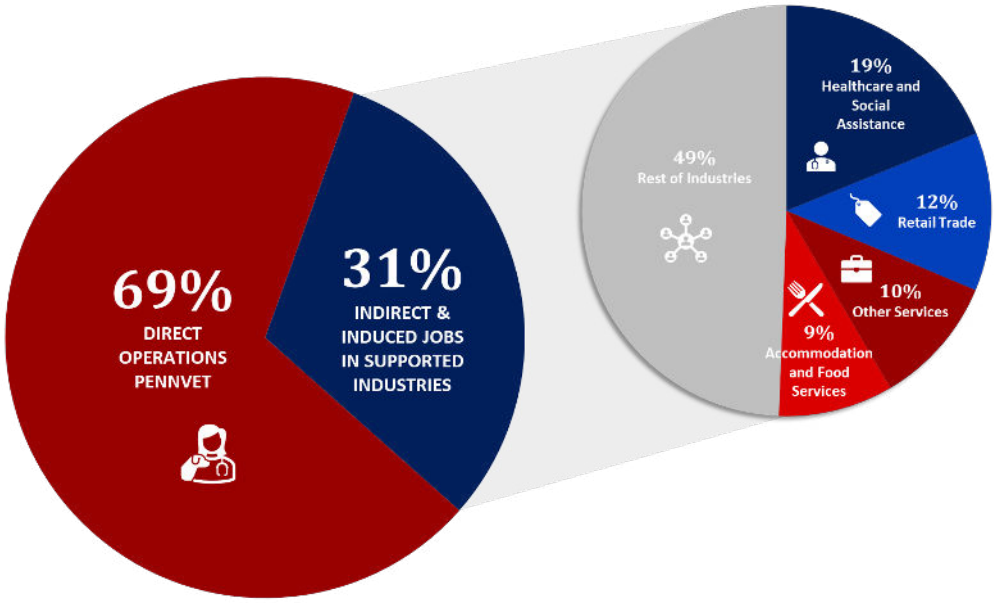
Impact Type	Penn Region	Pennsylvania
Direct Output ($M)	$58	$58
Indirect and Induced Output ($M)	$45	$46
Total Impact ($M)	**$103**	**$104**
Employment Supported (FTE)	**630**	**635**
Employee Compensation ($M)	**$51**	**$51**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

7.5. Industry Distribution of Economic Impact from the Penn Vet New Bolton Center

The Penn Vet New Bolton Center's operations generate significant employment across various sectors in FY 2024, with 69 percent of jobs directly tied to Penn Vet New Bolton operations. The remaining 31 percent represents indirect and induced employment distributed across several supported industries. Of these indirect jobs, Healthcare and Social Assistance accounts for the largest share at 19 percent, followed by Retail Trade at 12 percent. The Center's provides broad economic impact beyond its immediate veterinary operations (Graph 7.1).

Graph 7.1: Industry Distribution of Employment Generated from FY 2024 Penn Vet New Bolton Center Operations[40]



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

7.6. Penn Vet New Bolton Center Generates Tax Revenue

Penn Vet's New Bolton Center generates substantial tax revenue for both Philadelphia and Pennsylvania, with notably larger contributions at the state level. Pennsylvania receives more than $2.6 million in total tax revenue, with income tax being the largest contributor at $1.4 million, followed by sales tax of $947,000, and business tax of $347,000. Philadelphia's tax revenue from the Center is more modest, totaling $49,000, which breaks down into $35,000 in income tax, $4,000 in sales tax, and $10,000 in business tax. This disparity in tax revenue between city and state reflects the Center's location in Chester County, and broader economic impact across Pennsylvania. Although the tax revenue impact in Philadelphia is relatively modest due to the Center's physical location in Chester County, economic spillover from Chester County generates additional tax revenue within Philadelphia. This occurs as economic activities and employment opportunities in Chester County lead to indirect financial benefits within Philadelphia, including spending by employees, businesses, and related industries that contribute to the City's overall economic health.

[40] The smaller graph to the right represents the industry breakdown of the indirect and induced jobs, which comprise 31% of the jobs created by the Penn Vet New Bolten Center operations expenditures.

Table 7.2: Local and State Tax Revenue Impact from FY 2024 Penn Vet New Bolton Center Operations

Tax Type	Philadelphia	Pennsylvania
Income	$35,000	$1,353,000
Sales	$4,000	$947,000
Business	$10,000	$347,000
Total	**$49,000**	**$2,647,000**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022), City of Philadelphia CAFR (2022), Commonwealth of Pennsylvania CAFR (2022)

7.7. The Broader Importance of Penn Vet

Penn Vet plays a vital role in Pennsylvania's agricultural economy and public health infrastructure through its cutting-edge research, clinical services, and disease surveillance. As the Commonwealth's only veterinary school, Penn Vet's research directly impacts the productivity and sustainability of Pennsylvania's $132.5 billion agricultural industry.[41] The School's work in livestock health, reproductive medicine, and infectious disease prevention helps farmers optimize their operations and protect their herds, while research into antimicrobial resistance and emerging pathogens safeguards both animal and human health.

Penn Vet's animal health facilities play a vital role in preventing disease outbreaks, building on Penn's legacy of medical innovation—including the groundbreaking mRNA research that led to the development of the first COVID-19 vaccines. Through its New Bolton Center and Ryan Veterinary Hospital, Penn Vet continues this tradition by monitoring and controlling zoonotic diseases that can spread between animals and humans, serving as an essential part of public health protection. The School's researchers and clinicians actively monitor for potential disease outbreaks and develop innovative treatments and preventive measures.

The School's impact extends beyond immediate agricultural and public health concerns. Penn Vet's research encompasses groundbreaking work in fields like cancer treatment, regenerative medicine, and neuroscience, with findings that advance both veterinary and human medicine. As the veterinary school ranks near the top of all veterinary schools in NIH funding per faculty member,[42] Penn Vet's research capabilities are enhanced by its unique integration with Penn's broader biomedical community, fostering innovations that benefit both animal and human health throughout Pennsylvania and beyond.

[41] "About The Pennsylvania Department of Agriculture." Commonwealth of Pennsylvania, https://www.pa.gov/en/agencies/pda/about-pda.html. Accessed 17 Oct. 2024.
[42] University of Pennsylvania School of Veterinary Medicine. "General Overview: VMD-PhD Program." Penn Vet, https://www.vet.upenn.edu/education/dual-degree-programs/vmd-phd-program/general-overview. Accessed 17 Oct. 2024.

8. Aggregate Economic Impact

8.1. Penn's Aggregate Annual Economic Impact

Penn's aggregate economic impact derives from direct, indirect, and induced effects in four categories of economic activity directly attributable to the institution. In total, these impacts represent the citywide, regional, and statewide economic value of the University.

The economic impact generated from Penn's operations, capital investments, ancillary spending, and alumni wage premium is estimated to generate on an annual basis (Table 8.1):

- $25.2 billion in total output within Philadelphia, supporting 106,600 direct, indirect, and induced jobs with $11.2 billion in employee compensation;
- $30.4 billion in total output within Pennsylvania, supporting 155,000 direct, indirect, and induced jobs with $15 billion in employee compensation; and
- $37.7 billion in total output within the Penn Region, supporting 161,600 direct, indirect, and induced jobs with $15.8 billion in employee compensation.

Table 8.1: Annual Economic Impact of Penn, by Geographic Region

	Philadelphia	Penn Region	Pennsylvania
Total Output ($M)	$25,154	$37,697	$30,429
Employment	106,615	161,585	155,024
Employee Compensation ($M)	$11,185	$15,785	$15,043

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

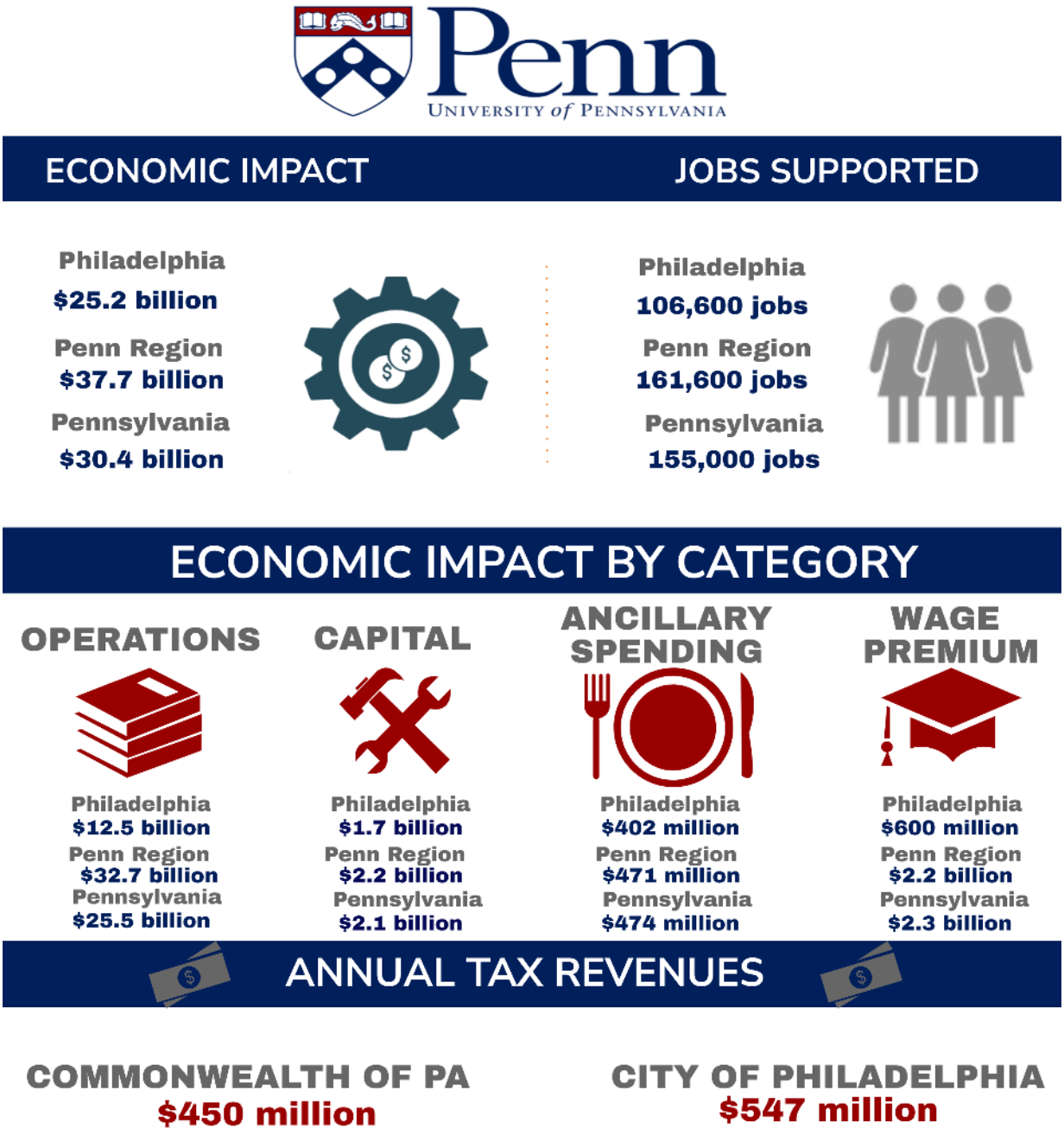
Penn has a substantial impact on tax revenue at both the city and state levels. Its presence and operations contribute $547 million in tax revenue to the City of Philadelphia and an additional $450 million to the Commonwealth of Pennsylvania (Table 8.2).

Table 8.2: Aggregate Consolidated Tax Revenue Impact, By Category ($ Millions)

Category	Philadelphia	Pennsylvania	Combined
Operations	$492.8	$336.3	$829.1
Capital	$19.0	$19.7	$38.7
Ancillary	$6.0	$9.3	$15.3
Wage Premium	$29.3	$84.8	$114.1
Total	**$547.1**	**$450.1**	**$997.2**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

Graphic 8.1: Aggregate Economic Impact and Fiscal Revenue, by Location and Category of Impact



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

8.2. Growth in Impact Over Time

Since 2000, Penn has grown as Philadelphia's most influential Anchor Institution. It is recognized as a community-rooted entity that invests heavily in its surroundings through employment, infrastructure, and social initiatives. Penn exemplifies this role in Philadelphia, fostering economic development, supporting education, and enhancing public health. Penn's impact spans local hiring, partnerships, and innovative projects that create shared prosperity. Guided by its founding vision of community uplift, Penn's engagement underscores its identity as a vital urban university, committed to inclusive growth and transformative impact.

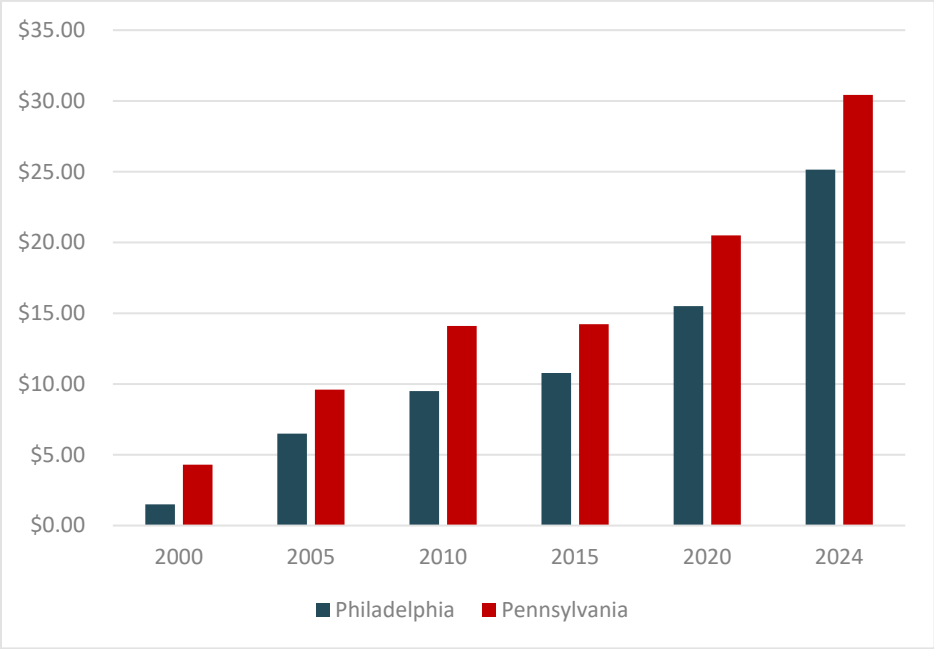
The university's commitment has led to an annual average research and development expenditure of $1.37 billion, an average of over $1.1 billion in capital investments, and an increase of operational spending year-over-year, regardless of overall economic climate. This growth extends far beyond campus boundaries: Penn Medicine has evolved into a world-class health system, innovative research has spawned numerous startups and technological breakthroughs, and strategic partnerships have catalyzed development throughout University City and West Philadelphia.

The multiplier effects of Penn's expansion ripple throughout the city, region, and state economies. The University's growing workforce generates substantial tax revenue and consumer spending. Meanwhile, Penn's enhanced national and global prestige continues to attract top talent, companies, and investment to the region. The wage premium enjoyed by Penn graduates—increasingly deciding to stay in Philadelphia post-graduation—creates lasting economic value as alumni build careers, launch businesses, and reinvest in their communities. This virtuous cycle of growth and reinvestment has established Penn as an Engaged University and an indispensable engine of economic opportunity and innovation for Philadelphia and the Commonwealth.

Penn's impact on Philadelphia's economy is profound. Direct employment by Penn, combined with the spillover effects of its presence, accounts for the equivalent of 1 in every 7 jobs in Philadelphia. Similarly, the economic activity generated directly and indirectly by Penn contributes $1 out of every $8 in local tax revenue collected by the City of Philadelphia.[43]

[43] Due to BLS data, as of October 2024, Philadelphia's labor force was 714,900 employed: https://www.bls.gov/eag/eag.pa_philadelphia_co.htm. The Mayor's operating budget in brief for fiscal year 2025 provides that total fiscal revenue in Philadelphia in 2024 is $4.26 billion: https://www.phila.gov/media/20240829150436/budget-in-brief-FY2025-approved.pdf

Graph 8.1: Growth in Total Economic Impact, 2000-2024 ($ Billions)



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024), IMPLAN (2022)

Appendix A

In an inter-connected economy, every direct dollar spent generates two spillover impacts:

- First, some amount of the proportion of that expenditure that goes to the purchase of goods and services gets circulated back into an economy when those goods and services are purchased from local vendors. This represents what is known as the **indirect effect** and reflects the fact that local purchases of goods and services support local vendors, who in turn require additional purchasing with their own set of vendors.
- Second, some amount of the proportion of that expenditure that goes to labor income gets circulated back into an economy when those employees spend some of their earnings on various goods and services. This represents what is known as the **induced effect** and reflects the fact that some of those goods and services will be purchased from local vendors, further stimulating the economy.

To model the impacts resulting from the direct expenditures of Penn, ESI developed a customized economic impact model using IMPLAN's input/output modeling system. Utilizing an industry standard approach, IMPLAN's input/output modeling system allows users to assess the economic and job creation impacts of industry-based events and public policy changes within a county or its surrounding area. IMPLAN has developed a social accounting matrix (SAM) that accounts for the flow of commodities through economics. From this matrix, IMPLAN also determines the regional purchase coefficient (RPC), or the proportion of local supply that satisfies local demand. These values not only establish the types of goods and services supported by an industry or institution, but also the high level at which they are acquired locally. This assessment determines the multiplier basis for the local and regional models created in the IMPLAN modeling system. IMPLAN takes these multipliers and divides them into 546 industry categories in accordance with the North American Industrial Classification System (NAICS) codes.

Explanation of Multipliers[44]

The use and application of multipliers are intuitive. Multipliers, in their most basic form, are the result of an algebraic analysis expressing how two inputs are interconnected in the production of an output. The result of the equation generates a multiplier that is broken down into direct, indirect, and induced effects. In a generalized example: if the multiplier for good *X* to good *Y* is 3, then the direct effect of good *X* on *Y* is 1, with indirect and induced effects of 2. Essentially, every unit of good *X* supports 2 units of good *Y*.

When implemented on a large complex scale, such as that of the US economy or any subsection of it, multiplier effects across industries can be complicated. However, the same general concept comes into play. Each industry has largely different and varied inputs into other industries. The quantity of the

[44] Lahr, Michael. "Input-Output Analysis: Technical Description and Application." Rutgers University Edward J. Bloustein School of Planning and Public Policy.

output is largely decided by the scale and efficiency of the industries involved. As a result, the sum of those inputs equates to an output product plus a value added/component. By arranging these inputs and outputs by industry in a matrix and performing some algebra to find the Leontief inverse matrix, each industry's effect on final demand can be estimated. Additionally, the direct, indirect, and induced effects can also be determined. Direct effects include direct purchases for production, indirect effects include expenses during production, and induced effects concern the expenditures of employees directly involved with production. Using building construction as an example, the direct effects would include materials, brick, steel, and mortar; the indirect effects would involve the steel fabrication and concrete mixing; and the induced effects would consider purchases by construction workers using their wages. While impacts vary in size, each industry has rippling effects throughout the economy. By using an input-output model, these effects can be more accurately quantified and explained.

IMPLAN is one of several popular choices for regional input-output modeling. Each system has its own nuances in establishing proper location coefficients. IMPLAN uses a location quotient to determine its regional purchase coefficient (RPC). This represents the proportion of demand for a good that is filled locally; this assessment helps determine the multiplier for the localized region. Additionally, IMPLAN also accounts for inter-institutional transfers (e.g., firms to households, households to the government, etc.) through its social account matrix (SAM) multipliers. IMPLAN takes the multipliers and divides them into industry categories in accordance with the North American Industrial Classification System (NAICS) codes, allowing a comprehensive breakdown of a region's multipliers by industry to be shown.

Despite the usefulness of input/output modeling, there are some shortcomings to the system. Notably, input-output models ignore economies of scale. Input-output models assume that costs and inputs remain proportionate through different levels of production. Further, multipliers are not generally updated on a timely basis; most multipliers are prone to be outdated with the current economy. If the multipliers are sourced from a year of a recession economy, the multipliers may not accurately represent the flows from an economic boom period. Additionally, multipliers may not capture sudden legal or technological changes which may improve or decrease efficiency in the production process.

Glossary of Terms for Input/Output Models

Multiplier Effect– the notion that initial outlays have a ripple effect on a local economy, to the extent that direct output leads to indirect and induced output.

Economic Impacts– total expenditures, employment, and labor income generated.

Tax Revenue Impacts– local and/or state tax revenues generated.

Direct Output– initial outlays usually associated with the project or activity being modeled; examples: one-time upfront construction and related expenditures associated with a new or renovated facility, annual expenditures associated with ongoing facility maintenance and/or operating activity.

Direct Employment– the number of annual jobs associated with direct output (including full- and part-time employment)

Direct Labor Income– the salaries and wages earned by employees, contractors, and proprietors as part of the direct output.

Indirect Output– indirect and induced outlays resulting from the direct output; examples: vendors increasing production to meet new demand associated with the direct output, workers spending direct labor income on various purchases within the local economy.

Indirect/Induced Employment– the number of annual jobs associated with indirect/induced output (including full- and part-time employment)

Indirect Labor Income– the salaries and wages earned by employees, contractors, and proprietors as part of the indirect output.

Total Output– the sum of direct output and indirect output.

Total Employment– the sum of direct employment and indirect employment.

Total Labor income– the sum of direct labor income and indirect labor income.

Source: Econsult Solutions, Inc. (2023)

Appendix B

Local and Diverse Spending

As one of Pennsylvania's largest private employers and Philadelphia's leading economic engine, the University of Pennsylvania recognizes its profound responsibility to strengthen the local economy through intentional spending. Penn has long taken decisive action to direct more of their purchasing power toward diverse-owned and local businesses, creating jobs and fostering an inclusive economy in their West Philadelphia community and across the Greater Philadelphia region.

Penn's total procurement spending has shown significant growth, rising from $2.17 billion in FY22 to $2.97 billion in FY24—a 37 percent increase over only two years. While this dramatic increase is likely due in part to rebound spending after the pandemic, Penn has demonstrated an upward trend in operational spending over the years. The University's commitment to local economic impact is evident in the dramatic growth of Philadelphia-based spending, which surged from $349 million to $572 million over the past two years, representing a 64 percent increase (Table C.1). While Philadelphia spending grew from 16 percent to 19 percent of total expenditures, the broader Pennsylvania region (excluding Philadelphia) also saw substantial gains, increasing from $199 million (9.2% of total spend) to $367 million (12.3%).

Most notably, when combining all Pennsylvania-based spending (Philadelphia, Penn Region within PA, and Rest of Pennsylvania), the University directed $1.13 billion, or 38 percent of its total procurement, to in-state vendors in FY 2024, up from $738 million (34%) in FY 2022, demonstrating a strengthening commitment to the Commonwealth's economy (Figure C.1).

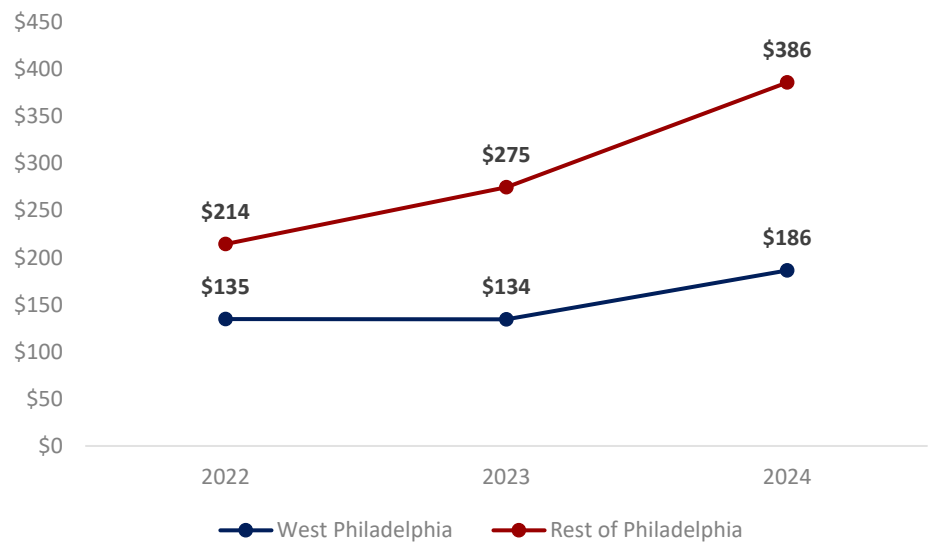
The data tells a compelling story about Penn's growing investment in Philadelphia and Pennsylvania more broadly—as well as an investment in doing business specifically with neighboring West Philadelphia enterprises. Penn increased spending with West Philadelphia businesses by 38 percent over just two years (Graph C.1).

Table C.1: Penn Spend, FY 2022 - FY 2024 ($ Millions)

	FY 2022	FY 2023	FY 2024
Philadelphia	$349	$409	$572
Penn Region within PA (not Philadelphia)	$199	$266	$367
Penn Region Outside of PA	$47	$51	$59
Rest of Pennsylvania	$190	$200	$190
Other	$1,389	$1,626	$1,784
Total	**$2,173**	**$2,552**	**$2,972**

Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Graph C.1: Penn Spend in Philadelphia, FY 2022 - FY 2024 ($ Millions)



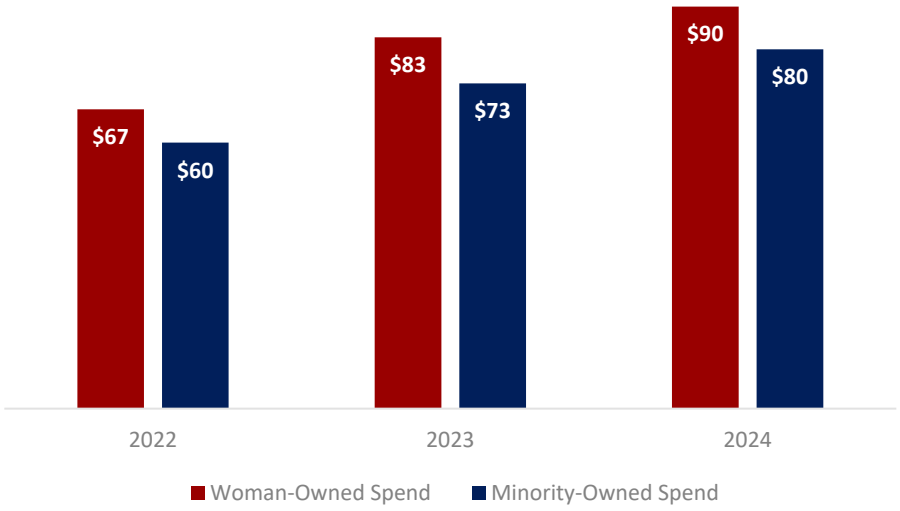
Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

The University of Pennsylvania's commitment to economic inclusion extends beyond geographic boundaries to ensure meaningful opportunities for diverse business enterprises. Through strategic partnerships and intentional spending, Penn has made sustained investments in both woman-owned and minority-owned businesses, viewing supplier diversity as essential to building a more equitable and dynamic business ecosystem.

The data reveals consistent year-over-year growth in diverse spending across both categories. Woman-owned business spending has shown particularly strong momentum, climbing from $67 million in FY 2022 to $83 million in FY 2023, and reaching $90 million in FY 2024—representing a 34 percent increase over two years. Similarly, minority-owned business spending has demonstrated steady growth, rising from $60 million in 2022 to $73 million in 2023, and achieving $80 million in 2024—a total increase of 33 percent. Together, these upward trajectories reflect Penn's deep investment in diverse suppliers[45], with combined spending across these categories growing from $127 million to $170 million during this two-year period (Figure C.3).

[45] Diverse suppliers include those businesses owned and operated by historically underrepresented or underserved groups, including minority-owned businesses and women-owned businesses.

Graph C.2: Penn Diversity Spend, FY 2022 vs. FY 2024 ($ Millions)



Source: University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Appendix C

Contributions by Penn to Philadelphia Organizations[46]

Table C.1: Donations by Penn to Philadelphia Organizations, in the Public Education Category

Public Education	Amount
School District of Philadelphia	$11,370,050
Philadelphia Education Fund	$216,159
West Philadelphia Alliance for Children	$18,110
Total	**$11,604,319**

Table C.2: Donations by Penn to Philadelphia Organizations, in the Arts, Culture, & Recreation Category

Arts, Culture, & Recreation	Amount
Philadelphia Soccer 2026	$750,000
Hillel Of Greater Phila	$133,000
Technically Media Inc	$12,000
The Woodlands Trust for Historic Preservation	$10,000
Fortress Arts Academy	$9,200
Mexican Cultural Center	$5,500
Greater Phila Chamber of Commerce	$5,000
Mother Bethel Ame Church	$3,000
Greater Phila Cultural Alliance	$2,715
Center For Architecture	$2,500
Settlement Music School	$2,550
Wyck Association	$1,160
Philadelphia Public Access Corp	$250
Career Wardrobe Dba the Wardrobe	$250
Total	**$937,125**

[46] Sorted by Penn & Philly Areas of Focus

Table C.3: Donations by Penn to Philadelphia Organizations, in the Economic Opportunity Category

Economic Opportunity	Amount
University City District	$2,555,742
Pennsylvania Horticultural Society	$333,000
United Way	$510,813
Greater Phila Chamber of Commerce	$264,750
Rebuilding Together Phila	$202,793
Schuylkill River Devel Council	$125,000
Fund For Philadelphia	$59,525
Jastech Development Services, Inc	$35,546
Economy League Of Greater Philadelphia	$56,500
Amplify Philly	$15,000
The Enterprise Center Community Development Corporation	$10,000
Committee Of Seventy	$10,000
Boost CDC	$6,250
Central Philadelphia Development Corp	$9,000
Southwest Community Development Corporation	$8,500
Community Of Compassion Community Development Corp	$5,000
Achievability	$5,000
Sister Clara Muhammad Community Development Corporation	$5,000
Philadelphia Business Journal	$4,750
Greater Philadelphia Cultural Alliance	$4,655
School District of Philadelphia	$3,750
A New Dawn Incorporated	$3,333
Church Of Christian Compassion	$2,500
Welcoming Center for New Penna	$2,500
The International Institute for Advanced Instruction	$2,500
Total	**$4,241,407**

Table C.4: Donations by Penn to Philadelphia Organizations, in the Healthy Communities Category

Healthy Communities	Amount
University City District	$423,942
UC Green	$112,500
American Association for Cancer Research	$15,000
Carve 4 Cancer Inc. (Dba Live Like Brent)	$5,000
Habitat For Humanity Philadelphia	$5,000
Sharing Excess	$9,438
Epilepsy Foundation Eastern Pennsylvania	$6,500
Philadelphia Ronald McDonald House	$3,000
Wishes & Dreams for Cf	$2,500
American Cancer Society	$2,500
Mantua Worldwide Community, Inc.	$2,000
Soul Food CDC	$2,000
HMS School For Children with Cerebral Palsy	$1,500
Aids Fund	$1,000
Oshun Family Center	$1,000
Eastern Pa Branch ASM	$500
Total	**$593,380**

Table C.5: Donations by Penn to Philadelphia Organizations, in the Knowledge in Action Category

Council on Library and Info Resources	$11,000
Center for Black Educator Development	$2,500
Total	**$13,500**

Appendix D

Wage Premium Methodology

The alumni wage premium represents the average difference in wages between college graduates and those with less education. To calculate this difference, ESI developed a methodology.

First, ESI estimates the share of employed living alumni. In this case, it is estimated that 71.2 percent of all living alumni are employed.[47] Then, ESI applies that share to the known amount of alumni living in Philadelphia, the Penn Region (non-PA counties), and Pennsylvania (non-Penn Region).

Table D.1: Share of Employed Living Alumni Living in Philadelphia and Pennsylvania

Category	Philadelphia	Penn Region (PA counties)	Penn Region (non-PA counties)	Pennsylvania (non-Penn Region)
Bachelor's Degree Alumni	8,000	13,500	2,300	4,000
Advanced Degree Alumni	13,800	20,400	2,800	5,900
Workforce Participation Rate	71.2%	71.2%	71.2%	71.2%
Bachelor's Degree Alumni in Workforce	5,700	9,600	1,700	2,800
Advanced Degree Alumni in Workforce	9,800	14,500	2,000	4,200
Total Alumni in Workforce	**15,500**	**24,100**	**3,700**	**7,000**

Source: U.S. Bureau of Labor Statistics (2024), University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Secondly, ESI estimates the difference between median earnings for Penn's graduates by different degree attainment levels and the median earnings for all residents at one degree attainment level below (Table D.2).

[47] U.S. Bureau of Labor Statistics. "The Share of Workers Who Worked Full Time, Year Round, Rose to 71.0 Percent in 2022." The Economics Daily, 26 Jan. 2024, https://www.bls.gov/opub/ted/2024/the-share-of-workers-who-worked-full-time-year-round-rose-to-71-0-percent-in-2022.htm.

Table D.2: Estimated Wage Premium by Degree Type

Category	Degree Level	Philadelphia	Penn Region (PA counties)	Penn Region (non-PA counties)	Pennsylvania (non-Penn Region)
Penn Bachelor's Degree					
Without Penn	Associates	$40,000	$49,800	$50,400	$43,700
With Penn	Bachelor's	$86,700	$109,300	$107,000	$84,700
Wage Premium - Bachelor's		**$46,700**	**$59,600**	**$56,700**	**$41,000**
Penn Advanced Degree					
Without Penn	Bachelor's	$60,400	$76,200	$74,600	$59,000
With Penn	Advanced	$92,700	$119,700	$117,800	$90,600
Wage Premium - Advanced		**$32,300**	**$43,500**	**$43,100**	**$31,500**

Source: U.S. Bureau of Labor Statistics (2024), U.S. Department of Education College Scorecard (2024), University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Lastly, wage premium by degree type is multiplied by the estimated employed alumni living in Philadelphia, the Penn Region (non-PA counties), and Pennsylvania (non-Penn Region), to obtain the total wage premium.

Table D.3: Total Estimated Wage Premium by Degree Type

Degree Level	Philadelphia	Penn Region (PA counties)	Penn Region (non-PA counties)	Pennsylvania (non-Penn Region)
Bachelor's Degree				
Volume of Working Alumni	5,700	9,600	1,700	2,800
Wage Premium	$46,700	$59,600	$56,700	$41,000
Total Working Alumni ($M)	$264	$572	$94	$116
Advanced Degree				
Volume of Working Alumni	9,800	14,500	2,000	4,200
Wage Premium	$32,300	$43,500	$43,100	$31,500
Total Working Alumni ($M)	$317	$631	$86	$132
Grand Total - Regionally Exclusive ($M)	$581	$1,203	$180	$247
Grand Total - Regionally Inclusive ($M)				
Philadelphia	**$581**			
Penn Region	**$1,964**			
Pennsylvania	**$2,031**			

Source: U.S. Bureau of Labor Statistics (2024), U.S. Department of Education College Scorecard (2024), University of Pennsylvania (2024), Econsult Solutions, Inc. (2024)

Appendix E

About Econsult Solutions, Inc.

This report was produced by Econsult Solutions, Inc. (ESI). ESI provides businesses and public policy makers with consulting and thought leadership services in urban economics, real estate, transportation, public infrastructure, economic development, public policy and finance, strategic planning, as well as expert witness services for litigation support.

ESI combines robust quantitative analysis with trusted expert insights to create sustainable solutions. The firm works collaboratively with its clients, and draws in expertise, when necessary, from our network of experts and partners across industries, regions, and management practices. Based in Philadelphia, the firm supports clients nationwide.

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