



teQ

SPECIAL EDITION  pwc

2022 STATE OF THE INDUSTRY

THE PITTSBURGH REGION | Data for Years Ending 2019 through 2021

2022 STATE OF THE INDUSTRY

THE PITTSBURGH REGION | Data for Years Ending 2019 through 2021

Data Compiled by Kevin Lane

DESPITE SOME MINOR DECLINES, POSITIVE GROWTH TRENDS CONTINUE FOR TECHNOLOGY INDUSTRY CLUSTERS IN SOUTHWESTERN PENNSYLVANIA.

This year's State of the Industry Report compares three years of data for each of six main technology industry clusters for three years ending 2021, the latest year for which complete data was available.

A region's total annual payroll is the most significant measure of its wealth, and in southwestern Pennsylvania technology industry clusters examined herein account for 36 percent of the region's total workforce payroll.

Most technology industry clusters experienced positive growth in total annual payroll, with the exception of manufacturing and energy. Information technology led the way, gaining 19 percent over a three-year period. This also propelled IT to post the highest percentage growth in average wage at 23 percent. The aggregate subclusters that make up life sciences had the second highest payroll growth at 11 percent. When considering health services as part of the life sciences cluster, it is important to note that its total annual payroll is the largest in this report at \$8.2 billion. It also has the highest number of employees at more than 103,000.



Southwestern Pennsylvania counties in the Pittsburgh region tracked for this report include Allegheny, Armstrong, Beaver, Bedford, Butler, Cambria, Fayette, Greene, Indiana, Lawrence, Somerset, Washington, and Westmoreland. The Pittsburgh Technology Council keeps records of a complete list of currently used NAICS codes for each subcluster in this report.

HIGHLIGHTS:

- ▶ The **11,258 technology establishments** tallied in the year 2021 represent more than **15 percent of all companies** in the 13-county region, an increase over the previous year.
- ▶ These firms employ **295,168 individuals** and account for more than **24 percent of the area's overall workforce**.
- ▶ The **\$27.2 billion annual payroll** of technology and related companies, including the health services subcluster, represents more than **36 percent of the region's total wages**.



You're In The Driver's Seat! Choose the Right Road for Human Resource Management

The PTC PEO is administered by Abel HR, a Certified Professional Employer Organization. We enter into a contractual relationship with your company, allowing us to share and manage many human resource responsibilities and employer-related risks and liabilities.

Workers become employees of both companies. You maintain control of managing and operating your company day-to-day. The PTC PEO provides Human Resource services, employee benefits, payroll and payroll taxes, risk management and workers' compensation.

Benefits to Your Business

- Save Time & Money
- Improve Profitability & Productivity
- Reduce Turnover & Attract Quality Employees
- Claims Management (Workers' Comp & Unemployment Insurance)
- Competitive Employee Benefits Package
- Deliver Professional HR Services
- Consolidate Accounting & Payroll Functions

For more information, contact a PTC Benefits expert at
(855) 717-2864 or ptcbenefits@mybenefitadvisor.com



INFORMATION TECHNOLOGY

HIGHLIGHTS:

▶ **63 hardware establishments** within the 13-county region employ **3,175 people** with a total annual payroll of nearly **\$314 million**, which is an increase of more than \$14 million from the previous year. Couple the payroll increase with the increase in the number of those employed, and it results in an annual average wage increase of \$4,000 from the previous year.

▶ **Software accounted for 1,161 establishments** in 2021, and it employed **15,979 people** with a total annual payroll exceeding **\$2 billion**, which was \$97 million more than the previous year.

▶ **597 telecommunications firms** employ **10,583 people** in the 13-county region with a total annual payroll in excess of **\$1.4 billion**. Telecom represents the most significant positive change in the IT industry cluster's average wage with **growth of more than 31 percent** over a three-year period.

▶ The aggregated IT industry cluster had the **highest percentage growth in total annual payroll** of any in this report, as measured over the three-year period between 2019 and 2021.

Component Industries:

- Hardware
- Software
- Telecommunications

AGGREGATED Information Technology Cluster — 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	1,706	30,913	\$3,210,214,908	\$103,846
2020	1,769	30,312	\$3,386,088,730	\$111,707
2021	1,821	29,737	\$3,825,415,626	\$128,642
Percent change 2019-2021	+ 6.7	- 3.8	+ 19.0	+ 23.8



Powered by: **pwc**

GETTING TO DONE

Discover the SDLC Difference. We stand firm on a legacy of providing trusted and experienced guidance and support to ensure that our healthcare client's business and technology strategies and projects succeed. "Performance Enabled" is why our healthcare clients accomplish more in less time and cost.

Let's talk about what we can get done together.

sd|c partners
A CitiusTech Company

p: 412.251.0848 | e: solutiondesk@sd|cpartners.com | www.sd|cpartners.com



LIFE SCIENCES

HIGHLIGHTS:

- **65 medical equipment and supply manufacturers** within the 13-county region employ **1,176 people** with a total annual payroll of more than **\$70.8 million**.
- **47 instrument and device makers** employ **5,238 people** with a total annual payroll of more than **\$450 million**, an increase of \$14.2 million over the previous year.
- **354 bioresearch establishments** employ **12,916 people** with a total annual payroll in excess of **\$1.6 billion**.

- **21 pharmaceutical companies** employ **455 people** with a total annual payroll of **\$33 million**, which is an increase of more than 35 percent over the previous year.
- With a **total annual payroll of nearly \$8.2 billion** and **nearly 103,000 employees**, health services subcluster is by far the largest tracked in this report, and as such, it requires a separate examination in addition to the aggregated life sciences cluster. (See charts.)

Component Industries:

- Medical Equipment and Supplies
- Instruments and Devices
- Bio Research
- Pharmaceuticals
- Health Services

AGGREGATED Life Sciences Cluster — 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	432	19,251	\$1,953,437,497	\$101,472
2020	459	19,594	\$2,105,401,540	\$107,451
2021	487	19,785	\$2,168,883,255	\$109,623
Percent change 2019–2021	+ 12.7	+ 2.8	+ 11.0	+ 8.0

AGGREGATED Health Services Subcluster — 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	2,667	110,035	\$7,956,445,196	\$72,308
2020	2,921	110,855	\$8,293,274,481	\$74,812
2021	3,059	103,882	\$8,227,123,906	\$79,197
Percent change 2019–2021	+ 14.7	- 5.6	+ 3.4	+ 9.5



Gold
Microsoft Partner







Digitalize your processes with Sycor – Your Local ERP Implementation Partner

Customized and quality-assured assistance with the selection, implementation and operation of an ERP system suited for your business.

- Full-service partner
- 24 years in the business
- 10 locations worldwide
- Operating in Pittsburgh since 2001

Contact us today to learn more
about our services for your ERP project.

John Bertolino
+1 724 944 4791
john.bertolino@sycoramericas.com

www.sycoramericas.com
SYCOR AMERICAS Inc.



ENVIRONMENTAL TECHNOLOGY

HIGHLIGHTS:

▶ **37 environmental equipment manufacturers** employ **2,204 people** in the 13-county region with a total annual payroll of nearly **\$162 million**.

▶ **318 waste remediation and management establishments** within the 13 counties employ **4,395 people** with a total annual payroll of nearly **\$284 million**, an increase of \$21 million over the measured three-year period.

▶ **1,375 professional service and research establishments** employ **29,635 people** with a total annual payroll of more than **\$3 billion** in the 13-county region, which is an increase of \$136 million over three years.

Component Industries:

- Environmental Equipment
- Remediation and Waste Management
- Professional Services and Research

AGGREGATED Environmental Technology Cluster — 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	1,662	37,389	\$3,380,982,909	\$90,427
2020	1,658	36,890	\$3,508,188,694	\$95,098
2021	1,730	36,234	\$3,532,208,698	\$97,483
Percent change 2019-2021	+ 4.1	- 3.1	+ 4.5	+ 7.8



Every day in business is a big day.

We'll keep you ready for what's next with nationwide connectivity, advanced cybersecurity solutions and a team that's always ready to help. Visit ComcastBusiness.com/Enterprise.

**COMCAST
BUSINESS**
Powering Possibilities™

Restrictions apply. Not available in all areas. Call for details. ©2021 Comcast. All rights reserved.



ENERGY TECHNOLOGY

HIGHLIGHTS:

▶ The energy industry in the 13-county region has **1,011 establishments** employing **33,289 people** with a total annual payroll in 2021 of more than **\$3.4 billion**.

Component Industries:

- Coal
- Petroleum and Natural Gas
- Power Storage
- Nuclear
- Hydroelectric

AGGREGATED Energy Technology Cluster — 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	1,047	39,070	\$3,860,620,631	\$98,813
2020	1,020	33,978	\$3,311,230,482	\$97,452
2021	1,011	33,289	\$3,447,331,777	\$103,558
Percent change 2019-2021	- 3.4	- 0.8	- 10.7	+ 4.8



We build leading brands. Any size. Any Industry.



brand strategy	brand experience	brand architecture
naming	logo design	positioning
	storytelling	tagline

contact@themachine.biz

themachine.biz

大成 DENTONS

Global Venture Technology

Innovation. Acceleration. Disruption.

dentonsventurebeyond.com

© 2022 Dentons. Dentons is a global legal practice providing client services worldwide through its member firms and affiliates. Please see dentons.com for Legal Notices.



ADVANCED MANUFACTURING

This cluster encompasses industries that are largely automated and that employ a high degree information technology and process controls, such as computer numerical control systems, as well as employees that are scientists and engineers.

HIGHLIGHTS:

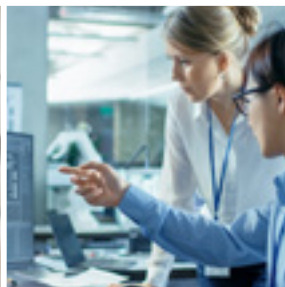
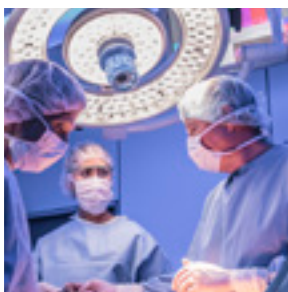
- There are **777 advanced manufacturers** within the 13-county region that employ **21,715 people** with a total annual payroll of nearly **\$1.7 billion**.
- The technology-intensive manufacturing subcluster generally encompasses heavier industries, yet with a high degree of science and engineering employees. This subcluster accounted for nearly **1,357 establishments** and employed **41,106 people**. The total annual payroll for this subcluster was more than **\$3.6 billion** in 2021.

AGGREGATED
Advanced and Technology-Intensive Manufacturing Cluster
— 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	2,119	66,677	\$5,376,759,089	\$80,638
2020	2,126	64,594	\$5,241,787,398	\$81,149
2021	2,911	62,821	\$5,357,384,167	\$85,280
Percent change 2019-2021	+ 37.4	- 5.8	- 0.4	+ 5.7



Powered by: **pwc**



We're delivering more than safe and reliable electricity. We're powering the growth of resilient, sustainable Pittsburgh communities.

Beyond delivering safe and reliable electricity and energy-saving solutions to our customers, Duquesne Light Company is an employer of choice to more than 1,700 employees and a contributing member of our community. **Together, we're powering Pittsburgh and our community's future.**

DuquesneLight.com





ADVANCED MATERIALS

HIGHLIGHTS:

➤ **151 rubber and plastics manufacturers** within the 13-county region employ **6,956 people** with a total annual payroll of more than **\$425 million**.

➤ **88 chemical manufacturers** within the 13 counties employ **2,464 people** with a total annual payroll of **\$217 million**, an increase of more than \$40 million or 22 percent from three years prior.

Component Industries:

- Chemicals
- Plastics and Rubber

AGGREGATED Advanced Materials Cluster — 13 Counties —

Year	Establishments	Employment	Total Annual Payroll	Average Wages
2019	242	9,789	\$595,266,645	\$60,809
2020	239	9,396	\$609,964,616	\$60,917
2021	239	9,420	\$643,165,165	\$68,277
Percent change 2019–2021z	- 1.2	- 3.8	+ 8.0	+ 12.3

blink outside the box.

For more than a decade, we have produced unique, creative services that tell stories, move hearts, and influence decision-making that advances business objectives - your business objectives.

Marketing • Design • Web • Video • Media
321Blink.com | 412.799.0321

blink
Creatively advancing business.

OTHER GROWTH FACTORS



A region's technology economy is described by a variety of indicators beyond the number of companies, jobs and wages. This section illustrates the other important measures that help influence southwestern Pennsylvania's strength and pace of technology growth.



UNIVERSITY RESEARCH AND DEVELOPMENT

The level of research and development spending at local universities and research centers can have a great impact on the development and success of technology firms. Throughout the United States, there are strong examples of positive links between research universities and high technology industries, especially since they both are involved in drawing large amounts of investment capital and talent.

Within this context, it is significant that Pittsburgh is home to two of the largest research universities in the region, the University of Pittsburgh and Carnegie Mellon University. Duquesne University and Indiana University of Pennsylvania also continue in a tradition of R&D spending, although not to the magnitude of Pitt and CMU. In addition, although technically not located within the 13-county southwestern Pennsylvania geographic region, West Virginia University is close enough to the Pittsburgh MSA to be considered for inclusion in this cohort. In previous years, Penn State Beaver, Slippery Rock University and Wheeling Jesuit College also made the list, but they were not ranked for this examined timeframe.

Sources of funds counted in this section include federal, state and local governments, institutions' funds, business, non-profits and other sources.

Source: National Science Foundation/National Center for Science and Engineering Statistics, Higher Education Research and Development Survey of 815 institutions of higher learning in the U.S. and its territories for fiscal years 2018 through 2020, the latest years for which data was available. Data for these years include Carnegie Mellon University, Duquesne University, Indiana University of Pennsylvania, West Virginia University and the University of Pittsburgh.

There are 45 FFRDCs throughout the U.S. The Software Engineering Institute is the only FFRDC in the region, and it is funded separately from Carnegie Mellon University, even though it is managed by CMU. Data was provided by the National Science Foundation FFRDC Research and Development Survey for fiscal years 2018 through 2020.

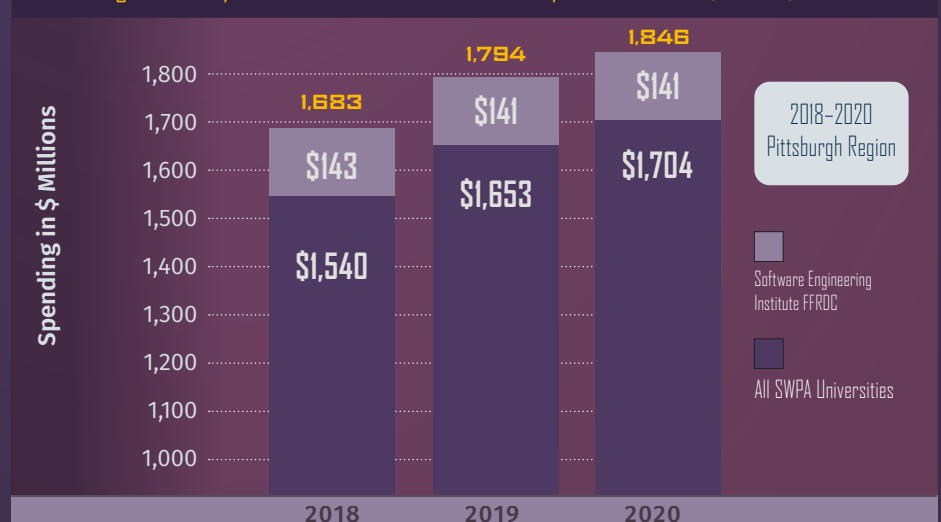
Values from previous years may have been restated, due to late reporting and/or accounting revisions.

HIGHLIGHTS:

- University spending in 2020 totaled **\$1.7 billion**, an **increase of 10.6 percent** over a three-year period.
- The region's R&D spending is fueled principally by research and development activity in the life sciences, predominately at the University of Pittsburgh. Pitt was **ranked 15th among 915 colleges and universities nationwide** with total R&D expenditures in 2020 at more than **\$1 billion**, an increase of \$105 million over three years.
- On that year, the University of Pittsburgh **ranked third nationally in federally funded life sciences** R&D spending behind Johns Hopkins University and the University of Washington at Seattle. Financed mostly through the U.S. Department of Health and Human Services, of all Pitt's federal R&D expenditures, 86 percent was devoted to life sciences.
- Math and Computer Science** is the second largest discipline in the region with respect to R&D funding, as Carnegie Mellon University generally is acknowledged to be among the **top three computer science schools in the nation**, along with Stanford University and M.I.T. Carnegie Mellon was **ranked 68th** in 2020 with **\$387 million** in R&D expenditures, an increase of \$55.6 million over three years.
- Expenditures at the Software Engineering Institute (SEI), the region's only Federally Funded Research and Development Center (FFRDC) is examined separately and reached **\$141.2 million** in 2020, the latest year for which data is available.
- The SEI is the only one of 42 FFRDCs throughout the U.S. focusing specifically on software-related security and engineering issues.
- Research expenditures at Duquesne University exceeded **\$17.4 million** in 2020.
- Although Mercyhurst University is located in Erie, PA, outside of the 13-county southwestern Pennsylvania region, it is interesting to note that campus had R&D expenditures of \$1.8 million in two of the three years examined here.

R&D Expenditures at Universities and Colleges

Including Federally Funded Research and Development Center (FFRDC)





SCIENCE, ENGINEERING AND HEALTH FIELD GRADUATE STUDENTS

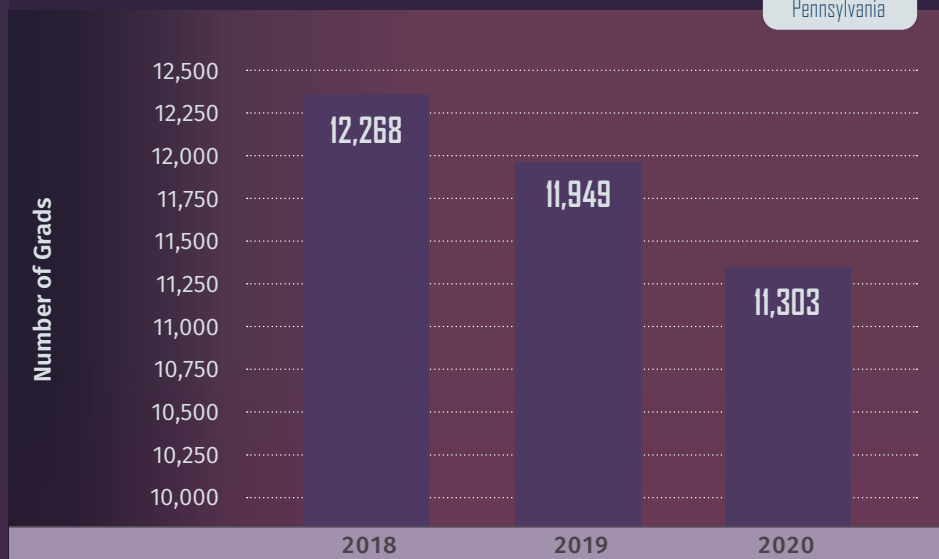
The number of science, engineering and health fields graduate students that any region's colleges and universities enroll each year continues to be an important drawing card in attracting and expanding technology development. Companies wishing to establish a presence in any given locale will examine the number of graduate students produced by nearby science and engineering, as well as health field departments, as a ready source of technology talent.

HIGHLIGHTS:

- Altogether, nine regional universities accounted for **11,303 science, engineering and health field graduate students** in 2020, the last year for which complete data is available.
- Both Carnegie Mellon University and the University of Pittsburgh accounted for **76 percent of the 13-county total** in 2020. Many other of the region's institutions are keeping pace.
- Out of the 673 colleges and universities across the U.S. that grant graduate degrees in science, engineering and health-related fields, **Carnegie Mellon ranked 30th with 4,805 students** in 2020. **The University of Pittsburgh ranked 46 with 3,782 students.**
- West Virginia University is included in these totals, because of its close proximity to and economic influence on the southwestern Pennsylvania region. Many students from Pennsylvania cross the state line to attend there. The University accounted for more than **15 percent of the total.**
- Indiana University of Pennsylvania, Duquesne University, Chatham University, Slippery Rock University, Clarion University and Point Park combined contributed the remaining **nine percent of the region's total** science, engineering and health field graduate students in 2020.
- It may be noteworthy that three universities, Gannon, Edinboro and Mercyhurst, just north and outside of the 13 counties examined here, combined for a total of 211 graduate students in 2020.

Source: National Science Foundation Graduate Students in Science, Engineering and Health Fields in Doctorate-granting Institutions. Data includes Carnegie Mellon University, Chatham University, Clarion University, Duquesne University, Indiana University of Pennsylvania, Slippery Rock University, Point Park University, The University of Pittsburgh and West Virginia University. Results may have been restated from previous years' reports.

Science, Engineering and Health Field Graduate Students



UNIVERSITY-BASED TECHNOLOGY TRANSFER

University technology transfer activity represents the vehicle by which science and technology developed at the universities is translated into commercial ventures. Aspects of technology transfer are indications of the value that is realized from university research, and as such, they are vital components of regional economic development.

HIGHLIGHTS:

- Although the number of patents filed in any given year may vary widely, the fluctuation can be attributed to coincidence. It still indicates the underlying robustness of ongoing innovative activity and discovery. In this regard, 2021 showed robust numbers across the board.
- The U.S. Patent and Trademark Office awarded the Carnegie Mellon University **97 patents** and the University of Pittsburgh received **124 new U.S. patents** in 2021. Pitt's total was a new single-year record for the university and earned it a ranking in the top 20 of all universities worldwide that report awarded patents.
- Gross licensing income at **Pitt improved to \$12.6 million; CMU's licensing income was \$13.9 million** in 2021.
- Carnegie Mellon also reported that **639 inventors were served** in its tech transfer program in 2021.
- Carnegie Mellon consistently ranks among the top 20 U.S. universities in the number of startup companies per research dollar spent.

University Technology Transfer in Southwestern Pennsylvania

	2019	2020	2021
Patents Issued	180	211	228
Licenses & Options Executed	406	308	312
Gross License Income	\$26.6 Million	\$18.8 Million	\$26.5 Million
Start-up Companies	34	21	21

Source: Carnegie Mellon University, the University of Pittsburgh, and Duquesne University. Since 2009, Duquesne University had adopted the "Carolina License," which offers a no-cost, royalty-only option (license) to spur more regional start-ups. Consequently, not much, if any, license income is anticipated in the short term. Data for Licenses, Options and Other Agreements Executed provided by the University of Pittsburgh and Duquesne University represent a total that includes regular licenses/options executed, sublicenses and licenses that fall under inter-institutional agreements in which the University is not the lead institution. These non-regular license/options are termed "other agreements." The new metric reflects a change by the Association of University Technology Managers in counting licenses/options.

This year's report represents a slight change in reporting data in the above chart. The University of Pittsburgh no longer reports its number of patents filed, which means that category would result in under reporting and inconsistency, so it has been omitted for this report. The other categories remain consistently available and are reported above.



SBIR/STTR AWARDS

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are a large source of early-stage technology financing, and it encourages the development and commercialization of new technology products and services by funding small, technology-based companies that are performing cutting-edge research.

Under the SBIR program, federal agencies with more than \$100 million in their extramural R&D budgets must have set aside 3.2 percent for partnerships with private industry. Within the STTR program, agencies with one billion-dollar budgets are required to set aside 0.45 percent.

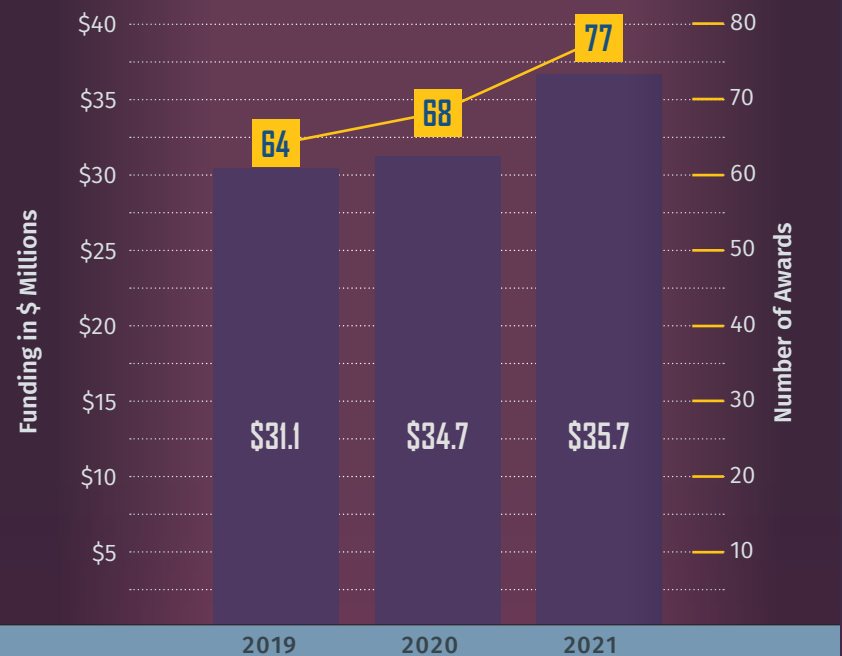
HIGHLIGHTS:

- Among the 13 counties, the total award values in 2021 exceeded \$35.7 million. This represented a nearly 15 percent increase over a three-year period.
- The total number of awards set another record in 2021 at 77, an increase of more than 20 percent since 2019.

Source: Small Business Administration; note that although technically awarded in any given year, awards to certain recipient companies may not be publicized until later years. The SBA award database is continually updated throughout the year. As a result, data for a given year is generally not complete until June of the following year. For the reasons stated above, values from previous years may have been restated.

SBIR/STTR Funding (All Agencies)

2019-2021
13 Counties in
SW Pennsylvania



Powered by: **pwc**