

**The Economic Impact of Science and
Arts Engagement New York, in
Partnership with CCNY, STEAM
Initiative**

July 17, 2017



Introduction

Science and Arts Engagement New York (SAENY) is a 501(c)3 not-for-profit organization created in 2016 by a group of City University of New York faculty with the goal of eliminating the underrepresentation of young men and women of color in the sciences, technology, engineering, art and mathematics (STEAM) fields in New York City.

SAENY is currently working toward the establishment of a “science gallery” in New York City, “an innovative, contemporary venue dedicated to inspiring college students, teens and young adults to deepen their engagement with and understanding of science, technology and creativity through an ever-changing program of exhibitions and events.” Since its birth at Trinity College Dublin in 2008, the “science gallery” model has been replicated in several other cities around the world. SAENY has reached agreement on a lease with Janus Properties for the “science gallery” New York to occupy 25,000 square feet of space in a new office building that is being developed on the site of the old Taystee Bread Factory at 450 West 126th Street, in the heart of the historic Manhattanville Factory District.

In June 2017 SAENY asked Appleseed – a New York City-based consulting firm – to assess the impact of the development and operation of “science gallery” New York on the City’s economy, and on Harlem’s ongoing revitalization. This report summarizes the results of Appleseed’s analysis, including:

- The impact of developing “science gallery” New York’s new home on West 126th Street;
- The impact of “science gallery” New York’s ongoing operations;
- The impact of off-site spending by visitors to the “science gallery”;
- How the “science gallery” can contribute to the ongoing redevelopment of the Manhattanville Factory District and the surrounding area; and
- How it can contribute to the expansion of learning and career opportunities for young New Yorkers, and to the development of a deeper and more diverse workforce in STEAM fields.

The impact of developing “science gallery” New York

SAENY estimates that designing, building out, furnishing and equipping its 25,000 square-foot space at 450 West 126th Street will cost approximately \$5.0 million, with the work being completed in 2019. Using the IMPLAN input-output modeling system – an analytic tool commonly used in economic impact studies – Appleseed estimates that this investment will directly support 19 jobs in construction and related industries, with earnings totaling nearly \$2.0 million (in 2019 dollars).

Taking into account the indirect and induced (or “multiplier”) effects of SAENY’s investment of \$5.0 million, we estimate that development of the “science gallery’s” new space will directly and indirectly support:

- 33 jobs in New York City;
- Nearly \$3.1 million in wages in 2019 dollars); and
- \$7.1 million in City-wide economic output.

These impacts are summarized below in Table 1.

Table 1: Direct, indirect and induced impacts of SAENY’s development of “science gallery” New York at 450 West 126th Street (wages and output in thousands of 2019 dollars)

	Jobs	Wages	Output
Direct impact	19	\$1,995.9	\$4,483.7
Indirect/induced effects	14	\$1,098.3	\$2,616.5
TOTAL	33	\$3,094.2	\$7,100.3

The impact of ongoing operations at “science gallery” New York

SAENY expects the “science gallery” to begin operating in its new space at 450 West 126th Street by late 2019 or early 2020. The new space will include:

- 7,550 square feet of gallery and studio space for “science gallery” exhibits and projects;
- A 2,500 square-foot “maker space” (SAENY is currently in discussions about having NYC *FIRST*®, the local chapter of an organization that sponsors robotics programs and competitions in schools throughout the U.S. and around the world, operate in this space);
- A 2,750 square-foot auditorium;
- 2,250 square feet of SAENY office space;
- A 2,300 square-foot café;
- A 1,800 square-foot “science gallery” shop;
- A 1,600 square-foot event space; and
- 4,250 square feet of facility service and storage space.

Based on data provided by SAENY, Appleseed estimates that direct, on-site employment will total 27 jobs, including:

- 14 employed directly by SAENY in “science gallery” programs and in the overall management of the facility;
- 3 employed in the management of the NYC *FIRST*® “maker space;”
- 7 employed in the café; and
- 3 employed in the shop.

Taking into account as well the indirect and induced effects of these operations, we estimate that when it is fully operational, “science gallery” New York will directly and indirectly account for:

- 45 jobs in New York City;
- \$2.9 million in wages (in 2020 dollars); and
- \$5.7 million in City-wide economic output.

These impacts are summarized below in Table 2.

Table 2: Direct, indirect and induced impacts of “science gallery” New York operations at 450 West 126th Street (wages and output in thousands of 2020 dollars)

	Jobs	Wages	Output
Direct impact	35 ¹	\$2,114.8	\$3,709.4
Indirect/induced effects	10	\$804.3	\$2,024.8
TOTAL	45	\$2,919.1	\$5,734.2

The local impact of off-site spending by visitors

Based on a forecast prepared by AEA Consulting, SAENY estimates that “science gallery” New York will attract approximately 215,000 visitors annually. While most of these visitors will be students from New York City schools and colleges or other City residents, SAENY estimates that people coming from outside the City will account for about 54,300 annual visits to the “science gallery.”

For purposes of this analysis, Appleseed has conservatively assumed that none of these out-of-town visitors will be coming to New York City primarily to visit the “science gallery.” However, visits to the “science gallery” by non-New York City residents – and by adult residents of other New York City neighborhoods as well – will represent an increase in visitor traffic *in Harlem*, and will thus have a positive impact at the community level. SAENY estimates that these two groups will together account for approximately 78,000 visits to the “science gallery” each year.

Moreover, even if out-of-town visitors to the “science gallery” do not represent an increase in the total number of visitors to New York City, their trips to the “science gallery” could result in additional *visitor spending* in the City. Assuming that off-site spending associated with these visits (that is, spending over and above what visitors might spend at the “science gallery” itself) averages \$20 per person, we can estimate that \$1.56 million per year in off-site spending would directly support 15 additional restaurant, retail and service jobs in the surrounding area, with approximately \$619,050 in wages (in 2020 dollars).

When indirect and induced effects are added, we estimate that off-site spending by visitors to the “science gallery” will directly and indirectly account for:

- 18 jobs in Harlem and elsewhere in New York City;
- \$864,500 in wages (in 2020 dollars); and
- Nearly \$1.8 million in economic output in New York City (primarily in Harlem).

These impacts are summarized below in Table 3.

¹ In addition to the 27 on-site jobs described above, the 35 direct jobs cited in Table 2 include direct employment with local service contractors and suppliers.

Table 3: Direct, indirect and induced impacts of off-site visitor spending (wages and output in thousands of 2020 dollars)

	Jobs	Wages	Output
Direct impact	15	\$619.0	\$1,136.0
Indirect/induced effects	3	\$245.5	\$623.0
TOTAL	18	\$864.5	\$1,759.0

Redeveloping the Factory District, strengthening Harlem’s economy

The “science gallery” at 450 West 126th Street will also contribute to the ongoing redevelopment of the Factory District, and to economic revitalization in Harlem. It will add a valuable new dimension to the cluster of STEAM facilities and programs that has already begun to develop in the West 125th Street corridor and elsewhere in West Harlem, including:

- The CUNY Advanced Science Research Center at City College;
- The Harlem Biospace incubator on West 127th Street; and
- Columbia’s Lenfest Center for the Arts and the Jerome Greene Science Center, both part of the University’s new Manhattanville campus on West 125th Street.

Along with Harlem Biospace, two local art galleries and technology startups such as Lumiode (a developer of chips used in high-intensity microdisplays) and Chromation (commercializing low-cost sensors used to measure light and color), the “science gallery” will help build the Factory District’s identity as an attractive location for innovative science- and technology-based enterprises.

The “science gallery” will also add to the array of destinations that each year attracts growing numbers of visitors to the 125th Street corridor and to Harlem more broadly – from Harlem Stage, the Apollo and the Studio Museum to churches and restaurants.

Developing New York City’s workforce in science, technology and the arts

Especially since 2000, innovations in science, technology and digital media have been among the leading drivers of economic growth in New York City. To maintain the growth of these sectors – and to ensure that young New Yorkers have access to the full range of opportunities that a growing economy provides – the City needs to help its teenagers and young adults acquire the knowledge, skills and experience required for careers in STEAM (science, technology, engineering, the arts and math).

Providing opportunities in STEAM fields is especially important for young New Yorkers from low-income minority neighborhoods. The “science gallery” is especially well-located to serve this population. As of 2015 about 235,000 people lived within a one-mile radius from the “science gallery’s” proposed location, more than two-thirds of whom were black or Latino – including more than 41,000 who were age 15 to 24. More than 34 percent of all residents of this area who were less than 18 years old lived in households with incomes below the poverty level.²

² U.S. Census Bureau, American Community Survey 2015

Beyond its immediate neighborhood, the “science gallery” will also be easily accessible by subway or bus from other low-income minority communities, including East Harlem, Washington Heights and the South Bronx.

The forecast that AEA Consulting prepared for SAENY estimates that the “science gallery” will annually attract more than 61,000 visits by young New Yorkers – high school, college and university students, as well as other City residents ages 10 to 24. This equates to an average of nearly 200 young New Yorkers each day³ who will be engaging with the “science gallery’s” interactive exhibits, working in the NYC *FIRST*® maker space, or participating in other “science gallery” projects, workshops, conferences and short courses on scientific topics – and many more who will regularly participate in SGENY’s online community.

Students will also be employed as “mediators,” staffing the “science gallery’s” exhibits and helping to educate visitors. Student mediators will themselves gain valuable training and experience in communicating science to diverse audiences.

Early engagement with science – especially in a context that helps them understand its relevance in their own lives and in their communities – can be critical in motivating teenagers and young adults to pursue further studies and to explore careers in STEAM fields. Even if just a small percentage of those who participate in the “science gallery’s” programs are thereby inspired to earn degrees in science, technology and engineering or to explore the intersection of science and the arts, they will over time expand and diversify New York City’s supply of scientific, technical and creative talent.

Conclusion

During the ten years from 2019 through 2028, the development and ongoing operations of the “science gallery” will create 33 temporary construction-related jobs and 45 on-going jobs and cumulatively add nearly \$29.4 million in wages and \$58.7 million in economic output to New York City’s economy. In addition, the increase in visitor spending the “science gallery” brings to Harlem will add 18 jobs and cumulatively add nearly \$7.8 million in wages and \$15.8 million in economic output to the City’s economy. In summary, over the decade from 2019-2028 the “science gallery” will result in 33 temporary and 63 new on-going jobs, cumulative added wages of \$37.2 million and economic output of \$74.5 million.

During the same period, SAENY estimates (probably conservatively) that the “science gallery” will host over 2 million visitors of which nearly 550,000 visits will be by the young New Yorkers it is designed to serve. If just 1 in 10 of these visits results in a young New Yorker being inspired to enter the STEAM field, the “science gallery” would be helping to launch the careers of 55,000 new highly-skilled science and technology workers.

During the “science gallery’s” first decade and the decades that follow, the continued growth of the New York’s economy will increasingly depend on the availability of a well-educated, highly-skilled workforce that is solidly grounded in the STEAM disciplines. At the same time, education and hands-on experience in these disciplines will provide access to a wide range of high-paying careers – in engineering, computer science, software development, the life sciences, digital media and others.

³ Assumes that the “science gallery” will be open 310 days each year.

At a time when young black, Latino, Asian and mixed-race New Yorkers are destined to account for a growing share of the City's workforce, increasing their engagement in science, technology, engineering, the arts and mathematics is not just a worthy goal – it is a matter of economic necessity.