

BARCLAYS CENTER

NEW YORK

NEW YORK CITY Digital Digital Games haustr

2021 ECONOMIC

MPACT STUDY



Dear Fellow New Yorkers,

When the Mayor's Office of Media and Entertainment expanded support for the creative sectors in 2018, we turned our attention to digital media, with a particular focus on video games. Video games showcase the best in creativity of our times: rich storytelling, elaborate artistry, and technological innovation. What better place for advancing this creative industry than NYC!

When we originally suggested a deeper dive into video games, we received reactions such as "but they're so violent" or "kids spend too many hours on them." But in the wake of the pandemic, we saw a different truth emerge, one that video gamers have known all along: video games help people connect to each other and the broader community. And games are not just for kids—the average video gamer is 34 years old, owns a house and has children.

NYC is poised to become a leader in the video game space. The city is home to Take-Two Interactive, one of the leading video game publishers in the world. We are one of four cities (along with Los Angeles, Houston and San Francisco) that dominate the E-sports job market. And we are a hub for casual and hyper-casual games, which are great for passing the time waiting for the subway. We also host two of the largest gatherings: Games for Change for game creators and social innovators to drive real-world impact through games and immersive media, and Play NYC, the biggest multi-day game convention for developers to introduce new titles to the gaming community.

To better understand the industry, we commissioned this first ever "NYC Digital Games Industry Economic Impact Study," which affirms how this burgeoning industry is becoming a major economic driver, employer and content creator for the city. The findings underscore our objectives to support current and future game developers and develop initiatives that propel NYC on its way to becoming a global game development center.

Not only does this study shine a light on the industry's economic impact in NYC, totaling \$2 billion and responsible for 7,600 total jobs and \$762 million in total wages, it also reinforces the notion that NYC, serves as an incubator for the successful growth of our creative communities, including the animators, writers, editors, producers, directors and developers who contribute to game content.

We invite you to dig into these findings in order to get a better sense of the industry's current role and exciting future in New York City.

Game on

Anne del Castillo Commissioner New York City Mayor's Office of Media and Entertainment

About the Mayor's Office of Media and Entertainment

The Mayor's Office of Media and Entertainment (MOME) comprises four divisions: the Office of Film, Theatre and Broadcasting, which coordinates film and television production throughout the five boroughs; NYC Media, the largest municipal television and radio broadcasting entity in the country with a reach of 18 million viewers within a 50-mile radius; workforce and educational initiatives in film, television, theater, music, publishing, advertising and digital content to support the development of NYC's creative industries; and the Office of Nightlife, supporting the sustainable development of New York City's nightlife industry. Overall, MOME supports over \$150 billion in economic activity and nearly half a million workers.

About the Consultants

Buro Happold Cities is an international, interdisciplinary team of consultants that provides strategic planning, project management, and analytical services to a diverse range of public and private sector clients. The team brings together planners, economists, engineers, urban designers, real estate professionals, and demographers to tackle urban development problems that represent the built environment at its broadest scale. Buro Happold follows an evidence-based planning approach that ensures tailormade and highly effective solutions for today's multi-layered urban issues.

Public Works Partners is a WBE/DBE/SBE certified planning and consulting firm rooted in New York City. Public Works Partners builds stronger neighborhoods and stronger organizations. The firm engages communities, designs smart plans, and implements policies for public and nonprofit clients. The firm's goal is to increase client impact.

Pure+Applied is a multidisciplinary design studio whose mission is to create spaces—physical and virtual—that invite people to linger and learn. The studio approaches each project as a fresh and specific challenge. Unlike purely formal design solutions, solutions translate to different media and add layers of complexity, subtly, and nuance. The studio's areas of expertise include graphic design, branding and identity, master planning and strategy, exhibition design, and content development.

Front Cover **ESLOne at the Barclays Center in 2016** Image courtesy of ARAM

- 1. Executive Summary
- 2. Introduction
 - 8
- **3. Defining the Industry**
- 4. Total Economic Impact
- 5. Direct Economic Impacts by Sector
- 6. Broader Economic Impacts 38
- 7. Creative and Educational Benefits of Digital Games

42

- 8. Challenges
- 9. COVID-19 Impacts
- 10. Recommendations
- 11. Conclusion
- 12. Appendices

Contents

Summary Summary

Grand Theft Auto IV in-game still set in New York City Image courtesy of Grand Theft Auto IV and Rockstar Games New York City has seen many major milestones in the history of digital games, from the proliferation of penny arcades to the jubilant crowds at apex esports stadium events. Game development studios large and small have designed their gaming aspirations against the backdrop of New York City, fuelled by the city's collective enthusiasm for boundless innovation. Full of untapped potential for growth, New York City nurtures an exuberance for the future of digital game development and other emerging game sectors such as esports.

In 2020, New York City's digital games industry supported in total more than 7,600 total jobs in the city, accounting for over \$762 million in total wages and \$2 billion in total economic output (business revenues and self-employment receipts). The industry consists of six key sectors: game developers, publisher/developers, retail and arcades, professional and financial services, esports, and non-profits and education. These sectors are mutually reinforcing, and each plays a crucial role in the industry's value chain, from the development and publishing of digital games through to their consumption by players and enthusiasts. This report evaluates these sectors and their economic impacts. Its findings include:

- The six sectors of the digital games industry are directly responsible for 4,600 jobs, \$489 million in wages, and \$1.3 billion in economic output.
- The number of jobs in the industry has tripled since 2008 and these are high-paying jobs on average; industry professionals earn an average of \$106,000 in annual wages, in comparison to the citywide average annual wage of \$93,000.
- In terms of indirect economic impact, New York City's digital games industry supports an additional 1,500 jobs, \$160 million in wages, and \$356 million in economic output by way of transactions with suppliers and vendors to the industry's main sectors.
- The industry's induced economic impact, which are created when job holders—both directly and indirectly supported by the industry spend their wages in New York City, support an additional 1,500 jobs, \$113 million in wages, and \$294 million in economic output.
- The industry's ancillary economic impact—tourism spending that can be attributed solely to attending esports and digital games-related events—amounts to about \$4 million annually.

This report also takes an in-depth look at the industry's six sectors and explores their characteristics, dynamics, and trends. These six

In 2020, New York City's digital games industry supported approximately

7,600

\$762M

\$2B IN TOTAL ECONOMIC OUTPUT



Two students creating a 3D rendering for a video game Image courtesy of EvgeniyShkolenko, accessed via Canva

sectors form a symbiotic relationship in supporting the digital game development, digital game consumption, and workforce development of the game industry as the industry continuously expands to new fields and subsectors. Growth in any of the six sectors would support the advancement of the others, highlighting the abundance of opportunities the industry has for further evolution in New York City. The key findings based on analysis of these six sectors are:

Game development and publishing drive job creation in New York City's digital games industry.

- Digital game developers and publisher/developers are the industry's largest employers, accounting for approximately 66 percent (or 3,100) direct jobs in 2020.
- In 2020, software engineers were the most in demand roles by large game developers and publisher/developers. However, creative professionals such as special effects animators, illustrators, and User Experience/User Interface (UX/UI) designers were also among the most highly sought-after roles by developers and publisher/ developers, according to job postings data.
- While larger developer/publisher studios follow more conventional hiring practices such as requiring four-year college degrees, indie studios and mid-sized studios offer more variety in pathways to "break into" the digital games industry. These companies' flexibility in hiring from various educational backgrounds can open doors for socioeconomically disadvantaged job seekers.

The independent game ("indie") scene drives innovation in defining the next generation of game design.

- Over half of game development firms in New York City are independent, meaning that the games are made and distributed by solo developers or small teams of less than five people. Independent (or "indie") games are often made more accessible to players through a wide variety of digital platforms as they are less likely to be tied to a single platform than games made by larger publisher/developers. They are also showcased locally in play testing events or local game events, and often win game awards for design and art direction.
- Indie games are a disruptive force in the digital games industry. Many indie game developers challenge the industry's approach to issues of social equity, diversity, and inclusion by weaving bold narratives and themes within their games.
- Industry players look to indie game communities as an indicator of a city or region's industry talent pool. The quantity and quality of original indie game developers in New York City boosts the city's

attractiveness to larger studios and investors choosing where to locate game development. Larger studios increasingly seek intellectual property (IP) created by indie studios.

The digital games industry leverages the strength of New York City's technology, advertising, arts, media, and entertainment sectors.

- The digital games industry benefits greatly from its proximity to New York City's advertising and arts, media, and entertainment sectors. Digital games publishers and developers enjoy content and character licensing opportunities with film and television producers, as well as monetization opportunities via advertising.
- Mobile game and adjacent app development are thriving as part of New York City's well-established technology and start-up ecosystem.
 Demand for game developers in the city is expected to increase as gamification of sectors such as healthcare, personal finance, and wellness proliferate.

New York City has become an international destination for hosting gaming events.

- Over the last five years, NYC has hosted one to two large esports and digital games-related events a year, drawing a total of 8,000 attendees on average and overall generating an estimated \$4 million annually in ancillary tourism spending within the city.
- Global esports revenue has grown to \$947 million in 2020 and is projected to grow by 14.5% in 2021, with an estimated total global esports audience of over 474 million viewers.¹
- The esports sector has become enmeshed with traditional sports broadcasting. Accelerated by the pandemic, livestreaming has expanded consumer interest in both competitive and noncompetitive game streaming. This has allowed the digital games industry to offer new career roles, employment opportunities, and flexibility for a broad range of interests and ages. Esports firms in New York City regularly pay and form contracts with independent content creators to increase streaming and marketing reach through platforms like Twitch.

The digital games industry is a driving force behind youth STEM/ STEAM educational initiatives in New York City.

• For students of all ages, digital games development and design are an approachable and engaging motivator to develop creative and technical skills. Programs such as the Urban Arts Partnership (UAP) support game-centered K-12 programs and curriculums as a way of



Image of a game in progress, Betrayal At Club Low Image courtesy of Cosmo D Studios



providing career pathways for groups that have historically not been engaged by the games development sector. Engaging with youth in STEM education early on through digital games has been cited by industry experts as key to creating a robust future talent pipeline for the city.

The digital games industry has displayed resiliency throughout the COVID-19 pandemic.

- Digital games development and publishing in New York City remained strong, as companies adapted to remote work and continued to develop and publish games. Venture capital investment in the industry increased during the pandemic, as demonstrated by the fact that the amount of capital raised by companies in the industry grew from \$376M in 2019 to \$774M in 2020, a more than doubling despite the number of deals staying roughly the same over this period.
- Some game industry sectors, such as games events, esports leagues, and brick and mortar retailers were hit hard by pandemic lockdowns and event cancellations. All major gaming events were cancelled due to the pandemic, amounting to an event audience loss of 5,000 to 10,000 attendees, a blow to a sector that had been building momentum in the city in the years prior to 2020. City-sponsored industry events or celebrations can help the sector regain lost momentum by boosting visibility of future planned events.

Recommendations

Overall, New York City's digital game industry is dynamic and growing. Yet there are opportunities for the City to help make it stronger. Guided by analysis of industry data and interviews with industry stakeholders, this report outlines six key areas of opportunity for New York City government initiatives:

- Advocating for the advancement of state tax credit programs
- Creating publicly available digital resources for digital game industry related opportunities and events happening within New York City
- Expanding and enhancing the industry's economic development by strengthening partnerships with game developers and publishers
- Strengthening partnerships with New York City educational institutions to improve on existing New York City industry assets and facilities
- Expanding City-led workforce development programs and educational partnerships to include the digital games industry
- Supporting the indie and freelance game development community



Image of a game in progress, Skate Story Image courtesy of Sam Eng

2016 Games for Change Arcade Image courtesy of Games for Change and Jane Kratochvil

GAMES FOR CHANGE

GAMES FOR CHANGE

SAL

HORT ORDER

New York City is a bastion of culture and innovation and has historically been the meeting ground where commerce, finance, and the arts intermingle, allowing for an environment where creatives, entrepreneurs, and trailblazers can thrive. New York City is where video games concepts are conceived, where characters are given voices, and fantastical worlds are built by teams, both small and large, of artists, writers, and programmers. From the local around-the-corner boutique video game shops filled with retro nostalgia to the electric atmosphere of a bustling bar during arcade night, fun and culture in New York City is married to games of all forms.

History of Gaming in New York City

In the late 1970s and early 1980s, digital games landed in neighborhood arcades, delighting adults and children with popular games such as Pac Man, Donkey Kong, and Space Invaders. Films set in New York City such as The Lost Arcade (2015) chronicled the diverse community surrounding these arcades, celebrating the cultural significance of these digital game icons. Before TV production crews and broadcasters captured a full house of esports fans cheering on wall-to-wall screens at Barclays Center or Madison Square Garden, New York City had already cut its teeth on digital game tournaments, with fighting games hosted in local establishments in the early 1990's. Arcades such as Chinatown Fair made New York City a competitive game destination on the east coast before the advent of professional esports-virtual gaming competitions with millions at stake. As games evolved and esports became a prominent aspect of the industry, local entrepreneurs followed suit. The NYC-based Major League Gaming (MLG) hosted the first ever Halo tournament in 2004 and the ten-tournament season was held across the United States, starting and ending in New York City. Though the phenomenon of youth vying for a chance to mash buttons and fumble with joysticks on an arcade machine has diminished, video games continue to change the landscape of entertainment in New York City.

The industry has worked to expand its footprint in New York City over the last twenty years, even as smaller industry clusters emerge in cities such as Albany and Buffalo. In 2001, Nintendo New York opened their first global retail store at Rockefeller Center, distinguishing the city from other industry hubs nationally and enabling consumers more choice in their gaming retail options. Later, in 2008, the NYU Game Center was founded as part of NYU's Tisch School of the Arts, a program that has been an integral part of the city's game community by creating an inclusive and innovative space for independent artists, developers, esports players, and academia. Later in 2014, massive spectator turnout rocked the esports and digital games community as thousands of fans attended a weekend long *DOTA 2* competition hosted by Electronic Sports League (ESL) One New York, an esports management company, There is growing attention on the city's game industry. We are seeing more money focused on games here. Games made in NYC share a collective minimalism that makes them beautiful in their simplicity.
Game company founder



CHINATOWN FAIR

New York, New York

Chinatown Fair opened in 1944 on Mott Street in New York City and operated as a joint penny arcade and small museum before expanding to become a large video game arcade in the 1970's. The notoriety of the arcade grew as it shifted focus to competitive fighting games such as Street Fighter, Tekken, and Soul Caliber in the 1990's, becoming a cultural gathering place for a diverse community of players across the city, and frequented by the top players in the nation. Rebranded as the Chinatown Fair Family Fun Center, the establishment is known today as New York City's "last great arcade."

at Madison Square Garden (MSG). The following year, *Riot*, the developer of *League of Legends*, returned to MSG for a sold-out championship series final, packing not only 11,000 fans into the stadium but streaming to more than 1 million viewers across the country. In 2016, New York City saw the first *Game Devs of Color Expo* which showcased games made by creators of color and sponsored by major game industry firms. Today, the Expo includes grants and award programs to support creators of color in the industry, in addition to showcasing their games. These annual game events are a testament to the way digital games have gripped New York City, and to the dramatic ways the industry has enmeshed itself with the rest of New York City's entertainment, tech, and arts communities.

The New York City Digital Games Industry Today

The digital games industry has ingrained itself in the cultural institutions and creative communities of New York City, creating a small but strong economic cluster. The city is home to over 200 game development studios and publisher/developers, and an even larger number game industry freelance and creative network that live, work, and create in the city. The games industry contributes to the city's already vast talent pool of creatives and technologists by creating opportunities where easily transferable skills such as graphic design, coding, and project management open doors for professionals from various industries. Beyond the typically high wages of programmers and software developers, the digital games industry employs a wide range of career opportunities, from marketing and event planning to illustration and voice acting. Additionally, key players in finance, healthcare, and entertainment are demonstrating the desire to expand into the digital games sphere through cross-sector collaboration of various gaming platforms and technologies. The crossover opportunities with other industries is another unique proposition that New York City has to offer; the potential spill-over effects of the video game industry and job growth could be magnified on a much more significant level. Such spill-over effects encompass positive impacts on technological innovation and education, and drive city talent growth, investment capital attraction, and partnership opportunities with other entertainment forms.

Despite the benefits the industry brings, New York City has yet to attain the critical mass of game development talent and activity that would attract larger industry giants. The digital games industry is still a relatively new industry in New York City compared to more established US digital game industry hubs on the West Coast but has seen much progress in the past decade despite setbacks caused by the COVID-19 pandemic. Industry growth in the city is spurred by strong global industry performance, putting a spotlight on the future of digital games; given New York City's history as a global cultural destination and center for creative and technological talent, the city is poised to seize the myriad opportunities in new emerging sectors of digital gaming such as esports. New York City's robust and diverse talent tool remains key to attracting additional industry growth by boasting an unmatched



Source: Buro Happold analysis

network of creatives ranging from freelance illustrators to marketing professionals.

Why This Study Now?

This study comes at a critical time given the rapid new developments in digital game sectors. The global digital games industry is projected to record revenues of \$180 billion in global sales, making the digital games industry larger than the global film and North American sports industries combined, with New York State ranking fifth in total in-state game industry-related economic output across the country. New York City is among the top ten cities in terms of industry presence and number of digital game developers and publishers. The City has taken steps in encouraging workforce development for tech and creative fields. It has also placed a strong emphasis on diversity, inclusion, and equity initiatives that set the city apart from other games industry hubs. However, despite the games industry's advantages for growth in the digital age, its future in New York City faces numerous challenges that must be addressed for the industry to expand within the city.

What Is in This Study?

The Mayor's Office of Media and Entertainment (MOME) conducts studies to build its understanding of New York City's evolving media and creative industries. MOME Commissioner Anne del Castillo launched this study in 2021 to provide a detailed assessment of the size, characteristics, and trends of the New York City digital games industry.



Because the industry's significance to New York City is wide-ranging, the study's analysis entailed a multi-layered research process that included:

- An economic analysis of the industry's jobs, wages, and economic output in 2020
- · An analysis of the COVID-19 pandemic's impacts on the industry
- An analysis of digital game sectors and changes that have occurred in the city in recent years
- · Interviews with over 20 key industry stakeholders and experts
- A literature review of the industry studies in other game industry hubs to contextualize the study's findings and recommendations

This report reflects the pandemic's impacts on the industry using insight from key industry stakeholders and experts. The trends and characteristics observed leading up to the pandemic in 2020 foretell a promising future for the industry within the city, with an abundance of opportunities for industry stakeholders to forge a solid foundation for growth of the digital games industry.



NYU GAME CENTER

New York, New York

The NYU Game Center is housed within the Department of Game Design at the Tisch School of the Arts. A vital part of the city's game industry ecosystem, the Game Center's mission is to graduate the next generation of game designers, developers, entrepreneurs, and critics while pushing innovation in game making and game design. The Game Center is also host to the NYU Game Center Incubator, a part time program with funding for accepted participant teams, which has helped take local, small independent game projects from conception to launch since 2014.

G

> Attendees playing new games featured at the 2019 E3 event run by the ESA Image courtesy of The ESA and Jaclyn OLaughlin

AMING

Methodology

Since a well-defined digital games industry is not separately captured within the federal government's Northern American Industry Classification System (NAICS), this study used a tailored methodology based on establishment-level data to define and size the industry in New York City. An establishment-level custom industry database was created, which served as the basis for defining the industry and ultimately allowed for an analysis of the industry according to several key economic indicators, namely jobs, wages, and economic output. Whereas this methodology did not allow for a historical analysis of these indicators due to the constraints of establishment-level data, it enabled an evaluation of the state of the industry in New York City in 2020. This methodology is explained in greater detail in the Economic Analysis Methodology in the Appendix.

Digital Games Industry Framework

For an in-depth look at the dynamics, trends, and economic impacts of New York City's digital games industry, this report is framed around six industry sectors. These six sectors encapsulate the full range of economic activities in the city's digital games industry as modelled in this report's economic impact analysis.

- **Developers:** the game development studios, and developer teams that take a game from concept to production, and are responsible for the core software, user interface, graphics, character designs, user testing, and all functional aspects of digital game development. This sector includes solo developers, indie studios and teams that work exclusively in game development but not publishing.
- **Publisher/Developers:** the industry's main distributors of games, responsible for funding, marketing, and project management for the game development lifecycle. These firms can operate as standalone publishers or as hybrid publisher/developer companies. Hybrid firms often have in-house development teams for original game titles (referred to as "intellectual property" or "IP" in this report), any third-party developer can pitch to game publishers to fund game development in exchange for a share of future sales revenue.
- **Retail and Arcades:** the stores and physical establishments that distribute and sell digital games, host game events, or vend game hardware directly to consumers. This sector includes big box retailers where physical game copies or game consoles constitute a significant portion of total sales, boutique establishments where the primary

NYC has the best culture for games, and we see the grit and personality of NYC reflected in the games made here.
Digital games industry investor

GAMER LANGUAGE



VIDEO GAME CONSOLE: Any piece of hardware dedicated to supporting game software and controls. Some recognizable household video game console brands

include: Playstation, Xbox, Nintendo. Personal computers (PCs) and dedicated "gaming laptops/desktops" can also be referred to as game consoles.

DIGITAL DISTRIBUTION PLATFORM:

Software catering to both gamers and game developers that allows for direct purchase and downloads of digital games. Platforms such as Steam allow developers to release games directly to the platform, and easily engage the gaming community through comments, direct game updates, videos, and announcements accessible through one platform. Users can access their library of game and launch games directly from the platform. GAMEPLAY: The technical aspects of a video games, including plot, narrative, structured quests and tasks, and strategies required of the player that is distinct from elements such as visuals, graphics, or sound effects.

PLAYTHROUGH: The act of playing and recording gameplay from start to finish. This term is frequently used by online game streamers and is often accompanied with live commentary while playing.

PLAYTESTING: A method of testing video games during the game development and design process. Playtests often involve a select group of users not involved in the development of the game to play unfinished versions of the game and give feedback on game flaws, mechanics, UI/UX, and glitches.

Figure 2: Industry Framework



Source: Buro Happold analysis

product are games and accessory hardware, as well as establishments where video arcades are the primary form of entertainment.

- **Professional and Financial Services:** the firms and businesses that provide marketing, consulting, media, or financial services to the digital games industry, such as player testing and research, advertising, or private equity investment to kickstart game development.
- Esports: the companies and organizations that host major game industry events. Esports in this report refers to any event where professional or casual players compete in multiplayer digital games for virtual or physical prizes, often hosted by the developer/IP holder, or a franchised "league" sanctioned by the IP holders of the game. Players may compete as an individual, an informal team of friends, or a professional team depending on the type of game and entry requirements. Esports game genres can range from simulated traditional sports, such as NBA 2k for basketball, to tactical first-person shooters such as Call of Duty, as well as emerging genres such as multiplayer online battle arena (MOBA) games like League of Legends that focus on cooperative team strategies. This sector includes esports team owners and league managers who organize and sell tickets for digital game tournaments and competitions in large facilities akin to traditional sports events.
- Non-profits and Education: the higher education institutions and non-profit organizations that offer educational degrees or certificates in digital game development and design, or provide workforce development services, game start-up incubation opportunities, facilities, or independent K-12 outreach programs designed to support the digital games industry.

A TOTOLOGICAL CONOCIAL CONOCIA

Students playing games at the NYU Game Center Image courtesy of NYU Game Center

Types of Economic Impact

New York City's digital games industry has four types of economic impact:

- DIRECT IMPACT: the jobs, wages, and economic output generated within the core industry.
- INDIRECT IMPACT: the jobs, wages, and economic output of the suppliers of goods and services (indirect sectors) to the core industry.
- INDUCED IMPACT: the jobs, wages, and economic output caused by employees in the core industry and indirect sectors spending their wages in New York City.
- ANCILLARY IMPACT: spending and economic activity generated as a by-product of activity within the core industry."

This study evaluated these different economic impacts and focuses on the direct impact, since this reflects the industry's direct contribution to the New York City economy by way of the jobs, wages, and economic output it *creates*. The indirect, induced, and ancillary impacts reflect the jobs, wages, and economic output that the industry *supports* in New York City, and are evaluated in the Broader Economic Impacts chapter.

Figure 3: Types of Economic Impact



19

Source: Buro Happold analysis

In 2020, New York City's digital games industry supported approximately

7,600 TOTAL JOBS \$762M IN TOTAL WAGES \$2B IN TOTAL ECONOMIC

OUTPUT



Figure 4: Industry Total Economic Impacts (2020)



Source: Buro Happold custom industry dataset (Entertainment Software Association (ESA), gamedevmap, Giant Bomb, Indie DB, Business Dynamics Research Consortium Youreconomy Time Series (YTS), Emsi, company websites and social media), IMPLAN, Buro Happold analysis

Total Economic Impact Overview

The digital games industry is a fast-growing sector of New York City's economy. It consists of an impressive range of stakeholders including multinational development studios, publishers, entrepreneurs, small businesses, freelancers, and a variety of multi-industry businesses. Together, these entities contribute to the city's culture and economy, creating opportunities for thousands of New Yorkers at the intersection of technology and the arts.

In 2020, the digital games industry in New York City in total supported approximately:

- 7,600 total jobs
- \$762M in total wages
- \$2B in total economic output

These impacts extend beyond the industry's core sectors and represent the full scope of economic activity supported by New York City's digital games industry, encompassing indirect and induced effects. The industry's core sectors are served by local suppliers and service providers, such as recruiting firms and advisory firms, and together these direct and indirect sectors support yet more businesses and employment throughout the city's economy, resulting in induced economic impacts. Furthermore, the digital games industry's transformation over the last several decades has made the industry even more enmeshed in the city's internet and technology sectors, for example, and others like the hospitality and live entertainment sectors as esports events grow in popularity. In 2020, the six sectors of the digital games industry sectors were directly responsible for

4,600

\$489M

\$1.3B DIRECT ECONOMIC OUTPUT

NYU Game Center students testing VR games made by students Image courtesy of NYU Game Center

Sector Sector 0 7

The core digital games industry—that which is responsible for its direct economic impacts—consists of six sectors: developers, publishers/developers, retail and arcades, professional and financial services, esports, and non-profits and education. In 2020, these sectors were together directly responsible for:

- 4,600 direct jobs
- \$489M in direct wages
- \$1.3B in direct output

The developers and publisher/developers sectors drive the industry's economic impacts. In 2020, they were together directly responsible for 66 percent of the industry's jobs, 80 percent of its wages, and 79 percent of its economic output.

In 2020, the developers and publisher/developers sectors accounted for approximately

66%

80%

79% INDUSTRY DIRECT ECONOMIC OUTPUT



Figure 5: Industry Direct Economic Impacts (2020)

Source: Buro Happold custom industry dataset, IMPLAN, Buro Happold analysis



It is estimated that the industry has roughly tripled in size since 2008.

\$106K AVERAGE INDUSTRY ANNUAL WAGE

Average annual wage for the digital games industry in NYC was 12% higher than the city's average annual wage of \$93,000 in 2020.

Jobs

Based on previous studies of New York City's digital games industry, it is estimated that the industry has roughly tripled in size since 2008.ⁱⁱⁱ In 2020, there were 219 game development and publishing firms and 256 other industry entities accounting for 4,600 jobs in the city. The publisher/developers and developers sectors together account for 66 percent of these jobs, having been directly responsible for 1,700 and 1,300 jobs in 2020, respectively.

The developers and publishers/developers sectors create a variety of job opportunities for New Yorkers. In 2020, the most in-demand occupations in these sectors were software engineers and developers, according to job posting data. However, other highly sought-after roles were more generalist positions such as general managers, project managers, and researchers, indicating that these sectors also create opportunities for individuals with different work and educational backgrounds to develop careers in the industry.

Wages

New Yorkers working in the digital games industry are well compensated on average. In 2020, the industry's average annual wage per job was \$106,000 (12 percent higher than the city's average annual wage of \$93,000). However, compensation varies greatly depending on the industry sector. In 2020, the average annual wage per job in the publisher/developers sector (the highest-paying sector in the industry) was \$137,000, compared to an average of \$25,000 in the retail and arcades sector, where job holders primarily earn minimum wages.



Figure 6: Industry Direct Jobs by Sector (2020)

Source: Buro Happold custom industry dataset, IMPLAN, Buro Happold analysis

Table 1: Top Occupations by Job Postings (2020)

Role	Percent Job Postings	Median Annual Earnings	Typical Entry Level Education
Software Engineer/Software Developer	15%	\$132,000	Bachelor's Degree
Director	9%	\$117,000	
Data Analyst/Data Science/Data Engineer	9%	\$131,400	
Product Manager/Project Manager	9%	\$97,000	
General Manager	6%	\$200,400	
Technical Programmer	6%	\$94,400	
Special Effects Artists and Animators	6%	\$47,200	
UI/UX Designer	3%	\$77,700	Associate's Degree
Marketing	3%	\$84,100	Bachelor's Degree
Research & Development	3%	\$110,300	

Source: LinkedIn, Emsi, Buro Happold analysis

Economic Output

In 2020, New York City's digital games industry directly generated \$1.3 billion in economic output. Economic output represents the value of the industry's business revenues and self-employment receipts. The publisher/developers sector is the industry's financial engine, accounting for 60 percent of the industry's annual economic output. Firms in this sector tend to be larger than their counterparts in other sectors, well

Figure 7: Industry Direct Wages by Sector (2020)



Source: U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW), Glassdoor, Buro Happold analysis

VIDEO GAME CLASSIFICATIONS



The digital game industry utilizes an informal system of classification for video games made across different development, revenue, and marketing budget tiers.

AAA: Alternatively pronounced "Triple-A", the term "AAA" was borrowed from the credit industry's bond rating system to describe video games with significant development, production, and marketing budgets that rival those seen in major blockbuster film productions.

AAA++: Alternatively pronounced "Triple-A-Plus", this term is occasionally used to refer to a subset of AAA games that have additional revenue generation opportunities beyond the initial purchase of the game. This includes monetization models such as additional downloadable content (DCL), expansion passes, seasonal passes, and cosmetic in-game items that add to the long-term profitability of the game.

AA: Alternatively pronounced "Double-A", the term "AA" refers to mid-market video games that are typically produced outside of major first-party development studios. AA games can be produced by mid-sized to larger indie studios and tend to sell at lower price points than AAA games.

III: Pronounced "Triple-I", the term has been used to refer to comparable high budget and high-quality indie games.

Figure 8: Industry Direct Economic Output by Sector (2020)



Source: Buro Happold custom industry dataset, IMPLAN, Buro Happold analysis

capitalized, and profitable. Several of these firms are behind some of the best-selling video games of all time and two—Take-Two Interactive and Activision Blizzard—are publicly traded companies.

The developers sector accounted for almost 20 percent of the industry's economic output in 2020. This sector's economic output is primarily driven by large development studios, which typically have higher annual revenues than indie studios and solo developers. The esports sector accounted for just 2 percent of industry economic output in 2020, in part because of the sector's nascency but also because of the pandemic and lockdown's impacts on live entertainment. Industry experts have nevertheless pointed to the potential for growth in New York City's esports sector pending more league and team sponsorships and more suitable venues.

Direct Economic Impacts by Sector

Developers

Developers are the creative driving force of New York City's digital games industry. The developers sector is the industry's second largest employer and is where much of the industry's technical talent earns their livelihoods. Companies in this sector include individual game developers incorporated as sole proprietorships, indie studios (many of which have five employees or less), and larger studios, some of which The publisher/developers sector is the digital games industry's financial engine, making up

60% of the industry's annual economic output



HALF MERMAID PRODUCTIONS

Brooklyn, New York

Half Mermaid is a NYC video game production company founded in 2017 by BAFTA winning director Sam Barlow. The studio combines traditional film making techniques with interactive digital design to create compelling interactive narrative-based games that span a multitude of genres. Its player-centric game styles sit at the intersection of investigative thriller movies and mystery games, challenging conventions in both film direction and game design. The stories found in Half Mermaid games often revolve around a diverse cast and draw inspiration from the rich history of art and culture of New York City. The studio collaborates with creators, artists, actors, programmers and producers across the game and film/TV industry.

are triple-A studios, employing hundreds of full-time employees and parttime contract workers. Large and small, these entities are the backbone of New York City's digital games industry. In 2020, the developers sector was directly responsible for:

- 1,300 jobs (29% of 2020 industry jobs)
- \$151M in annual wages (31% of 2020 industry wages)
- \$244M in annual economic output (18% of 2020 industry economic output)

New York City is home to more than 160 developers, over half of which are solo developers and indie studios. Solo developers and indie studios collectively form a strong ecosystem in New York City. These small firms push the boundaries of digital game content development and are where many professionals first get their start in the industry. Members of small-scale development teams wear many hats—from all facets of game development to marketing, business development, and fundraising—and therefore develop broad skillsets. Said skillsets make these professionals highly mobile—some join larger studios, branch off and create firms of their own, or seek employment in other technology sectors. According to industry experts, there were more than 1,500 individuals involved in game creation that were actively seeking funding for their projects through crowdfunding in 2020. The strength of the city's solo and indie developer scene, and the strong and diverse talent pool it fosters, is a key reason why industry firms choose to locate in New York City.

New York City's mid-to-large-sized studios accounted for over 80 percent of the sector's jobs in 2020. Large studios are mature businesses often consisting of multiple specialized teams and departments. They typically employ a broader range of talent than do indie studios, such as project management, marketing, and business operations professionals. While some large studios develop games fully in-house, others outsource animation, special effects, and user testing to third party or foreign production teams with lower labor costs.

New York City's large studios also typically pay higher wages than their indie counterparts and drive the sector's high average annual wage per job of \$113,000, higher than both the industry and citywide averages. Interviews with industry experts highlighted that first-year game developers are typically paid between \$50,000 and \$60,000 but that they can quickly earn six-digit salaries as they gain industry experience.

Developers are also becoming increasingly intertwined with other major New York City industries as the "gamification" of industries such as personal finance, healthcare, personal wellness, and education, becomes an increasingly popular trend among start-ups and technology firms. Gamification in healthcare, for example, applies gaming principles to improve patient clinical outcomes. These trends have created new opportunities for individual developers and studios alike. Solo developers can supplement their incomes by freelancing for gamification start-ups

Figure 9: Number of Firms and Jobs by Developers Sub-Category (2020)



Source: Buro Happold custom industry dataset, Buro Happold analysis

and some large studios have started to fund the development of original gamification-related IP through contract work in adjacent sectors. $^{\rm iv}$

Publisher/Developers

The publisher/developers sector is the New York City digital games industry's financial engine and largest employer. Traditionally responsible for funding, marketing, and distributing games, the digital games publishers in New York City are the driver of large-scale commercial success in the industry, developing and financing some of the industry's most successful games. These firms have largely adopted hybrid developer/publisher models by acquiring or creating internal game development teams. In 2020, the publisher/developers sector was directly responsible for:

- 1,700 jobs (37% of 2020 industry jobs)
- \$237M in wages (49% of 2020 industry wages)
- \$803M in economic output (61% of 2020 industry economic output)

The city's major game publishers generally come from a game console and hardware manufacturing background, which influences which kinds of games are published in the city. Firms with console-manufacturing backgrounds often include first-party development teams that create titles specific to a console. However, some game publishers without console-specific background have taken to creating their own original IP in addition to licensing games from outside developers, expanding their sphere of influence beyond specific console users. This means games are developed and published in New York City for a variety of users, regardless of console or computer used. As users favor different systems, and popularity grows or wanes with each system, the diversity In 2020, the publisher/ developers sector was directly responsible for 49% of 2020 digital games industry wages.



TAKE-TWO INTERACTIVE

New York, New York

Take-Two Interactive is a New York City based triple-A game publisher/developer founded in 1993. The company is parent to several other publishing labels that do game development in the city, such as Rockstar and Playdots. A leader in the industry, Take Two has been recognized as one of Fortune's "Fastest Growing Companies" in 2020, and as well as one of the "Best Places to Work in NYC" for small and medium sized employers in 2020-2021. Take Two is a sponsor and partner with many NYC community organizations and support a variety of K-12 STEM education initiatives through scholarship endowment and internships.

of publishers enables the industry to weather any disruptions to console popularity.

In addition to being the industry's financial engine, accounting for over 60 percent of its economic output in 2020, the publisher/developers sector has the highest paying jobs in the industry. In 2020, the average annual wage per job in the sector was \$137,000, 30 percent higher than the industry average and almost 50 percent than the citywide average. The sector's high economic output and wages reflect that digital games publishing is a profitable business and that firms in this sector tend to be large and well capitalized. Some have seen breakout success, publishing some of the best-selling video games of all time and two-Take-Two Interactive and Activision Blizzard—are publicly traded companies.

New York City's publishers are also integral to the brokering of crosssector partnerships, securing licensing deals with other industries, and successfully promoting and marketing titles from independent developers. As such, game publishing is also the digital games industry sector that drives the greatest amount of economic activity in adjacent industries. For example, game publishing companies oversee the integration of ancillary activities, such as legal services, finance, market consulting and research, advertisement and media, and more, into the core digital games industry.

Retail and Arcades

Brick and mortar retail storefronts, local game boutiques, and interactive arcades have long been a staple in New York City's entertainment landscape. While big box retailers, electronics conglomerates, and video game franchise stores such as Best Buy and GameStop dominate retail and sales employment in the digital games industry, local game boutiques such as Video Games New York are often family-run and are a part of the vital landscape of small businesses of New York City. For the purposes of this study, the digital games industry's retail and arcades sector is defined as including only the companies (and arms of companies) whose activities are directly tied to the digital games industry. In 2020, the retail and arcades sector was directly responsible for:

- 800 jobs (18% of 2020 industry jobs)
- \$20M in wages (4% of 2020 industry wages)
- \$48M in economic output (4% of 2020 industry economic output)

The retail and arcades sector accounts for the third largest number of jobs in the industry. The city's digital games retailers, large and small, distribute game consoles and hardware, physical game copies, licensed game paraphernalia, and play an important role as meeting or smallscale event spaces for New York City's local gaming community. Local game boutiques often partner with local New York City restaurants and bars for game and arcade events that contribute to the city's vibrant entertainment scene. These establishments predominantly rely on the



local part-time employee workforce and the sector's average annual wage per job, \$25,000, is far is lower than the citywide average. However, some local boutique video game store owners have expressed a desire to transition more staff to full-time in order to expand their businesses beyond retail alone, into sectors such as indie game publishing. Small business owners of local game retail stores note the difficulties in securing more full-time employees in part due to the high costs of healthcare benefits, and the reluctance of part time staff to convert to full-time employment at low wage levels. Nevertheless, local small game retail and arcade businesses offer the first connection between youth and the digital games industry. These shops and local businesses are frequently the initial gateway for youth of color to engage the digital games industry by offering part time work, hosting local game events, or participation and sponsorship in community events.

While there are more than 90 retail establishments in New York City that sell games at a measurable scale, only 24 are small businesses. The remaining retail establishments selling games are Best Buy, Gamestop, and Target stores located across the New York City. Similar to local boutique stores, these establishments rely on local labor and pay wages lower than the average wages of both the industry and New York City.

While retail and arcades account for 18 percent of jobs in the industry, there is some uncertainty about the sector's future, particularly for the city's boutique digital games stores, in light of the growing popularity of digital download stores and services. Despite consoles and other game-related hardware being a robust source of brick-and-mortar sales, sales volumes of digital game software may continue to shift towards online platforms. As such, partnerships between digital game publishers/ developers and local brick and mortar retail stores for in-store exclusive events or promotions will prove critical to the continued health of physical game sales.

Professional and Financial Services

The digital games industry's rapid growth over the years has led to the rise of professional and financial services firms specializing in digital games. For the purposes of this study, the digital games industry's professional and financial services sector is defined as including only the companies (and arms of companies) whose activities are directly tied to the digital games industry. This includes advertising, marketing and research, consulting, internet publishing, and venture capital firms that work within the digital games industry. In 2020, the professional and financial services sector was directly responsible for:

- 400 jobs (10% of 2020 industry jobs)
- \$61M in wages (12% of 2020 industry wages)
- \$178M in economic output (13% of 2020 industry economic output)

VIDEOGAMESNEWYORK



VIDEO GAMESNY

New York, New York

VideoGamesNY is a local video game boutique retail store found and run by an independent business owner in the early 2000's. Beginning with just 3 employees, the boutique was first known as Saint Marks Games prior to moving to its current location near East Village and has since attracted nationwide media attention. Beyond offering a wide selection of vintage and retro games and arcade parts, VideoGamesNY has expanded to act as distributor and publisher of predominantly indie games local to New York City. The owner believes that video games, and the community surrounding indie games, form an important part of American culture.

UNDERSTANDING ESPORTS



Esports stands for electronic sports and can be used to describe any competition game with professional leagues. Esports competitions are often hosted by the developers of the game, and anyone or team that qualifies can partake in competitive matches. Common esports games include League of Legends, Overwatch, Call of Duty, and NBA 2K series. These events are hosted in stadiums or midsized venues, with attendance between 5,000 and 10,000.

FRANCHISED LEAGUE: A league

structure with maintains a limited number of teams year to year, usually with little to no change in teams. A firm or organization can become part of a "franchised league" to earn the sponsorship benefits and advertising support from the franchiser, which is typically the game developer of the specific esports game. Being part of a franchised leagues requires offering professional players a minimum salary, benefits, and share of winnings.

UNFRANCHISED LEAGUE: Leagues where any team, organization, or individual can participate in competitive events if they qualify through promotions in game. Unfranchised leagues rely on "promotion and relegation" structure that allows teams to move between multiple ranked divisions based on performance for the season.

THIRD PARTY LEAGUE OPERATORS:

League managers unaffiliated with original game publishers who may license esports game IP and oversees league operations while sharing in revenue generated by the league. ESL is the biggest league operator, with a sales office in New York City and hosts major tournaments through ESL One New York.
Jobs in the professional and financial services sector are by and large very well compensated; the sector has the second highest average annual wage per job in the industry of \$136,000. Within the sector, advertising and marketing firms accounted for the largest share of jobs in 2020. These firms work with developers to market games both to publishers and the public.

While advertising and marketing firms account for most of the sector's jobs, investment and venture capital drives the sector's economic output. In 2020, digital games and esports companies raised \$774 million in venture capital investment. The amount of capital raised by these companies increased significantly between 2010 and 2020, growing at an average annual rate of 33 percent over this period. Venture capital is critical to the industry, from funding singular projects at indie studios to financing game development at mid-level developer studios. This funding can act as both a way for studios to stay open while developing IP and a way for studios to publish their games independently.

Despite the pandemic, investment capital raised by the digital games industry in New York City more than doubled from 2019-2020, increasing by 105 percent year-over-year despite the total number of deals staying relatively the same. The larger deal size in 2020 relative to deal volume highlights the value NYC-based investors place on game industry startups and game industry firms for future growth. As demand for esports and other cross-over game services rise, the NYC digital games industry can expect to see an increase in professional services targeted towards digital games firms, such as consulting, esports franchise advertising and marketing, and esports and digital game investment funds.

Esports

Digital games have historically trended towards social experiences between players, with developers constantly trying to find more ways to integrate digital interpersonal interaction through expansive network systems or through gameplay itself. Taken one step further, digital games have expanded beyond interaction that is entirely screen-based to inperson events, such as esports and local community game conventions and festivals, commanding attention as the rising stars of game industry venture opportunities. Building on New York City's legacy as a hub of entertainment, sports, and accommodations, game industry event businesses have stated that they benefit from being located in proximity to other events-related firms and sports teams, which provide the model for many esports events. In 2020, the esports sector was directly responsible for:

- 100 jobs (2% of 2020 industry jobs)
- \$9M in wages (2% of 2020 industry wages)
- \$27M in output (2% of 2020 industry output)

Though the esports sector's economic impacts are currently relatively small, the sector is young—having only begun to develop in earnest in

\$774M VENTURE CAPITAL RAISED BY THE INDUSTRY IN 2020

The amount of capital raised by digital games and esports companies grew at an average annual rate of 33% from 2010 to 2020.

INVESTING IN LOCAL GAMES

While New York City has an enviable pool of corporate investors, angel investors with a specific focus on digital games funding are frequently borne from indie studios that have seen success. Developers of breakout indie games go on to become indie game publishers and are more likely to support the local digital games industry. Examples of this include former indie studio Digital Continue started as a team of experienced game developers based in New York City, who grew through the provision of office space by the NYU Game Center. Since then, the studio continues to hire NYU grads and remains committed to growing in the city. This cycle renews itself organically as New York City game developers seek to remain and grow their businesses in New York City.

Game publishers with early origins in the city, such as Alliance Digital Media, are well-versed in the specific risks and challenges to game development in New York City. Local firms with long lineages in the city can offer not only financial capital to newer companies, but also provide invaluable mentorship and industry insights to independent studios and developers, creating a self-sustaining model for industry growth. Once established with infrastructure and talent, game studios are unlikely to relocate to new geographies despite more competitive incentives elsewhere due to the difficulties innate with moving a development studio at larger scales. While tax incentives can help support larger, more established game companies, city investment in local talent and start-ups is critical to promoting an game industry culture that continuously re-invests in NYC.



The Bango Toss, presented by the Brooklyn Folk Festival Background Photo by Eli Smith, Graphic Elements by Sean Wiley and Roman Sharf

Figure 10: VC Deal Count and Capital Invested



Source: Pitchbook, Buro Happold analysis

New York City in 2018—and there is much room for it to grow. The sector's average annual wage per job of \$90,000 is lower than the industry average but on par with that of the city overall. This is indicative of the sector's relative nascency, and that most companies in the sector are start-ups, funded by venture or investor capital. Furthermore, many jobs in the sector are contract-based surrounding major events. This facet of the industry sector could experience large jumps in average compensation as esports becomes more popular. Esports industry stakeholders have noted that professional esports players are generally paid high wages; franchised leagues have minimum salary requirements of \$50,000 in addition to providing provision of housing or housing subsidies to players. Profits from competition events and prize money is split between the players, league managers, and coaches, with the bulk going to players themselves. Prize money for major esports events such as championship series can range from several hundred thousand to over one million. Industry experts noted that New York City has a significant demand for esports events and media consumption, hinting that the city is uniquely positioned to benefit from the success of these firms.

Esports has also created new career paths that are accessible to people of all ages and backgrounds. Special Olympics New York, in partnership with gaming platform Mission Control, announced in 2020 open registration for its first-ever esports season for a chance to compete in Rocket League, a video game that offers competitive digital gameplay in simulated sports such as soccer and hockey. Esports leagues such as Special Olympics NY allow athletes with or without physical or intellectual disability to play on the same teams and connect with the larger sports and gaming community through shared love of competition. The sector was significantly hampered by the COVID-19 pandemic. Pandemic closures and restrictions on live events impeded broadcasting and advertising revenue streams for esports. Nevertheless, the esports sector is expected to rebound as pandemic restrictions ease, enabling events, and subsequent revenue streams, to restart.

Non-profits and Education

Non-profits and education programs are important to expanding the impact of digital games and for developing the next generation of game developers. Digital game development can be learned in a formal education setting, through certificate programs, or apprenticeships, allowing for multiple entry points to the industry. New York City is home to world-renowned universities and boasts a strong public university system that educates thousands of students every year, many of whom pursue games development education. In 2020, the non-profits and education sector was directly responsible for:

- 200 jobs (4% of 2020 industry jobs)
- \$11M in wages (2% of 2020 industry wages)
- \$24M in economic output (2% of 2020 industry economic output)

Table 2: Education Programs

Institution	School	Degree Name	Degree Type
Fashion Institute of Technology *		Computer Animation and Interactive Media	Bachelor of Fine Arts (BFA)
Hostos Community College*		Game Design	Associate of Applied Science (AAS)
The New School	Parsons School of Design	Design & Technology (Game Design Concentration)	BFA
		Design & Technology (Game Design Concentration)	Master of Fine Arts (MFA)
New York Film Academy		Game Design	1-year Certificate Program
New York University	Department of Game Design at Tisch School of the Arts, (NYU Game Center)	Game Design	Undergraduate minor
		Game Design	BFA
		Game Design	MFA
Pratt Institute	School of Art	Digital Arts and Animation	BFA
		Digital Animation and Motion Arts	MFA
School of Visual Arts		Animation	BFA
		Computer Art, Computer Animation and Visual Effects	BFA
		Computer Arts (Focus Animation, Motion Graphics or Fine Art)	MFA
		Continuing Education (CE) Animation	

* indicates a public institution

Buro Happold analysis



The non-profits and education sector has an average annual wage per job of \$57,000—far lower than the city and industry averages but comparable to other non-profits and educational institutions citywide. While there are relatively few jobs in this sector compared to the industry overall, it is deeply intertwined with the industry's other sectors. Education programs are expected to grow as the industry itself expands and the demand for jobs increases. A strong education pipeline benefits the existing industry players in New York City in addition to attracting new companies and industry leaders to the city.

The non-profits and education sector provides critical pathways into the industry for the city's youth and professionals. New York City's approach to higher education in game design is unique in that the programs offered across the city train future professionals to work in many capacities within the digital games industry that from game design to business management whereas other cities tend to focus on only the technical aspects of game development. The driving philosophy behind many of the city's accredited university degree programs such as NYU's MFA in Game Design centers on preparing aspiring game designers and creators to not only make video games, but also to run a business and market their firms. This approach to games training is present at the K-12 education program level, where students are encouraged to explore, learn, and create bodies of work in digital game design such as those offered by Brooklyn Technical High School. The Urban Arts Partnership is an example of a local non-profit organization with the mission of advancing K-12 STEM/STEAM education in underserved communities. Other examples of digital game industry-oriented non-profits include Games for Change, Esports and Game Design Collective New York (EGD).

G4C19 Student Challenge award recipients Image courtesy of Games for Change and Watts

Game education should start earlier, at the elementary school level even. These programs can help minority and disadvantaged students gain confidence, push through imposter syndrome and get more students into top colleges with serious scholarships.

Youth Non-profit Program Leader

Attendee viewing a VR experience at the G4C19 Marketplace Image courtesy of Games for Change and Jane Kratochvil

0

S

8

0000

Indirect and Induced Impacts

The digital game industry's economic impacts in New York City extend beyond the industry's six direct sectors. These core sectors are served by local suppliers and service providers and the industry is enmeshed in the city's technology, arts, and entertainment sectors. Publisher/ developers, for instance, engage the services of law firms and management consultants and developers engage freelance artists and voice actors from other creative sectors. The industry's indirect economic impacts capture the value generated by these business-to-business transactions between direct and indirect sectors.

In 2020, the digital games industry in New York City supported approximately:

- 1,500 indirect jobs
- \$160M indirect wages
- \$356M indirect economic output

Additionally, employees in these direct and indirect sectors spend their wages locally, supporting retail and service industry jobs across the city, contributing to other sectors of New York City's economy. These dynamics and inter-industry exchanges of goods and services are captured in the industry's induced economic impacts.



Figure 11: Indirect and Induced Jobs by Top Indirect Sectors

Source: Buro Happold custom industry dataset, IMPLAN, Buro Happold analysis

In 2020, the New York City digital games industry's indirect economic impacts amounted to

1,500 INDIRECT JOBS

\$160M

\$356M INDIRECT ECONOMIC OUTPUT

66

The East Coast is a huge, underserved area [for esports]. Multi-day events consistently sell out. New York City is a very accessible space for fans, making it a strategically valuable place to stay for esports leagues.

NYC esports executive

> Fans playing video games exhibited at the Play NYC 2019 gaming convention Image courtesy of Playcrafting and Micah Joel Productions

In 2020, the New York City digital games industry's induced economic impacts amounted to:

- 1,500 induced jobs
- \$113M induced wages
- \$294M induced economic output

Ancillary Impacts (Esports and Game Events)

Before the COVID-19 pandemic, esports and other gaming events routinely sold out as New Yorkers and out-of-state visitors flocked to witness exciting competitions and the latest in game development. These events generate another type of economic impact in New York City: tourism spending that is attributable to the esports and game event industry. This ancillary impact includes local spending-on, for example, local transportation, food, and hotels-that is a by-product of esports event attendance.

Though the esports sector is relatively nascent, New York City plays host to at least one-sometimes two-major esports event a year, on average attracting a total of 8,000 attendees, who are estimated to generate an average non-ticket spend of \$550 per person. According to industry experts, the number of attendees and events is expected to grow in the coming years, in turn generating more ancillary impacts in New York City.

Outside of esports, New York City is also a key destination for game conferences and showcase events for groups such as Game Devs of Color and Games for Change. Annual events pull in hundreds of visitors and put a spotlight on the diversity of local game development talent. These conferences also double as an opportunity for game industry professionals to network, and for upcoming indie studios and solo developers to connect with potential investors or publishers in pitching their works. Non-industry professionals, casual gamers, and game enthusiasts participate in game conventions or conferences to meet their favorite game creators and esports competitors.

Figure 12: Average Non-Ticket Spending Breakdown



In 2020, the New York City digital games industry's induced economic impacts amounted to

INDUCED JOBS

\$113 INDUCED WAGES

294 INDUCED ECONOMIC **OUTPUT**

From 2016-2019, major New York City esports events attracted a total of

ATTENDEES PER YEAR

Source: ESL Gaming, Andbox, Buro Happold analysis

J o no co tio

Attendees playing games featured at the 2019 E3 event hosted by the ESA Image courtesy of The ESA and Jaclyn OLaughlin

Independent Developers, Freelancers, and the Creative Community

New York City has been constructed, deconstructed, and explored inside and out by developers and gamers of all ages. Commercial successes such as the Grand Theft Auto series are not only set in New York City but also developed here. As the digital games industry matures, the innovation in gaming is increasingly driven not by large triple-A studios, but through the breakout success of "indie games" such as Her Story by Half-Mermaid Games or Killer Queen by Bumblebear Games. Indie games like these are developed by a small team of programmers, artists, and writers, or even a single individual. There does not exist any formal database or organization that captures the scale and magnitude of digital game industry freelance developers and creatives in New York City. However, through extensive interviews with indie game community members, collectives, and organizations, this report finds that the indie communities that thrive in the city defines the industry culture and forms an integral part of New York City game industry identity.

Brooklyn is a hotspot for indie game development due to more affordable studio space and residential rents for workers. Though the direct economic impacts of freelancers are small compared to the other industry sectors, the community of unincorporated, part-time, and freelance developers (collectively referred to as the indie and freelance community) are very much a vital part of the digital games industry ecosystem. The number of indie developers outnumber the quantity of larger game studios in New York City. There exists a network of approximately 18,000 New York City freelance creatives and game developers in the indie games development community who are involved at any level of game design and development. This includes not only programmers and designers, but also artists, musicians, actors, and writers that participate in the making and development of games in some way. Based on information from local digital games industry affinity and interest groups, approximately 1,500-2,000 part-time solo developers and freelancers reside in New York City, whose mainstay is exclusively in the technical development and design of games.

Creating Diversity in New York City Games

The independent games community is more diverse in terms of race and gender than large corporate game development studios, where white male developers tend to dominate the workplace. Many indie

2,000+ INDEPENDENT AND FREELANCE GAME DEVELOPERS

New York City boasts a large network of over 18,000 creatives and freelancers who are involved at any level of game design and production, including artists, writers, musicians, and actors.



GUMBO

Games Under the Manhattan Bridge Overpass (GUMBO) is a collective of independent game creators located in Dumbo, Brooklyn. GUMBO currently has about 30 full time members and hosts monthly meetups. These monthly events typically see around 20-30 people per event, and each event is sponsored by a different company. The collective welcomes any local game creator who is interested in creating, resource-sharing, networking, and collaborating.

PLAYTESTING



Playtesting forms a critical component in the digital game development process. By allowing users to experience unfinished versions of a game, developers can illicit feedback to bring forward greater game design. Open playtest events such as Playtest Thursdays organized by the NYU Game Center allow designers, players, and game enthusiasts from all backgrounds and interests to help game creators refine their games. Publicly open playtesting especially helps indie studios and solo developers validate their ideas, connect with their fanbase, and showcase upcoming games to the community. game developers are self-taught and learn development through skillsharing with other indie developers. Because of the greater diversity represented in indie game creators, indie games push the boundaries of traditional game narratives with different perspectives and address salient social and political topics such as race, inclusion, diversity, and climate change in ways that games published by larger studios rarely do. The independent developer community also partners with local retailers, boutiques, and dining establishments to host citywide meetups and roundtable events that form a cornerstone of New York City's local games ecosystem. This makes the indie games community open, collaborative, and iterative, increasing the visibility of the sector at large and provides inclusive gateways into the sector. Digital game investors and industry stakeholders alike have reiterated that the large presence of the city's indie games community is part of what makes NYC's industry seen as inclusive and committed to both diverse storylines and a diverse ecosystem for games makers and players.

Digital Games Industry Education and Workforce Development

Digital games design and development lie at the intersection of arts and technology. Increasingly, STEAM and K-12 STEM programs utilize game development and game design as a basis for stimulating youth interest in broader science and technology education. New York City non-profits and youth education programs see more than 1,500 students enrolled a year in "creative coding" programs that blend the technical and artistic aspects of digital game design. Local small businesses and larger game industry studios that offer internship opportunities to students form an integral part of the equation. Technical experience evidenced by strong portfolio of work is valued as highly by digital game development studios





GLOW UP GAMES

Glow Up Games is a game studio led by two women of color to create games that amplify the voices of beyond the perceived mainstream gaming demographic. The studio's games centers on the innovative applications of technology to drive digital narratives and storytelling. By forming partnerships with New York City firms such as HBO and crossover opportunities with other city industries, Glow Up Games is able to capitalize on digital games as a platform to reach underserved audiences while showcasing a forward-facing approach to the digital games industry.

Urban Arts Partnership student participants Image courtesy of Urban Arts Partnership

CULTURAL IMPACT OF INDIE GAMES

While less ambitious in scale and number of game features than games produced by larger studios, indie games are often more accessible to a wider variety of players due the range of host platforms. The storylines, characters, and gameplay styles also often resonate deeply among players, with indie games often sweeping the awards for "best impact," "best multiplayer," "best art direction," and "best music" categories at annual game competitions such as The Game Award. The visibility, audiences reached, and awards won are all metrics larger studios assess to gauge a region's game development talent pool and the caliber of indie games produced in a region. Indie games are celebrated in the New York Videogame Critics Circle (NYVGCC) Annual NY Game awards, which recognizes exceptional games and developers in the industry. NYVGCC itself is a multicultural non-profit organization formed of over 40 game industry leaders dedicated to mentoring, providing scholarships, and community outreach to NYC schools. The awards presented also venture into other creative and artistic categories that celebrate writing, acting, and music.





as holding degrees in the relevant fields. Creative coding programs such as School of Interactive Arts, an Urban Arts Partnership program, capitalize on this fact by helping students build up real life project experience, which has led to students attaining over \$4.5 million in scholarships since the program's inception. Programs such as these are also key to promoting gender diversity in the industry; over 50% of the participants in the program are young women. Entry into the digital games industry leads to the revolving doors of New York City's larger tech sector, allowing for an expansion of not only the city's talent pool, but also the city's reputation for diversity, equity, and inclusion.

Students drawing games concepts at the Games for Change Student XR Hackathon in 2019.

Image courtesy of Games for Change and Jane Kratochvil



URBAN ARTS PARTNERSHIP

The Urban Arts Partnership (UAP) is a youth educational non-profit aimed at responding to the needs of New York City public school students through programs that integrate arts and tech. The School of Interactive Arts (SIA) is one of UAP's most rapidly growing multi-year pre-college programs that focuses on pre-professional game development skills. Open to middle school students through high school, the SIA offers free training in creative and technical aspects of game development and is integrated into the general curriculum of partner schools. **Beyond mastery of software** and creative coding, SIA also provides students with support for standardized test prep, college advising, scholarship advertising support, and portfolio game creation with a goal of elevating program graduates to greater opportunities regardless of socioeconomic background.

The School of Interactive Arts (SIA) at Urban Arts Partnership Image courtesy of Urban Arts Partnership nership

PEDEMPTION 2

I believe there are many art forms in a game. To learn how to develop games, you must learn how to code and how to develop a story. This makes coding culturally responsible and fun in the process.

Youth Non-profit Programmer

66

Participant playing a VR game featured at the 2019 E3 event hosted by the ESA Image courtesy of The ESA and Jaclyn OLaughlin

With any emerging industry, the growing pains associated with the larger digital games industry in New York City requires support on two fronts: support for larger industry players, and support for the local indie and creative community. Some problems disproportionately affect portions of the industry more than others. The question of tax credits, for example, is a concern for large game studios in the city but is not as pressing of a need for the indie studios as the provision of affordable workspaces.

Availability of Affordable Co-Working Space

The cost and availability of New York City's commercial real estate is cited as a major limiting factor for the growth of indie to mid-sized studios, game industry start-ups, brick and mortar boutique retail stores, and even local esports leagues. Independent studios struggle to expand due to a lack of affordable studio space appropriate for a smaller studio's budget. Space size constraints limit the amount of technology and hardware for video game development, which can slow development times and increase costs for smaller studios. Hardware for animation, digital illustration, 3D modelling, and sound production are space-intensive. As a result, indie studios may have to contract out for these services rather than bringing them in-house. Freelancers who rely on studios to provide production space may find themselves working for large firms only, limiting their influence on other sectors of the industry.

Existing co-working spaces in the city tend to be out of the price range for independent developers and do not accommodate game development specific needs, such as having a variety of game hardware and platforms to perform playtesting. Industry experts noted the likelihood of meeting other game developers or industry creatives is low since these workers do not traditionally engage in these spaces due to cost and culture differences with the tech industry. Experts expressed that collaboration is key to game development as creators form partnerships that can lead to new independent studios, making the need for co-working space vital to the industry.

Even well-funded venture capital-backed start-ups in the games industry have cited space constraints and costs as a main roadblock to expansion and growth. Start-up founders have expressed concern about scaling offices to accommodate growing demand and have seen a growing preference amongst employees to commute from lower-cost suburbs with larger single-family homes, a trend that has been accelerated by the COVID-19 pandemic lockdowns. Local New York City professional esports team owners have shared similar concerns about the cost of housing professional teams within the city, and a lack of facility space technologically-equipped for esports teams to practice esports. Dedicated coworking spaces for games means affordable and accessible spaces that have the necessary equipment onsite where people can test their games. Don't ignore the outer boroughs most of the creators are there.

NYC game developer

66

We want to do events in NYC because this is where the fans are. In the gaming space, players expect to spend time with fans. Players and content creators want to incorporate NYC into their brands.

NYC esports executive

> Fans perusing the game exhibitions at the Play NYC 2019 gaming convention Image courtesy of Playcrafting

Image courtesy of Playcrafting and Micah Joel Productions

1.40001

Cost of Event Venues

Though typical cost concerns within the games industry typically revolve around digital development costs, the emerging games events and esports sector of the industry find the cost of large event spaces capable of accommodating esport crowds in New York City to be a defining challenge to growth. Past esports tournaments hosted in New York City have been held at large concert arenas such as Barclays and Madison Square Garden, or in theaters such as the Hammerstein Ballroomhowever, the cost of event production in these cases exceeds ticket sale revenue despite sold-out events. Franchised league team owners have stated that the city is especially lacking in mid-sized venues for hosting game events. These events typically require seating capacity for 4,000 to 5,000 attendees, with opportunities to accommodate up to 10,000 people. The pressure to find appropriate venues is expected to increase as more developers create competitive games for esports, and the popularity of attending matches and "home games" in New York City increases. While the allure of hosting an event in New York City remains a large deciding factor in attracting new events, game event organizers have voiced hesitancy to host annual and recurring events within the city. As esports and game events rise in popularity across the United States, New York City game event organizers consider the prospect of resituating larger events at more affordable out-of-state venues undesirable but necessary, especially as other cities and municipalities move towards subsidizing the cost of space for game events.

Access to Information

Unlike the larger tech sector, information on the games industry within New York City is not well disseminated to those who would most benefit from it. There is currently no existing centralized and publicly accessible database of game development studios or firms specific to New York City beyond information collected through local affinity groups. While industry jobs are searchable through major networking and job posting websites, contract or part-time employment in the digital games industry is generally found through individual outreach. Local independent developers have stated the difficulties in searching for contract work outside of existing relationships, which can prevent prospective new games employees from entering the games industry workforce. In parallel, corporate industry stakeholders have also noted that the lack of a publicly accessible database of available independent developers. Employers and employees have elaborated that the lack of shared information resources for employment creates the illusion that there is a lack of local game talent in New York City when the opposite is true. Beyond information asymmetries that impede the games industry workforce pipeline, these barriers to information for both New York City's game industry talent and firms highlight a need for greater visibility showcasing the creative potential and technical prowess of the city's independent developers and creative community.



Image of a game in progress, KungFu Kickball

Image courtesy of Jonah Wallerstein and WhaleFood Games

6

There just isn't a place for us to go and find information about the studios and opportunities in the city. The databases that do exist are owned by corporations. Studios and firms have no easy way of finding freelance talent in the city either.

Local freelancer developer Students drawing games concepts at the Games for Change Student XR Hackathon in 2019.

Image courtesy of Games for Change and Jane Kratochvil

66 The reason why there are not a lot of Black folks in the industry is that there is not enough money. **Folks need support** getting funding. Film, media, and music have all had breakthroughs in funding and investment [for producers of color]. The games industry has not had this moment yet.

NYC developer of color



Increasing Diversity and Barriers to Entry

The digital games industry as a whole has struggled with the problem of increasing racial and gender diversity in its workforce. Within the sector that sees the largest job creation in the digital games industry, 62 percent of publisher/developer jobs are held by white employees, which is a 15 percent higher rate of white employment than the NYC average of 47 percent across all industries. Additionally, only 39 percent of publisher/developer roles are held by those who identify as female.

Additionally, the prohibitively high cost of post-secondary education, results in many career paths falling out of reach for lower income communities, often disproportionately affecting communities of color. While degrees are not a prerequisite for game developer positions in the industry, applicants can be disadvantaged by a lack of access to technical training programs or self-teaching resources. It is difficult to break into the game industry without prior networks or connections, or successful experience as a solo developer. Disparities in socio-economic status are become especially prominent when looking at hiring within the digital game industry as low-income young people without computer access at home are less likely to build an early portfolio of original work or self-learning opportunities that can help them obtain internships or be competitive candidates for academic programs later. Nevertheless other cities with strong game industry ecosystems have looked to the digital games industry as a crucial pipeline to increase participation by low income and communities of color in tech and creative sectors due to the wide variety of available career paths.

Industry Tax Credits and Competition with Other Industry Hubs

Industry professionals have uniformly stated that tax credits geared towards the digital game industry would support the New York City games industry to offset costs, stay competitive with other major industry hubs and mitigate a "brain drain" of game development talent. Though other major industry hubs in the United States such as Los Angeles and San Francisco do not offer tax incentives for the games industry, New York City does not benefit from the historical roots in software engineering and game development that has driven organic growth in the West Coast. These is consensus within digital game industry experts that tax incentives geared towards the industry would attract triple-A studios, which would lead to increased job creation and employment for both full time workers as well as contract employees and freelancers.

While state level incentive programs exist for start-ups, technology firms, and small businesses in New York, those programs do not alleviate the respective financial pressures of game development in New York City to make it a competitive landscape nationally. Previous attempts have been made to introduce tax legislation supporting the digital game industry, but proposed measures have not generated the political support required to pass the measures in the past. There is consensus within the industry that any tax incentive for the industry must be sufficiently broad to encompass a wide variety of emerging sectors such as esports and game events, which bring tourism and ancillary spending revenue to the city.

Industry stakeholders and professionals agree that a production-based tax credit incentivizing local talent hiring and game development within the city would not only attract larger studios to New York City, but also enable existing studios to stay in the city.



PLAYDOTS

Playdots is a New York City based game development studio focusing on mobile gaming and cross-platform mobile games and apps. The studio is most wellknown for their visually appealing minimalist puzzle phone game, Dots and its sequel, Two Dots. The latter has won the 2018 Webby People's Choice Awards as well as being nominated for "Best Visual Design." Founded in 2013 by two New York City local game developers, Playdots has since grown to employ more than 50 people and represents one of the biggest breakout success stories of independent game development in New York City. The studio was acquired by Take-Two Interactive in 2020.

Fans playing games exhibited at the Play NYC 2021 gaming convention Image courtesy of Playcrafting and Micah Joel Productions The global digital game industry has grown during the COVID-19 pandemic as more consumers turn to digital games during lockdown periods as a form of entertainment. Video games, across platforms and devices, have allowed people to remain social during the pandemic, and have acted as an immersive medium for virtual interaction through cooperative gameplay, casual competition, and even through collaborative live events. Increasingly, retailers and commercial brands such as fashion companies have utilized digital games as a method of hosting virtual ingame live events that allow players to participate in product releases, streams, or showcases across the globe regardless of physical location or time zone. These trends are expected to continue beyond COVID-19 as companies realize the engagement power of digital games.

Impact on Retail

Physical brick and mortar retail stores saw the biggest negative impact due to the pandemic, especially affecting local boutique video game retail stores. Local New York City video game store owners have detailed the difficulties in transitioning to online storefronts, partially due to a lack of technological expertise in navigating online commerce. Small business owners are more likely to be dependent on annual trade shows and conventions such as New York Comic Con and other industry events across the United States to generate a significant portion of annual revenue, most of which were cancelled or postponed in 2020. Arcades, including dining establishments with arcade consoles, ceased to be operational during the pandemic, which also affected partnership opportunities between local bars and restaurants with local game store for game night events.

Impact on Developers, Artists, and Freelancers

The biggest impact of game industry layoffs due to production delays has been on contract workers and freelancers during the pandemic. When game title production came to a halt due to pandemic related disruptions, studios also ended short-term contracts with freelancers. Unlike full-time employees, freelancer game developers do generally do not receive benefits, such as healthcare insurance, and typically do not receive severance pay upon early termination of contracts. The cancellation of many local community game events and game gallery shows have also impeded collaboration and networking opportunities for the indie and freelance community. These communities have relied on conferences and events to showcase new games, find volunteers for playtesting, and pitch to local investors. 56

Before COVID-19, we used to do about 15-20 events a year with local bars. We provide the games and equipment; they provide the food and drinks. Covid has forced us to stop attending trade shows too—it wasn't just about the money, but important for creating brand recognition. That's what gave us great social media presence and helped us stay afloat when we moved to online retail."

Local game store owner

CONNECTING THE GAMING COMMUNITY



During the COVID-19 pandemic, local gaming communities moved physical meetings and workshops online through extensive use of social media and video streaming platforms. Voice and text apps such as Discord allowed for creation of private discussion servers or chat rooms which allow for moderated posting of content and collaboration. Larger companies are able to participate in local gaming community through sponsorship and hosting of these online "virtual meet-up" events. The greater accessibility of moving local game events online has allowed some New York City gaming collectives to expand their networks outside of the five boroughs and into neighboring areas such as New Jersey and Long Island.



Impact on Esports

Many esports events slated to take place in New York City have been cancelled or postponed because of the COVID-19 pandemic. Franchised esports league teams have responded to the pandemic by moving teams out of the city, and in some cases, out of the United States as a significant number of professional US-based esports teams consist of foreign nationals. These moves are predominantly due to the high cost of residential housing and a growing preference by team members to live in housing with more space. Professional esports teams have experienced difficulties in meeting physically for team practices and coaching, especially as office and commercial spaces have shut down during the pandemic. Esports organizations, dependent on revenue from broadcasting and advertising, have seen a steep decline in sponsorships due to event cancellations and general economic uncertainty. However, while in-person esports events have suffered, the popularity of virtual esports and esports industry sector continue to proliferate during the pandemic. Traditional sports leagues across the world have turned to esports and online streaming of esports as a new way of engaging their fans after the cancellation of major sporting events.

Freelance work has always been precarious, but especially during the pandemic because it's done without benefits. Having more triple A studios in the city would help keep the talent here.

Local freelance developer

ations G 0. Recommer

Students playing games at the NYU Game Center Image courtesy of NYU Game Center New York City's digital game industry has the potential to establish itself as an integral part of the city's economy, in particular, the larger tech and creative communities. Below are areas of opportunity for new initiatives and partnerships that would further support the industry and help it reach its full potential. The areas of opportunity and recommendations herein are based on stakeholder interviews, research, quantitative analysis and findings presented in this study.

Tax Credit Advocacy

 Stakeholders across industry sectors have advocated for digital game industry tax credits to support existing New York City game companies and to incentivize the establishment of new mid- to large-sized game development studios. Production-based tax credits work to offset the inherently high risks of game development. As such, the City could advocate for new production-based tax incentives that can broadly anticipate and encompass the needs of emerging game industry sectors. Tax credits should work in combination with targeted citywide efforts to promote digital game industry opportunities and programs for local developers and studios.

Digital Resources

 A dedicated webpage and marketing campaign to promote digital game development events and organizations located within the city would be a boon to the industry. A consolidated online New York City portal for game industry related information would act as a landing page for both prospective firms looking to relocate to the city, as well as contain resources for independent creators and small businesses. As part of the campaign, the website should showcase local games and developers from NYC's creative and independent developer community and showcase ongoing local digital game development projects.

Community Relations

• The City should expand its role in liaising with the independent game developer communities and nonprofits focusing on game communities of color and work with underrepresented communities such as communities of color to coordinate City-sponsored events. The City has a pivotal role in framing the direction that NYC goes with the games industry. Not only do New York developers need to be recognized, the games created in the city needs to be better recognized, and the City can find ways to provide that recognition.

NYC game event organizer



MICROSOFT REACTOR SPACE

New York, New York

The Microsoft Reactor New York is a privately owned publicly accessible event-based space located in Times Square that offers local technology, startups, and developer communities a flexible space to host meetings, small events, workshops, and hackathons. The space is equipped with monitors and microphones for presentations and streaming events. Spaces such as the Reactor Space provide local game and indie communities a safe, free, and well-equipped space for team meetups and collaboration. Organizations or individuals are able to make space reservations through the Microsoft Reactor website, and spaces are reserved based on time and date availability, as well as priority of events.

• The City should promote major city game events by offering public promotional and advertising space to increase event visibility and integrate digital games into existing marketing credit programs such as Made in NY.

Survey of Existing NYC Industry Assets

- The City should identify strategic "gaming cluster areas" where clusters of gaming activity is present, and growth is encouraged by the City programs. Game clusters are especially important and sought after by the industry as it mitigates risk levels of development due to proximity of project opportunities, IP, venture capital, and more importantly, talent.
- The City should explore partnerships with New York City academic institutions to create publicly accessible game-centric co-working space that also functions as incubator space. Local academic institutions, such as NYU, have expressed interest in supporting the creation of programming focused on small business support for independent creators and small studios. Successful game-centric co-working spaces offer programming such as pitch workshops, networking nights, and inviting industry professionals and investors for discussion panels. Spaces should be located in growing gaming clusters and be close to public transit. The City should also leverage underutilized and vacant City-owned properties to help subsidize event spaces as the esports industry grows and demand for technologically well-equipped space with massive seating capacity as rises.

Workforce Development

- The City should continue to support educational non-profits such as Urban Arts Partnership to establish a strong talent pipeline to digital games jobs. Programs focusing on K-12 STEM/STEAM education are especially critical to elevate the city's game, tech, and creative sector talent pool, and provide opportunities for underprivileged youth to rise above their socioeconomic circumstances.
- The City should explore partnership opportunities and advocacy for the development of degree programs and scholarships in video game development and design, at institutions such as the City University of New York.
- City-sponsored game competitions can help increase the visibility of local game development talent. The City should host city-wide game design competitions with separate categories for K-12 youth teams, indie studios, and solo developers. Competitions support the industry by spotlighting breakout talent in the city, and sparking interest in the city's game development talent pool from larger studios and investors.



Support for Indie and Freelance Community

- The City should explore partnerships to offer residency programs for independent creators similar to the Public Artists in Residence (PAIR) program which connects local artists to city agencies. Like PAIR artists, independent game creators could help create lasting impact in the city by working collaboratively with NYC agencies to solve problems and create new possibilities by leveraging the technological and creative talent of local game developers. Such projects could include interactive apps for public services, interactive educational material for City campaigns, and gamification of public information materials for safety, health, and transit, amongst other potential topic areas.
- The City should explore partnerships to offer project-based grants and incubator programs for local game start-ups, indie studios, and independent game creators. Access to seed capital enables the indie and freelance community to focus on producing original IP rather than depend on uncredited contract work, increasing the potential for more breakout titles developed in New York City.

Fans playing video games exhibited at the Play NYC 2019 gaming convention Image courtesy of Playcrafting and Micah Joel Productions

Grants for indie developers are needed. Independent developers straddle the line between artist and entrepreneur, and it would be great if there was financial help for them like there is for artists.

Conclusion

Students drawing games concepts at the Games for Change Student XR Hackathon in 2019 Image courtesy of Games for Change and Jane Kratochvil

1 -

New York City's digital games industry is still experiencing the growing pains of a nascent industry but has already proven itself to be an integral part of the city's tech and creative communities. As the industry grows, with proper support, it will continue to expand its role as a valuable economic asset that provides accessible pathways to high paying jobs in a variety of careers and occupational interests. Digital games are effective tools to engage the city's youth, and propel younger generations to become innovators, creative thinkers, and entrepreneurs. The city's indie game development scene in particular is an essential asset that can form the pillar of New York City digital game identity. Ripe with diversity and creative stamina, the indie community awaits the right combination of infrastructural support, direction, and opportunities to break out and redefine what game development in the city could be. While the industry faces a variety of challenges, some of which are endemic to any cosmopolitan metro area and others which are unique to the industry, the New York City games industry is poised for high growth and expansion. From the heels of the COVID-19 pandemic, emerging sectors such as esports are in a unique position to establish new economic opportunities for residents while making New York City an even greater cultural destination for all.

56

A lot is happening in NYC in the games industry, and a lot more could happen if we connect the dots. The strength of NYC lies in its diversity of talent, which becomes diversity in the games created.

NYC game developer 2. Appendix

Tales from Off-Peak City created by Cosmo D Studios, an indie game developer from the GUMBO NYC collective

11E

Economic Analysis Methodology

This study quantifies the economic impact of New York City's digital games industry according to three key economic indicators: jobs, wages, and economic output (the value of business and self-employment revenues). Since a well-defined digital games industry is not separately captured within the federal government's Northern American Industry Classification System (NAICS), this study used a tailored methodology based on establishment-level data to define and size the industry in New York City.

Previous studies of the digital games industry have typically evaluated the industry at the state or national level. This study differs by taking a localized approach and evaluating the industry at the city level. It also uses a nuanced industry definition that captures both the 'core' industry entities that are fully attributable to the industry (such as developers) and the 'multi-industry' entities that are measurably significant industry players but only partially attributable to the industry because a substantial portion of their operations and revenue are tied to nondigital games industries (such as some professional services firms and retailers). By accounting for the entirety of all 'core' entities and only the directly relevant shares of 'multi-industry' entities (using a method described below), this study balances simplicity with the need for a nuanced and comprehensive understanding of New York City's digital games ecosystem.

For the purposes of this study, a custom database of industry firms and organizations was compiled and served as the underlying data for the economic analysis. This approach is similar to that used in the 2017 and 2020 ESA impact reports. The establishment-level database was built using multiple data sources, including existing digital game company databases, websites, social media, and other publicly accessible and proprietary sources. Building the database involved a two-step process. The first step was to develop a 'master list' of industry firms and organizations active in New York City in 2020. The second step was to identify and/or estimate employment information for these entities.

Existing digital game company databases—ESA Impact Map, GameDevMap, GiantBomb, and Indie DB—served as the foundation for this study's industry master list. These databases were compiled, verified, cleaned of duplicates, and supplemented with additional information from desktop research and other data gathering techniques. For example, professional services firms that specialize in digital games were identified through ad hoc desktop research and Google's Places API was used to identify relevant retail and arcade locations throughout the city. The resulting industry master list was vetted and refined by industry experts and served as the starting point for developing the custom industry database.



Student creating a 3D rendering for a video game Image courtesy of EvgeniyShkolenko,

accessed via Canva

The custom industry database was created by identifying and/ or estimating employment information for the companies and organizations in the industry master list. Two key proprietary data sources were used for this process: the Youreconomy Time-Series (YTS) data from Business Dynamics Research Consortium (BDRC), a project of the University of Wisconsin, Institute for Business and Entrepreneurship, and Emsi (a commercial provider of economic, labor market, demographic, and education data), which provides establishment-level business data via DatabaseUSA.com.¹² This process involved:

- Matching the industry master list to business data records from BDRC and Emsi, algorithmically when possible and manually when not.
- Developing data records for entities in the master list not captured in the BDRC and Emsi databases. This was achieved by estimating entities' employment information based on publicly available information from websites and social media (e.g., LinkedIn, Twitter, Facebook) and insight from industry experts.
- Developing digital games industry shares for 'multi-industry' entities. Accounting for the entities that are significant players in the digital games industry but with substantial operations and revenue tied to other industries required calibrating their data to reflect only the share that is directly relevant to the industry. This calibration involved taking a 'cut' of the entity's employment information, informed by desktop research, insight from industry experts, and in some cases public company filings.

Types of Economic Impact

The custom industry database was mapped to a simplified industry framework that is structured around six main sectors: developers, publisher/developers, esports, professional and financial services, arcades and retail, and non-profits and education. These sectors encompass the full lifecycle of industry activities and are what generate the industry's direct economic impact. The industry's direct economic output, for example, consists of the revenues attributable to the entities in these sectors, from business-to-business spending within the industry (e.g., for the rights to distribute a game) to sales to consumers (e.g., physical game sales by retailers).

The direct economic activity of these sectors (measured in terms of jobs, wages, and economic output) indirectly creates additional jobs, wages, and economic output in other sectors of the New York City economy. This is called the industry's indirect economic impact. For example, the industry's publisher/developers sector creates jobs, wages, and revenues for suppliers and service providers in non-industry sectors, such as legal practices and recruiting and employment services firms. Employees in direct and indirect sectors create additional economic impacts by spending their wages at New York City businesses, such as

- Infogroup is the provider of the Licensed Database used to create the Your economy Time Series (YTS). This research was authorized to use YTS through the Business Dynamics Research Consortium (BDRC) by the University of Wisconsin's Institute for Business and Entrepreneurship. The contents of this publication are solely the responsibility of the authors.
- 2 Emsi relies on data from public sources, including the United States Bureau of Labor Statistics, United States Census Bureau Nonemployer Statistics, in addition to private sources like job search platforms, to gather and verify information.

Table 3: Digital Games Industry Framework

Sector	Sub-Category	
Developers	Developer Studios (Mid- to Large-Sized)	
	Indie Studios and Solo Developers	
Publisher/Developers	Hybrid Publisher/Developer Studios	
	Interactive Platforms and Media	
Retail and Arcades	Video Game Retailers	
	Electronics Stores	
	Amusement Arcades	
Professional and Financial Services	Internet Publishing	
	Investment and Venture Capital	
	Consulting Services	
	Advertising	
	Market Research Services	
Esports		
Non-profits and Education	Non-profits	
	Education Programs	

Source: Buro Happold analysis

restaurants and pharmacies. This flow of money supports additional local jobs, wages, and revenues. This is called the industry's induced economic impact.

Finally, an additional type of economic impact is created when esports and other digital games events spark ancillary tourism spending that benefits the local economy. Eventgoers spend money on local transportation and patronize local businesses such as hotels and restaurants. This ancillary economic impact was analyzed separately as it requires a distinct methodology.

Direct Economic Impacts

The custom industry database, mapped to the simplified industry framework, served as the basis for evaluating the industry's direct economic impacts. The structured data, which summarized the industry's direct jobs by sector, was mapped to a corresponding set of NAICS and IMPLAN codes, allowing for an evaluation of the industry's direct wages and economic output.³

The industry's direct wages were evaluated using a combination of data sources—the U.S. Bureau of Labor Statistics (BLS)' Quarterly Census of Employment and Wages (QCEW), Glassdoor (the anonymous company

3 Employment figures in this study represent the total number of jobs in the industry, whether the positions are full-time, part-time, or temporary. For this reason, and because a single individual can hold multiple jobs, these values are not equivalent to the number of individuals employed in the industry or full- time equivalents (FTEs). review website where employees can also submit and view salaries), and game developer salary surveys—which were normalized for comparison. The industry's direct economic output was evaluated using IMPLAN's industry standard 'input-output' model, which models the interrelationships and financial transactions between economic sectors using economic data from the U.S. Bureau of Economic Analysis (BEA), BLS, and U.S. Census Bureau.

The industry's direct jobs, wages, and economic output are reported in this study according to the simplified industry framework. Other workforce characteristics are also reported in this way. This provides the direct economic impact of the digital games industry in New York City.

Indirect and Induced Economic Impacts

Modelling indirect economic impact involved estimating the impact of business-to-business spending between the digital games industry and non-industry entities. Modelling induced economic impact involved estimating the impact of spending by employees of direct and indirect sectors on the overall New York City economy. Once the industry's main sectors and corresponding metrics (jobs, wages, and economic output) were modelled, IMPLAN was used to estimate the same metrics for all relevant indirect and induced sectors. This provides the indirect and induced impacts of the digital games industry.

Ancillary Economic Impact

Modelling the ancillary tourism spending attributable to the digital games industry involved estimating the impact of local spending by eventgoers. This was achieved using New York City event attendance figures and spending surveys provided by esports companies.

Limitations

This study balances simplicity and replicability with the need for a nuanced and accurate understanding of New York City's digital games ecosystem. There are several considerations that should be noted regarding the data sources used:

- The custom industry database enabled a 'snapshot in time' analysis of the state of the industry in 2020 according to several economic indicators. However, due to the limited availability of high-confidence establishment-level data on a historical basis, a longitudinal (or historical) analysis of these indicators was not conducted.
- Many solo developers and industry freelancers are not represented in existing industry databases, nor do they have online presences. These individuals were not captured in the economic analysis and are therefore underrepresented in the overall economic impact estimates.

Endnotes

- i Global Esports and Live Streaming Market Report (2021), Newzoo
- ii The digital games industry's ancillary impact is the tourism spending generated by esports and game event attendance in New York City. This impact is modeled differently than the others and is therefore treated separately in the Broader Economic impacts chapter.
- iii This was estimated using figures from the Center for an Urban Future (CUF)'s 2008 Getting in the Game Report as a baseline.
- iv "Gamification" refers to the application of digital gaming elements to other activities or industries. This can include creating virtual competition, rules of play, point systems, or virtual rewards to incentivize desired usage or behavior on a platform or product. Gamification can also apply to marketing or educational materials.

References

- "All New York's A Stage: New York City Small Theater Industry Cultural and Economic Impact Study." New York City Mayor's Office of Media and Entertainment, 2019, https://www1.nyc.gov/assets/mome/pdf/mome-smalltheater-study-2019.pdf.
- Colton, Tara. "Getting in the Game." Center for an Urban Future, May 2008, https://nycfuture.org/research/getting-in-the-game.
- "Economic Impact, Trends, and Opportunities Music in New York City." New York City Mayor's Office of Media and Entertainment and The Boston Consulting Group, Inc., 2017, https://www1.nyc.gov/assets/mome/pdf/ MOME_Music_Report_2017_DIGITAL.pdf.
- Gladstone, Neil. "Programming New York for Video Game Development." New York Times, August 2, 2018, https://www.nytimes.com/2018/08/02/ nyregion/programming-new-york-for-video-game-development.html.
- Mander, Jason, et al. "The world of gaming report: An exploration of how the gaming landscape is rapidly levelling up." Global Web Index, 2020, https://direc.ircg.ir/wp-content/uploads/2020/10/The-World-of-Gaming-Report_2.pdf.
- Mauceri, Joe. "Esports competition comes to Barclays Center." Pix11, July 26, 2018, https://pix11.com/news/542262/.
- "New York City Film & Television Industry Economic Impact Study 2021." NYC Mayor's Office of Media and Entertainment, 2021, https://www1.nyc.gov/ assets/mome/pdf/mome-nyc-film-tv-industry-study-report.pdf.
- "New York City Film & Television Industry Economic Impact Study 2021." NYC Mayor's Office of Media and Entertainment, 2021, https://www1.nyc.gov/ assets/mome/pdf/mome-nyc-film-tv-industry-study-handout.pdf.
- Peckham, Eric. "With stadiums closed, TV networks turn to live esports broadcasts." TechCrunch, May 18, 2020, https://techcrunch. com/2020/05/18/with-stadiums-closed-tv-networks-turn-to-live-esportsbroadcasts/.
- "The eSports Industry's Rapid Rise Attracts Broadcasters Eager for Viewers." Financial Buzz, PRNewswire, July 24, 2019, https://www.prnewswire.com/ news-releases/the-esports-industrys-rapid-rise-attracts-broadcasterseager-for-viewers-300890096.html.
- "The State of the Games Industry 2021." Game Developers Conference, 2021, https://reg.gdconf.com/state-of-game-industry-2021?kcode=BLG_GDC
- Tripp, Simon, et al. "Video Games in the 21st Century: The 2020 Economic Impact Report." The Entertainment Software Association and TEConomy Partners, LLC, 2020, https://www.theesa.com/wp-content/ uploads/2019/02/Video-Games-in-the-21st-Century-2020-Economic-Impact-Report-Final.pdf.

Interviewees

Buro Happold would like to thank the following organizations for their expert opinions and insight leveraged in this report:

Andbox **Avalanche Studios** Entertainment Software Association (ESA) Epic Games E-Sports Entertainment (ESL) Game Devs of Color Expo Games for Change **GUMBO** International Game Developers Association (IGDA), New York City Kickstarter New York State Digital Game Development NYU Game Center Playcrafting SuperData Research Take-Two Interactive **Tilting Point** Tribeca Games Urban Arts Partnership Video Games New York

Mayor's Office of Media and Entertainment

Anne del Castillo – Commissioner Shira Gans – Senior Executive Director, Policy and Programs Alia Jones-Harvey – Associate Commissioner, Workforce Development and Educational Initiatives

BURO HAPPOLD CITIES Adam Friedberg Alice Shay Shayan Lotfi Joy Huang David Bigio Madeleine Sims Amelia Clark

PUBLIC WORKS PARTNERS Celeste Frye Aurelia Aceves Jordan Cosby Summer Payton

PURE + APPLIED Paul Carlos Miriam Haier Celine Kim

STRATEGIC ADVISOR

Dylan McKenzie – Game Designer, Teamshares, Adjunct Faculty, New York University, and former NYU Game Center Incubator Director

Back Cover

Grand Theft Auto IV in-game still set in New York City Grand Theft Auto IV and Rockstar Games

NYXL Homestand Sunday, February 9, 2020 Image courtesy of Andbox and Chris Ayala

