FEBRUARY, 2017

ANALYZING THE AMERICAN VIDEO GAME INDUSTRY 2016

STATISTICS ON GEOGRAPHIC VOLUME, EMPLOYMENT, AND GROWTH

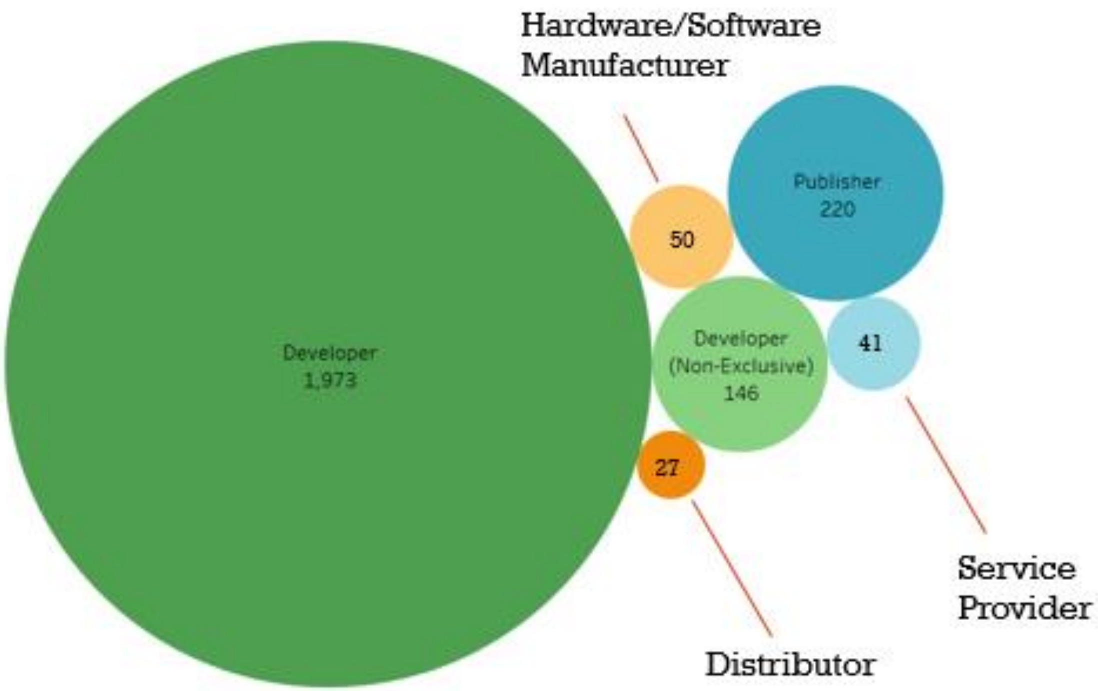
CONTENTS

EXECUTIVE SUMMARY

This report will provide a comprehensive overview of the volume, employment, and growth of the American video game industry in 2016. The report's key findings include the following:

- There are 2,457 active game companies in the United States across 2,858 locations.
- Game companies are located in all 50 states and 83.70% of Congressional districts.
- There are an estimated 65,678 direct employees in America's video game industry.
- 99.7% of American-based game companies are small businesses.
- The top 3 states by number of game companies are California, Texas, and Washington with 853, 268, and 221 companies, respectively.
- The top 3 metropolitan statistical areas by number of game companies are Los Angeles-Long Beach-Santa Ana, San Francisco-Oakland-Hayward, and New York-Northern New Jersey-Long Island with 331, 307, and 211 companies, respectively.
- The top 3 states by game industry employment are California, Washington and Texas with 35,325 employees, 6,166 employees, and 4,883 employees, respectively.
- The top 3 metropolitan statistical areas by employment are San Francisco-Oakland-Hayward, Los Angeles-Long Beach-Santa Ana, and Seattle-Tacoma-Bellevue with 16,466 employees, 14,484 employees, and 6,031 employees, respectively.
- The top 3 states by game industry growth (2013-2016) are Indiana, Utah, and Maryland with 150%, 100%, and 95% growth, respectively.
- The top 3 metropolitan statistical areas by game industry growth (2013-2016) are Charlotte-Gastonia-Concord, Provo-Orem, and Denver-Aurora-Lakewood with 175%, 140%, and 100% growth, respectively.
- Video game industry growth is likely due to (1) the rise of independent video game developers, who in 2016 made up 98.10% of all company additions, and (2) the increasing amount of video game studies courses and programs offered across 940 American educational institutions of higher learning.
- 481 of these 940 schools offer a major, minor, concentration, or certificate in game education.
- A state with a school offering game education is 89% more likely to have a game company.

GAME COMPANY CLASSIFICATION



In 2016, the American video game industry consisted of 2,457 active game companies across 2,858 office locations. 94.57% of these companies were founded domestically while the remaining 5.43% of companies were founded overseas with one or more branch offices located in the United States.

The aggregate number of game companies in the United States represent a cluster of smaller subgroups that are classified based on their primary business activity. There are six subgroups: (1) developer, (2) publisher, (3) non-exclusive developer, (4) hardware/software manufacturer, (5) service provider, and (6) distributor.

DEVELOPER

A game developer is any company whose primary business activity is the physical creation of a game. This encompasses several different tasks including game programming, designing, writing, and scoring. While not all activities have to be performed by the company, the company must have produced a finished product made available for public consumption in order for the company to be considered a developer. These companies make up 80.3% of all game companies with 1,973 companies in its subgroup.

Included Examples: DICE EA, Naughty Dog, Vicarious Visions

PUBLISHER

While game developers also publish games, the publisher subgroup consists of any company whose primary business activity is the publication of outside developers' or subsidiaries' content to online, computer, social, mobile, and console platforms. The subgroup consists of 220 companies.

Included Examples: Electronic Arts, Take-Two Interactive, Activision Blizzard

NON-EXCLUSIVE DEVELOPER

A non-exclusive developer is any company that develops a game (often for mobile game applications or web-based gaming), but does so in conjunction with other business activities outside of the video game industry including web development and film animation. There are 146 companies in this subgroup.

Included Examples: Magic Leap, LeapFrog Enterprises, Unit9

HARDWARE/SOFTWARE MANUFACTURER

Hardware/software manufacturers build game accessories and/or equipment such as game consoles, game headsets, virtual reality equipment, and computer graphics chips, as well as game engines for game development. This subgroup is small with 50 companies.

Included Examples: Unity Technologies, Turtle Beach Corporation, Nvidia

SERVICE PROVIDER

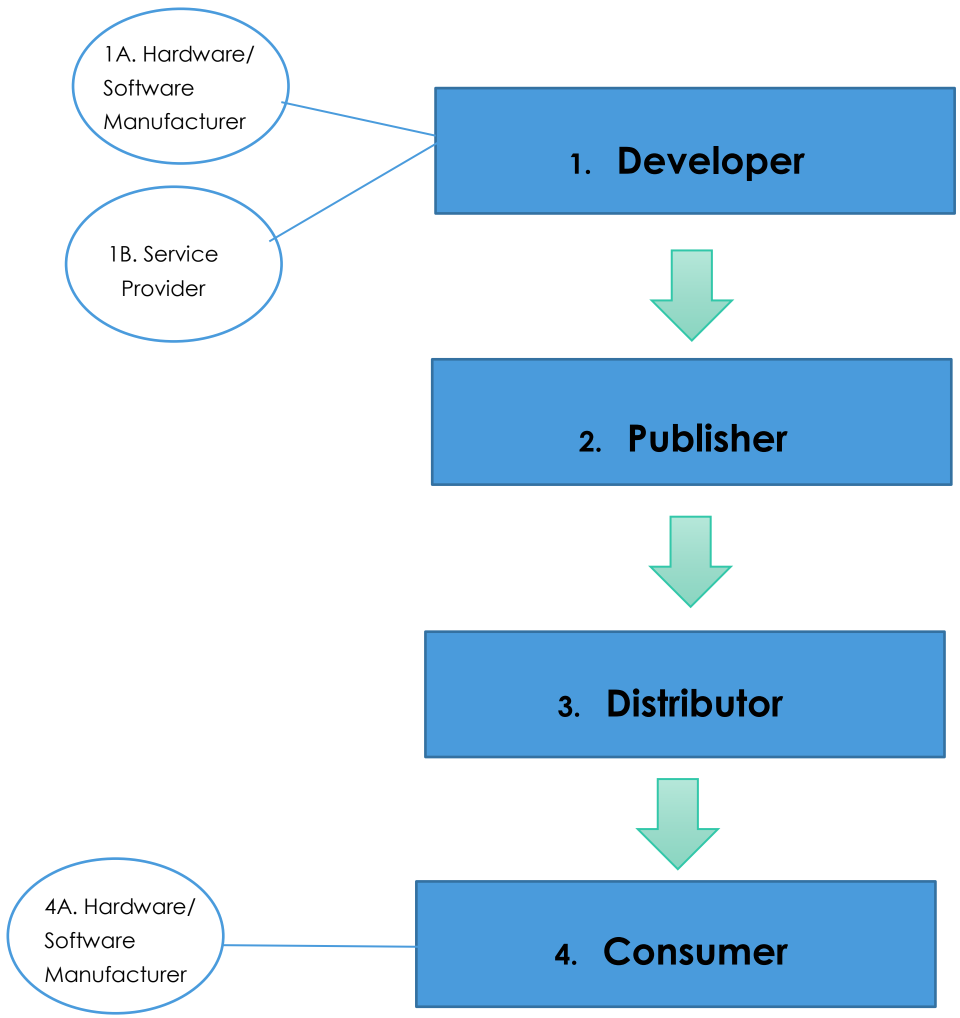
Service providers are developers who aid in the creation of game art, programming, tools, and design but do not produce any finished games or publish any finished products. Service providers are usually outside contractors who sell development tools, game art, and/or technology for game graphics and motion detection. This subgroup is small with 41 companies.

Included Examples: Game Workshop, Art Bully Productions, Faceware Tech

DISTRIBUTOR

The smallest subgroup with only 27 companies is the distributor. A distributor's primary business activity is distributing games either through an online platform or through the physical worldwide distribution of published content. This subgroup does not include individual stores that sell video games such as GameStop or Best Buy, but are comprised only of major American or worldwide wholesale distributors or online mobile and computer game distribution services.

Included Examples: Valve Corporation (Steam), Google Play, Big Fish Games



Example: Company Subgroups in PC Game Development

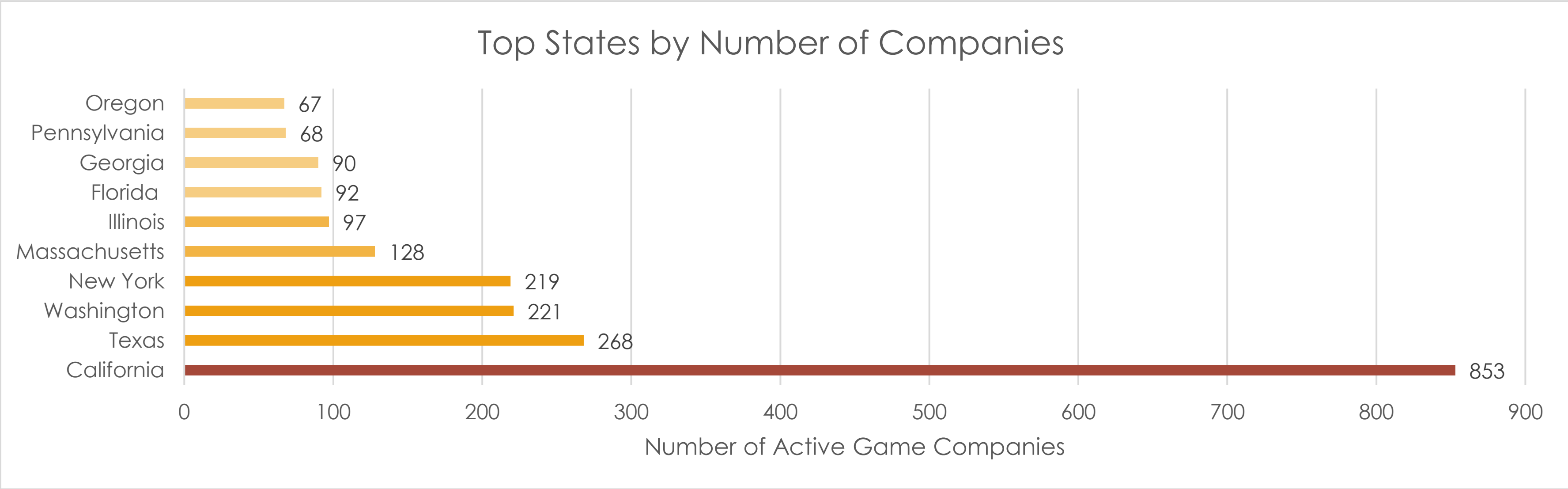
1.) **Developers** design and finalize game for publication
   1A. **Hardware/software manufactures** create game engines where the developer can create game
   1B. **Service providers** create additional content for game
2.) **Publishers** publish game on online distribution platform
3.) **Distributors** make game available for sale
4.) Consumer purchases and plays game
   4A. **Hardware/software manufactures** create graphics chips that enable the consumer to play game on their devices

VIDEO GAME INDUSTRY VOLUME

TOP STATES, METROPOLITAN STATISTICAL AREAS, AND CONGRESSIONAL DISTRICTS BY NUMBER OF GAME COMPANIES

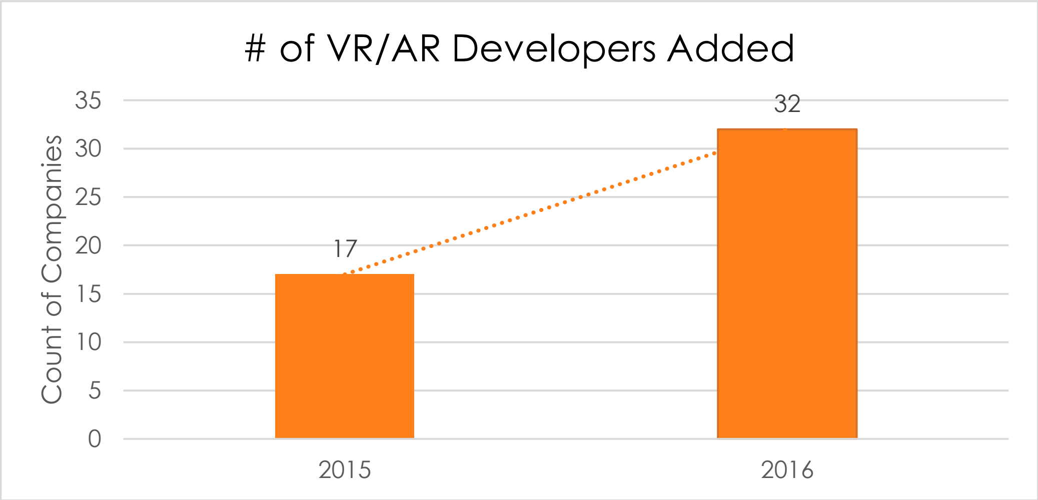
Top States by Number of Game Companies

California	Texas	Washington
853 Companies	**268 Companies**	**221 Companies**



Video game companies are located in all 50 states and the District of Columbia. 29.81% of all game companies are located in California, which is the top state for the American video game industry by number of companies with 853 companies. The second largest state for the U.S. game industry by volume is Texas with 268 companies, followed by Washington with 221 companies. These top three states attract companies across all six subgroups primarily because they are home to the headquarters of major video game publishers and their subsidiaries. For example, Electronic Arts, Activision Blizzard, Sony Interactive Entertainment, Take-Two Interactive's 2K Games, Ubisoft, Warner Brothers Interactive Entertainment, Crystal Dynamics, and Wargaming America have their headquarters in California. Electronic Arts Pogo, Electronic Arts' BioWare, and major ZeniMax Media developers including id Software, Battlecry Studios, and Arkane Studios are headquartered in Texas. Additionally, Nintendo of America and Microsoft Studios are headquartered in Washington.

TOP STATES FOR AUGMENTED AND VIRTUAL REALITY DEVELOPMENT



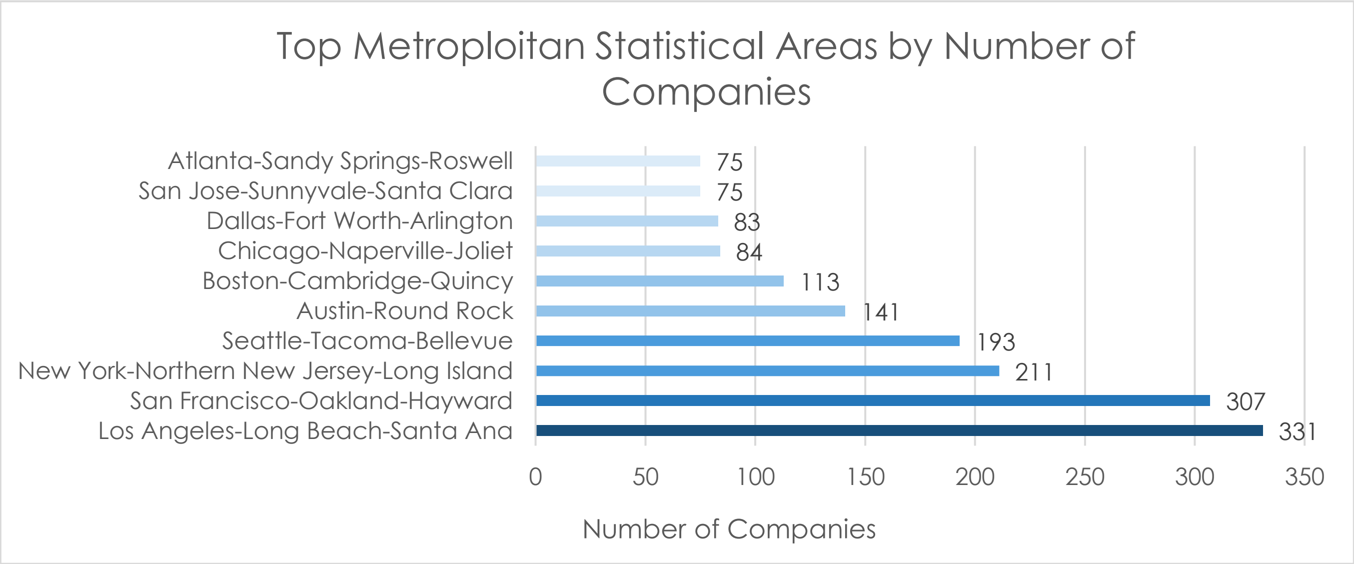
There are 144 game developers in the United States creating original content for augmented or virtual reality (AR/VR) enabled technologies such as mobile applications and PC gaming platforms such as Steam. Between 2015 and 2016, the number of companies added to the nation's total company count that developed their products for AR/VR technologies increased 88.23%.

Top states for number of AR/VR developers are California, Texas, and Washington with 61, 21, and 15 AR/VR developers, respectively.

Top Metropolitan Statistical Areas by Number of Game Companies

Los Angeles-Long Beach-Santa Ana	San Francisco-Oakland-Hayward	New York-Northern New Jersey-Long Island
331 Companies	**307 Companies**	**211 Companies**

The top metropolitan statistical areas (MSAs) by industry volume are led by major cities in California. Los Angeles-Long Beach-Santa Ana has more game companies than any other MSA with 331 companies followed closely by San Francisco-Oakland-Hayward with 307 game companies. Another California MSA, San Jose-Sunnyvale-Santa Clara, is also included in the list with 75 companies. Top MSAs are additionally located in Texas (Austin-Round Rock and Dallas-Fort Worth-Arlington), Washington (Seattle-Tacoma-Bellevue), New York (New York-Northern New Jersey-Long Island), Massachusetts (Boston-Cambridge-Quincy), and Illinois (Chicago-Naperville-Joliet).



Top MSAs include cities in California, Texas, Washington, New York, Massachusetts, and Illinois

Top Congressional Districts by Number of Game Companies

One or more video game companies are located in 83.70% of all Congressional districts. Similarly, colleges and universities encouraging and training industry talent by offering programs or courses in game studies are located in 86.40% of Congressional districts (more information on game education is included later in this report). Combined, there is a school offering courses or programs in game studies and/or a game company in 96.55% of Congressional districts.

District	Number of Companies
Rep. Nancy Pelosi (CA-12)	164
Rep. Ted Lieu (CA-33)	75
Rep. Jackie Speier (CA-14)	65
Rep. Carolyn Maloney (NY-12)	50
Rep. Pramila Jayapal (WA-07)	50
Rep. Suzan DelBene (WA-01)	47
Rep. Anna Eshoo (CA-18)	46
Rep. Adam Smith (WA-09)	43
Rep. Karen Bass (CA-37)	40
Rep. Barbara Lee (CA-13)	37
Rep. Jerrold Nadler (NY-10)	37

96.55% of Congressional districts have either a video game company or a higher educational institution offering education in video game studies

60% of individual Congressional districts with the most game companies are located in California including CA-12 (Rep. Nancy Pelosi) with 164 companies, CA-33 (Rep. Ted Lieu) with 75 companies, and CA-14 (Rep. Jackie Speier) with 65 companies. However, areas with large concentrations of game activity such as Los Angeles and Austin, TX consist of several Congressional districts. In order to account for the breakup of districts across states with one or more large metropolitan areas, the top three Congressional districts of each of the ten top states by number of game companies (see above) have been included below.

60% of top Congressional districts in top states including Texas, Washington, Massachusetts, Illinois, Georgia, and Oregon are centralized in the state's largest city. For example, all top districts in Texas and Georgia are centralized in or around Austin and Atlanta, respectively.

TOP CONGRESSIONAL DISTRICTS IN TOP STATES

California

Congressional District	Representative Name	Number of Companies	Political Party
CA-12	Nancy Pelosi	162	D
CA-33	Ted Lieu	75	D
CA-14	Jackie Speier	64	D

Texas

Congressional District	Representative Name	Number of Companies	Political Party
TX-10	Michael McCaul	33	R
TX-25	Roger Williams	29	R
TX-21	Lamar Smith	24	R

Washington

Congressional District	Representative Name	Number of Companies	Political Party
WA-07	Pramila Jayapal	50	D
WA-01	Susan DelBene	47	D
WA-09	Adam Smith	43	D

New York

Congressional District	Representative Name	Number of Companies	Political Party
NY-12	Carolyn Maloney	50	D
NY-10	Jerrold Nadler	37	D
NY-07	Nydia M. Velazquez	12	D
NY-20	Paul Tonko	12	D

Massachusetts

Congressional District	Representative Name	Number of Companies	Political Party
MA-07	Michael Capuano	31	D
MA-05	Katherine Clark	15	D
MA-03	Niki Tsongas	13	D

Illinois

Congressional District	Representative Name	Number of Companies	Political Party
IL-05	Mike Quigley	14	D
IL-07	Danny Davis	10	D
IL-08	Raja Krishnamoorthi	8	D
IL-09	Janice D. Schakowsky	8	D

Florida

Congressional District	Representative Name	Number of Companies	Political Party
FL-07	Stephanie Murphy	16	D
FL-10	Val Demings	8	D
FL-23	Debbie Wasserman Schultz	7	D

Georgia

Congressional District	Representative Name	Number of Companies	Political Party
GA-05	John Lewis	34	D
GA-06	Tom Price	13	R
GA-07	Rob Woodall	11	R

Pennsylvania

Congressional District	Representative Name	Number of Companies	Political Party
PA-14	Michael Doyle	24	D
PA-02	Dwight Evans	7	D
PA-01	Robert Brady	6	D

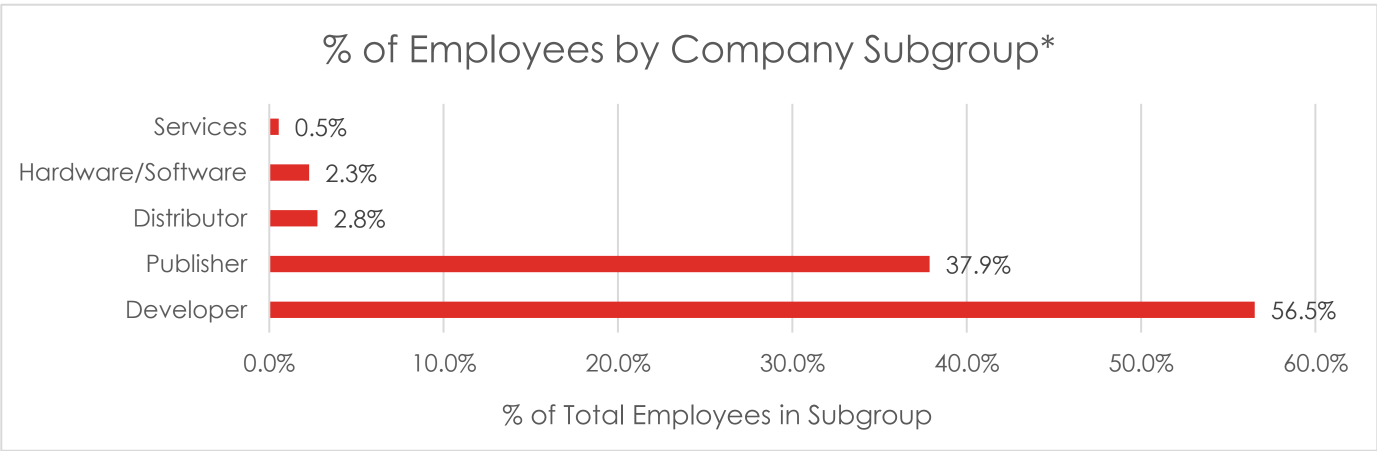
Oregon

Congressional District	Representative Name	Number of Companies	Political Party
OR-03	Earl Blumenauer	20	D
OR-04	Peter A. DeFazio	13	D
OR-01	Suzanne Bonamici	12	D

VIDEO GAME INDUSTRY EMPLOYMENT

TOP STATES AND METROPOLITAN STATISTICAL AREAS BY NUMBER OF DIRECT EMPLOYEES

The United States video game industry employs an estimated 65,678 direct employees as of 2016. 99.7% of American-based companies across all subgroups employ less than 500 employees with 91.4% of all American-based game companies employing less than 30 employees. This means that almost 100% of American game companies are considered small businesses under the qualifications set by the Small Business Administration. Only a handful of AAA game publishers employ more than 500 employees and are considered major corporations.



The American video game industry directly employees an estimated 65,678 people

*Non-Exclusive Developers are not included due to inability to judge the number of employees focused on game industry activities

All game publishers—even those that are considered to be small businesses—employ the most people on a per company basis. Despite only having 220 companies within its subgroup, publishers employ 37.9% of all industry employees. This is due to the prevalence of small companies in the developer subgroup. A developer's average total employment per company is 18 employees while a publisher's average total employment per company is 114 employees.

99.7%

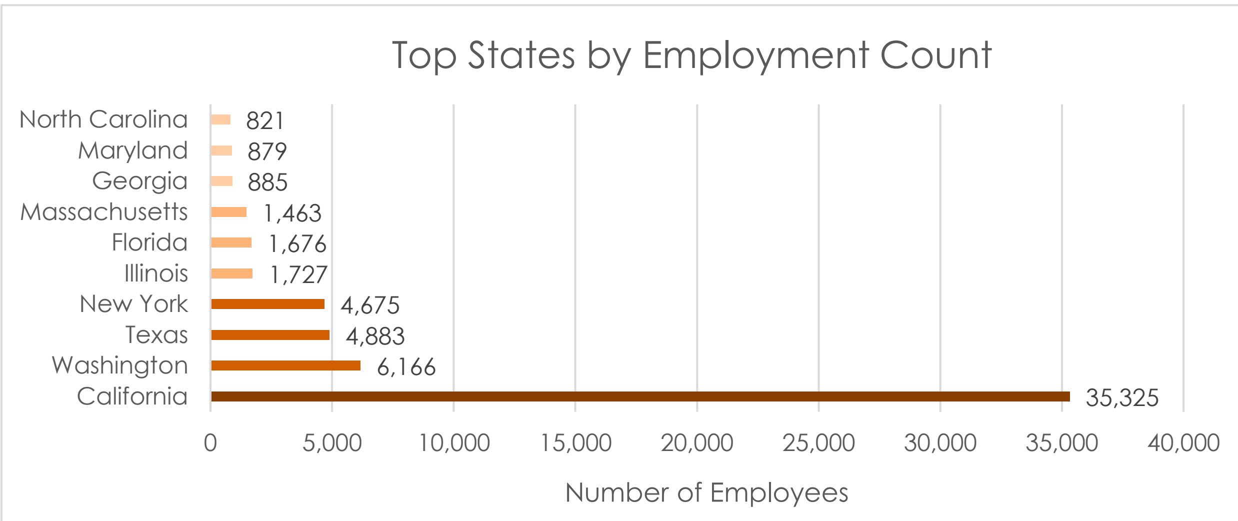
of American video game companies meet the criteria for a small business

91.4%

of American video game companies employ 30 people or less

Top States by Estimated Employment Count

California	Washington	Texas
35,325 Employees	**6,166 Employees**	**4,883 Employees**



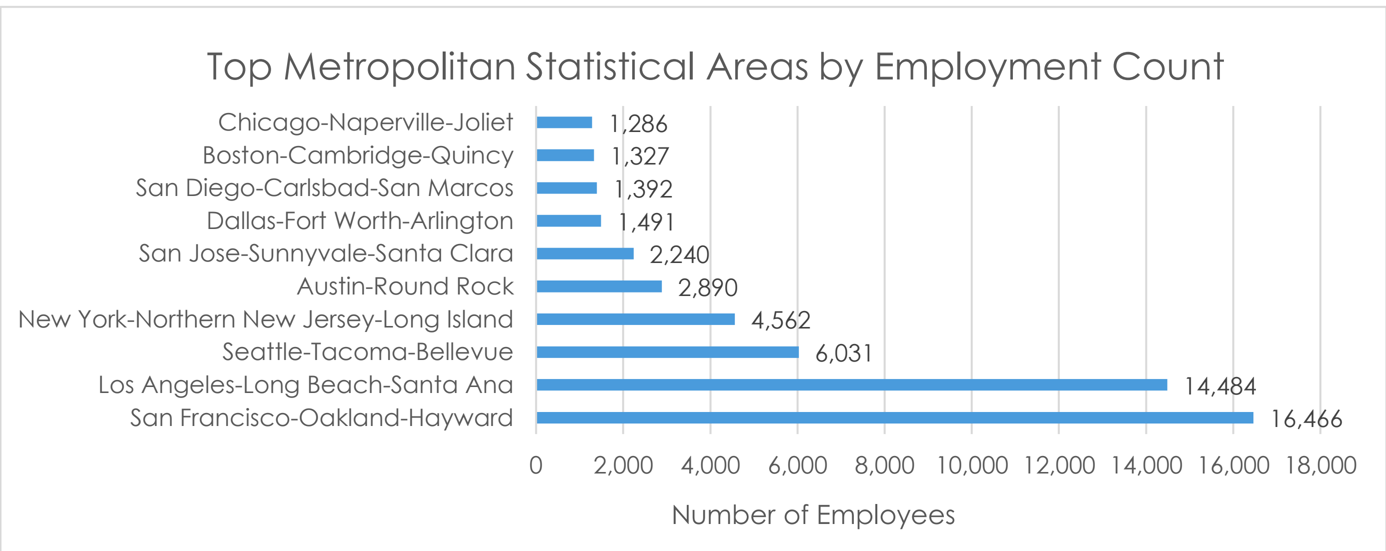
53.78% of industry employees are located in California

A state's employment count depends on its concentration of AAA publishers and their subsidiaries. For example, California, who employs 53.78% of all industry employees, contains the highest count of major game publishers (see list in "*Top States by Number of Game Companies*"). All other states on the employment top ten list similarly include office locations or subsidiaries of top publishers. Examples include New York, which is home to the headquarters of Take-Two Interactive and Rockstar Games, and Maryland, which houses both Bethesda Softworks and Take-Two's Firaxis. Additionally, Illinois hosts Warner Bros. subsidiary NetherRealm Studios and North Carolina is home to both Epic Games and Ubisoft subsidiary Red Storm Entertainment.

Top Metropolitan Statistical Areas by Estimated Employment Count

San Francisco-Oakland-Hayward	Los Angeles-Long Beach-Santa Ana	Seattle-Tacoma-Bellevue
16,466 Employees	**14,484 Employees**	**6,031 Employees**

Top metropolitan statistical areas for estimated employment are dominated by California MSAs. San Francisco-Oakland-Hayward leads all MSAs by total employment with 16,466 estimated employees. Los Angeles-Long Beach-Santa Ana follows closely with an estimated 14,484 employees. San Jose-Sunnyvale-Santa Clara and San Diego-Carlsbad-San Marcos are also on the list with 2,240 and 1,392 employees, respectively. All MSAs include headquarters, additional offices, and/or subsidiaries of major game companies including Activision Blizzard, Electronic Arts, Sony Interactive Entertainment, Warner Brothers Interactive, Nintendo of America, 2K Games, and Ubisoft, among others.

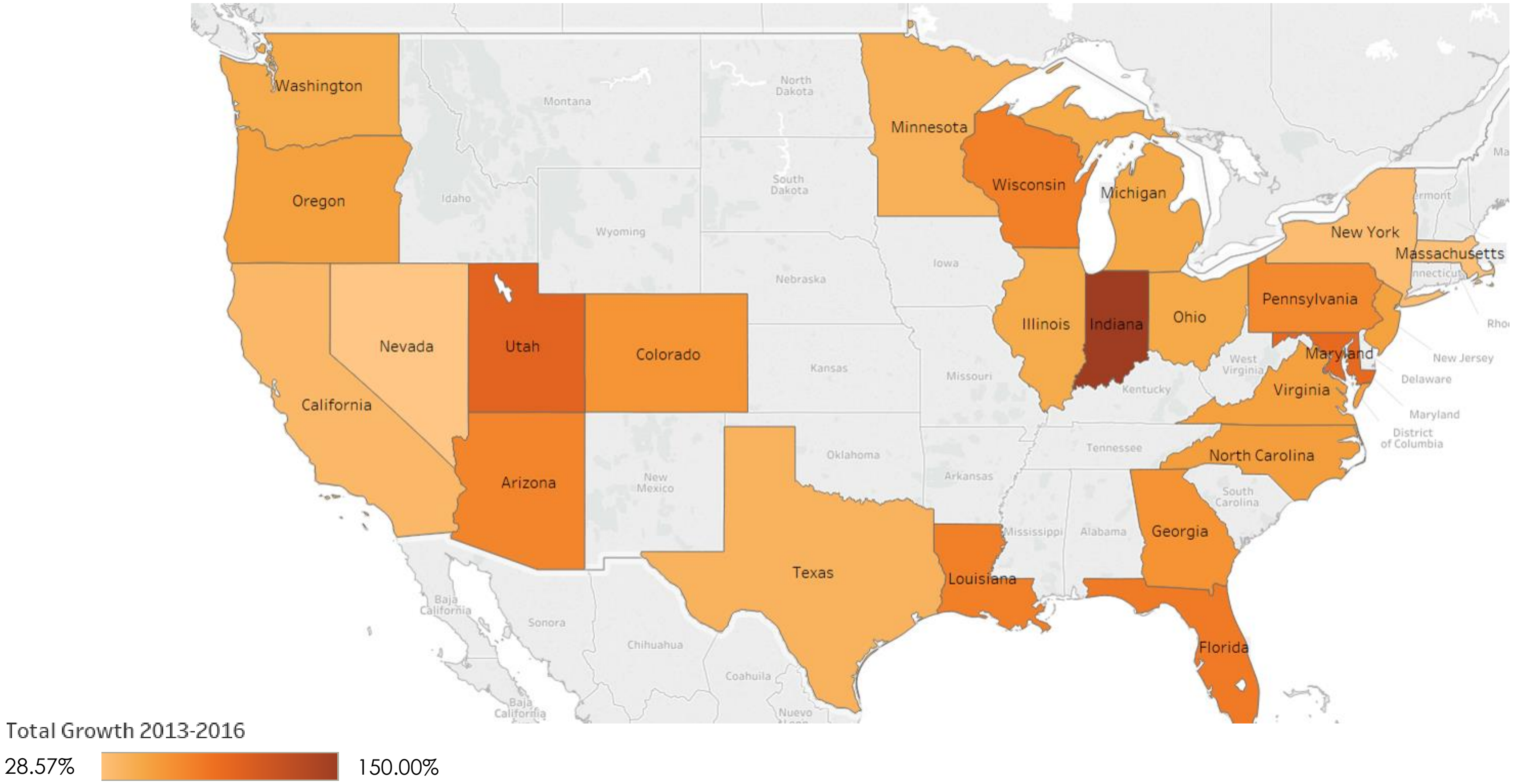


47.46% of all direct industry employees are located in Los Angeles and San Francisco.

VIDEO GAME INDUSTRY GROWTH

TOP STATES AND METROPOLITAN STATISTICAL AREAS FOR VIDEO GAME INDUSTRY EXPANSION

Indiana	Utah	Maryland
150% Growth	**100% Growth**	**95% Growth**



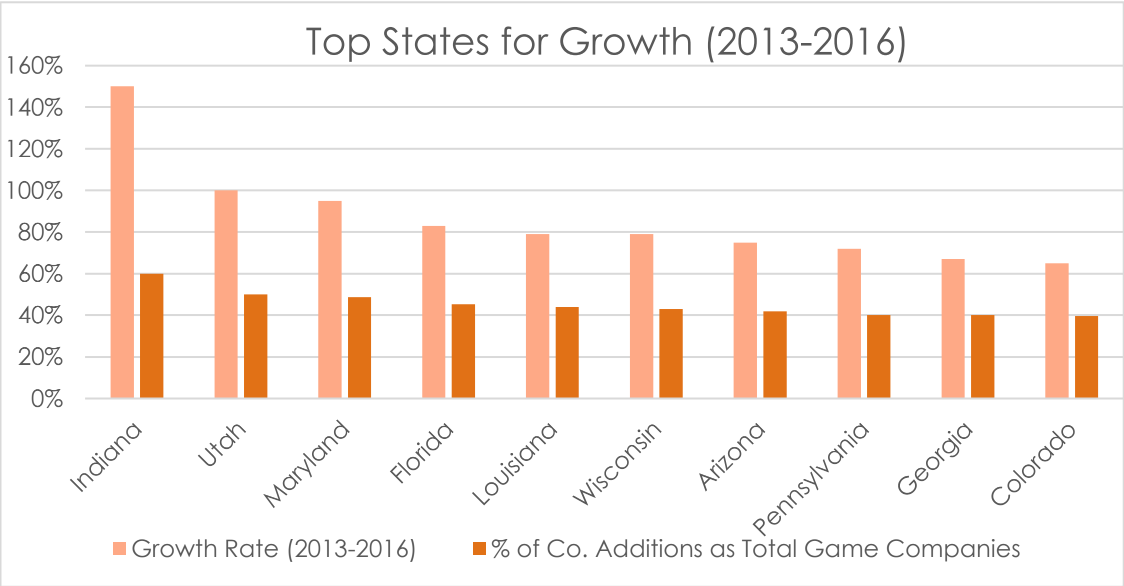
Top States by Company Growth

The map above shows the 24 states that experienced significant growth between 2013 and 2016. "Significant" means that the state added a minimum of 6 companies, the median of all companies added between 2013 and 2016.

Unlike other top ten lists in this report, the top 10 states for growth include smaller states with less AAA publisher locations such as Indiana, Utah, and Wisconsin, which are home to small developers and publishers only.

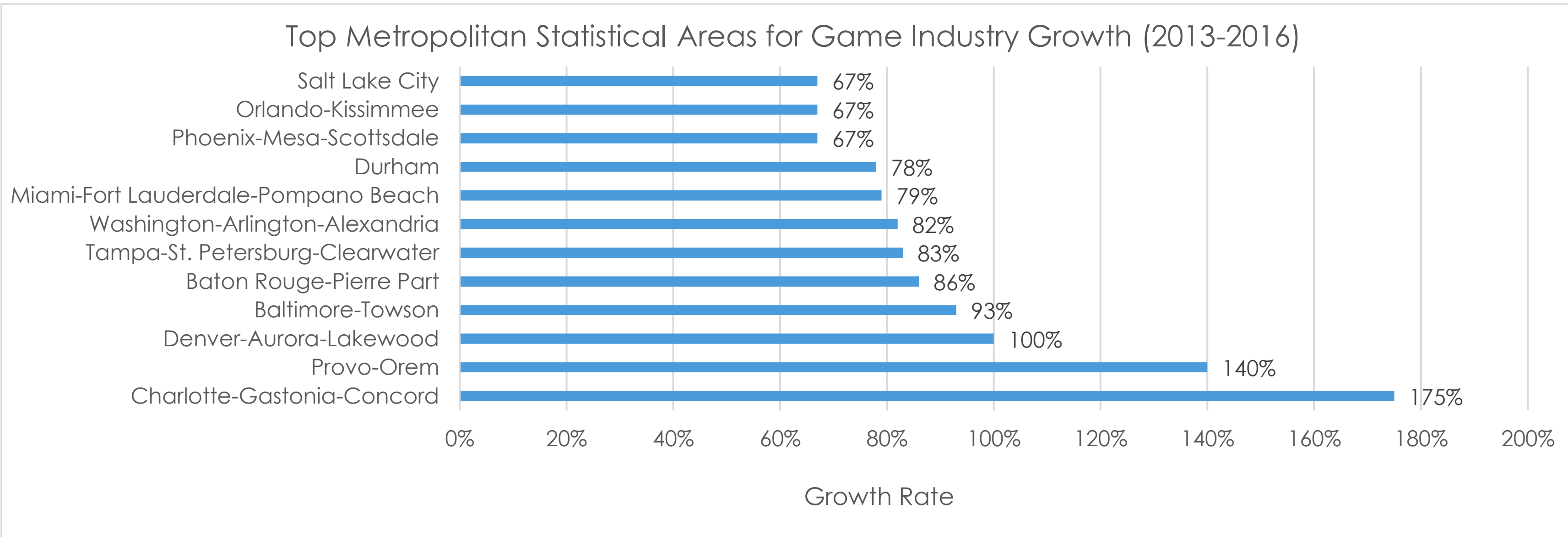
Between 2013 and 2016, Indiana was the top performing state for industry growth. The state had 150% growth and 60% of its known video game industry was created between 2013 and 2016. Utah grew 100% with 50% of its industry arising within the past three years. Other notable states for growth that do not have large concentrations of game companies or employees include Louisiana, Arizona, Wisconsin, and Colorado.

The differentiation between the top ten states for growth and top ten states for volume and employment indicate that while coastal tech giants such as California and Washington are still attracting the most companies and the largest companies, many of these top states have already amassed their share of the American game industry. Potential hubs for the game industry are now beginning to develop in smaller states that are not nor ever have been major centers for game development and publication. This is driven by small businesses, notably within the developer subgroup.



Top Metropolitan Statistical Areas by Company Growth (2013-2016)

Charlotte-Gastonia-Concord	Provo-Orem	Denver-Aurora-Lakewood
175% Growth	**140% Growth**	**100% Growth**



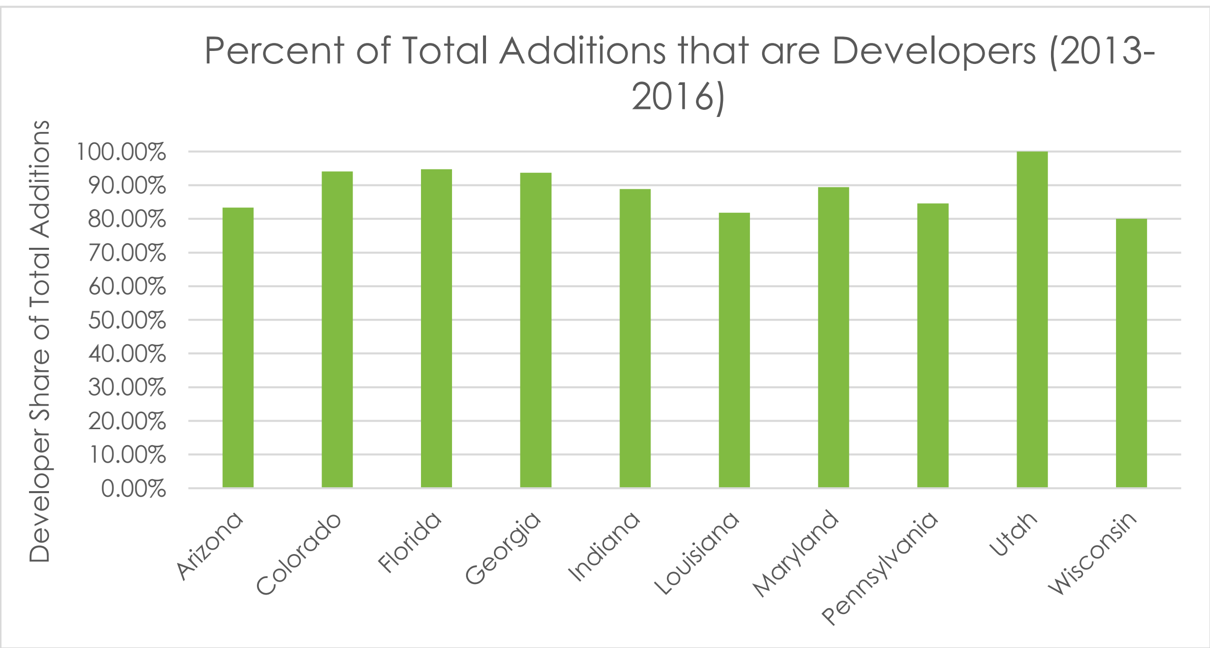
The three top growing MSAs are from Florida (Tampa-St. Petersburg-Clearwater, Miami-Fort Lauderdale-Pompano Beach, Orlando-Kissimmee), a state that experienced 83% growth between 2013 and 2016. Additionally, two MSAs are from North Carolina (Charlotte-Gastonia-Concord and Durham), which had a growth rate of 59%, and two MSAs are from Utah (Provo-Orem and Salt Lake City), which experienced 100% growth

The top states and cities for growth are due to an influx of small game companies in areas of the country not traditionally known for technological development. This influx is most likely due to two factors:

1.) Entrepreneurship and the increase of game development over other subgroups
2.) Increased access to game education and skill development at institutions of higher education across the U.S.

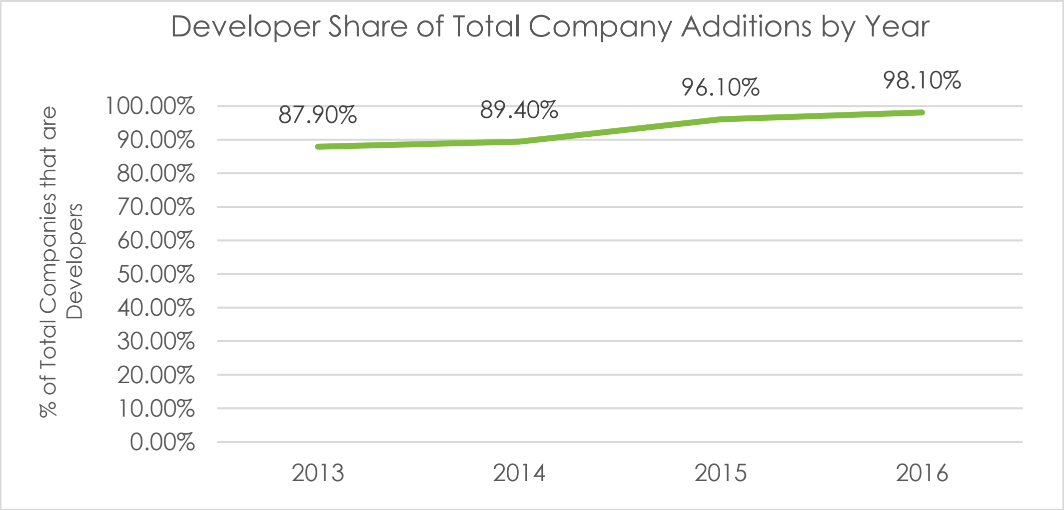
Game Industry Entrepreneurship

On average, 89.07% of all company additions of the top states by growth are developers. This means that industry growth in these areas is primarily due to the growth of game development instead of the growth of publication, distribution, or any other company activity. The states with the most additions in the top 10—Georgia, Florida, and Utah—had the highest share of developers as new company additions at 93.75%, 94.74%, and 100%, respectively.



An overwhelming majority of company additions in states with high growth are developers

The large percentage of new game companies in high growth states that are developers is consistent with national trends. In 2013, developers made up 87.9% of total companies added. In 2014, the share of developers as total company additions increased slightly to 89.4%. By 2015, developers had taken 96.1% of the addition share. And in 2016, 98.1% of the 260 game companies added in 2016 were added to the developer subgroup. This is an 11.49% increase from 2013.



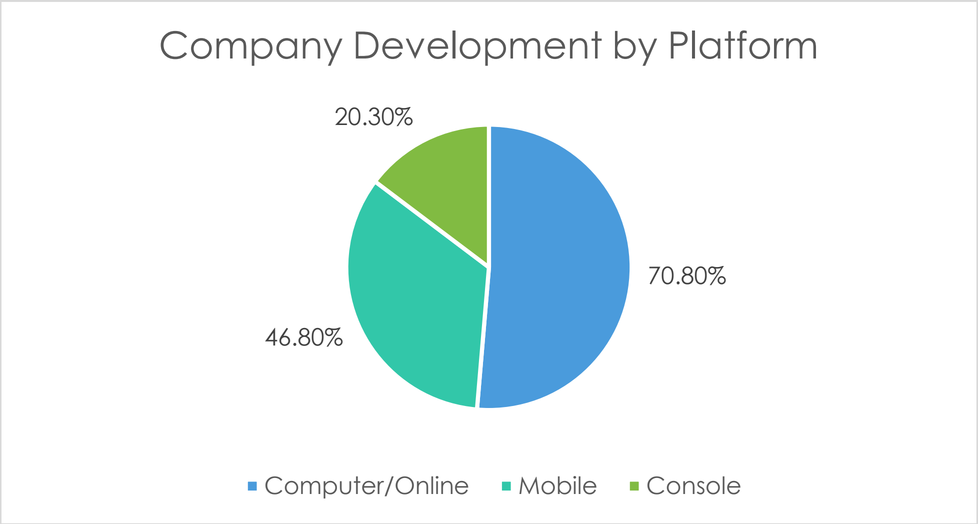
98.10% of 2016 company additions are developers

The growth of game developers as the largest company subgroup is likely due to the following four factors:

1.) Increasing Access to Self-Publication and Distribution Outlets
2.) Increasing Access to Crowdfunding and Alterative Financial Sources
3.) Increasing Access to Self-Marketing and Promotional Tools
4.) Increasing Access to Skill Development

ACCESS TO SELF-PUBLICATION

70.8% of developers create content for online and computer platforms including Steam, Facebook, web-based game distributors, and virtual world websites. 46.8% of companies develop games for mobile applications through distribution platforms including Google, Apple, and Amazon. Only 20.3% of developers develop for console gaming platforms including Microsoft's Xbox, Sony Interactive Entertainment's PlayStation consoles and handheld consoles including PSP and PS Vita, and Nintendo's Wii and Wii U consoles. Companies often develop for more than one platform.



70.80% of game developers create content for computer and online distribution platforms

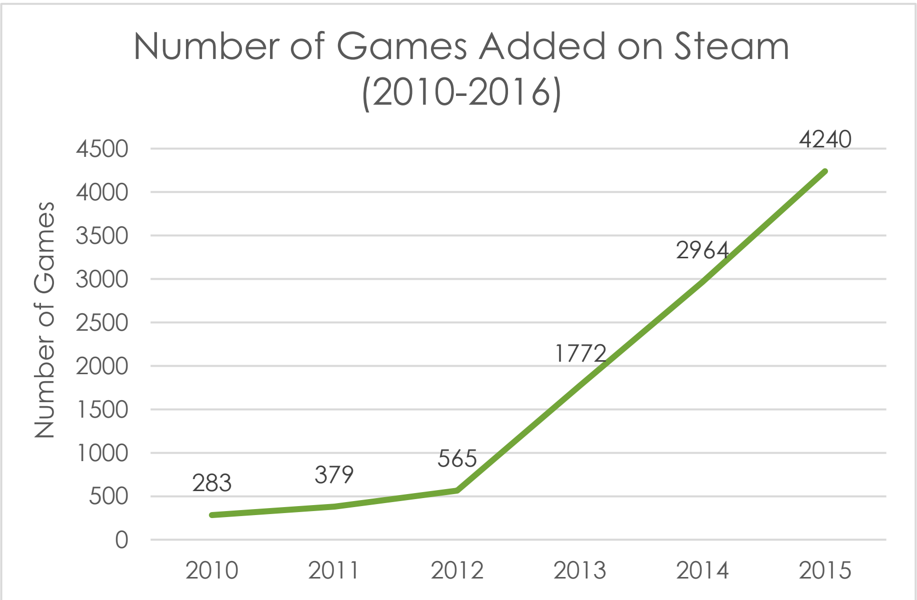
The rise of computer development is due to online distribution platforms such as Valve Corporation's Steam. Steam is an online game marketplace that distributes developers' content for play on PC and Apple devices. While founded in 2003, Steam Spy, a Steam analytics website, found that 38% of Steam's entire game library was added to the distribution platform in 2016. This suggests the growing appeal and importance of the platform to game developers and consumers.[1]

The beginning of big upticks in game additions on Steam was in 2013 when the number of companies added per year jumped from 565 games to 1,772 games. Game news and review websites including Polygon have noted the correlation between the

[1] Schiesser, Tim. "38 Percent of All Steam Games Were Released in 2016." *TechSpot*. TechSpot, Inc., 1 Dec. 2016. Web. 19 Jan. 2017.

sudden jump in game additions and the launch of Early Access and Steam Greenlight; features that reduce barriers to entry for independent developers.[2]

Steam Early Access is a feature that allows independent developers to gain early feedback from potential audiences by releasing their game early on Steam. Similarly, Steam Greenlight allows independent developers to gain access to Steam if enough users vote to play the game on the distribution site. This feature identifies potential profitability of a game by its current fan base and interest. It also gives independent developers the opportunity to expand to a wider audience and gain distribution on a major computer platform.



The growing popularity of Steam is a major contributor to game development growth

Developers can also submit their games to online mobile distributors such as Amazon, Apple, and Google for publication without the traditional marketing and cost barriers of console game distribution by filling out simple request forms. Developers

[2] Sarkar, Samit. "Almost Two-fifths of Steam's Entire Library Was Released in 2016." *Polygon*. Vox Media, 01 Dec. 2016. Web. 19 Jan. 2017.

who have their content published onto game consoles usually publish their content to handheld devices such as Sony's PSP and Nintendo's Wii U.

ACCESS TO CROWDFUNDING

Crowdfunding services such as IndieGoGo and Kickstarter have been on the rise in the game industry since 2012. According to a 2015 study by analytics firm RJMetrics, only 27 games were funded using Kickstarter in Q1 of 2011. As of Q2 of 2015, 678 games sought funding from supporters with over $160 million pledged towards games on the crowdfunding site.[3]

The rise of Kickstarter and crowdfunding present an opportunity for smaller developers to gain alternative access to funding online. The report does state, however, that most funding goes towards a small number of games by mid-sized developers including California based InXile Entertainment, Double Fine Productions, and Obsidian Entertainment. These companies gained pledges of $8 million, $4.5 million and $3.9 million, respectively.

Per Entertainment Software Association data, 33.3% of active developers in the United States leverage crowdfunding to fund their projects.

ACCESS TO SELF-MARKETING

Social media platforms such as Facebook and Twitter have made it easier for companies to generate buzz around their games. This is especially important since an increased amount of resources available to developers to fund and publish their games are based on fan interest, feedback, and support.

Another major source of self-marketing are indie gamer communities including IndieDB where developers can post and advertise their upcoming games. Additionally, game communities on YouTube and Twitch have been instrumental in launching indie games into the mainstream. For example, one-man Texas-based developer Scott Cawthon's *Five Nights at Freddy's* arguably gained traction through notable online personalities including Markiplier posting playthroughs of the game on their YouTube channels. The game has spawned five sequels, several fan-made spinoffs, and its own line of merchandise.

Personalized company websites are also major marketing centers for indie game developers.

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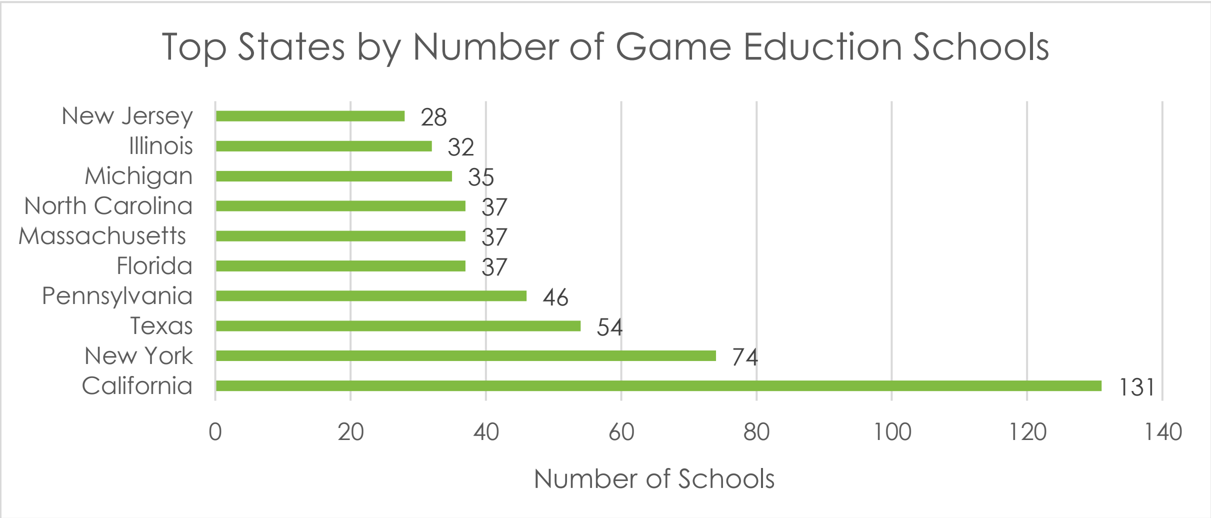
[3] Handy, Tristan. "Funding for Top Kickstarter Games Is Nearing $1MM, and It's Going to Change Gaming Forever." *RJMetrics*. Magento Company, 09 Sept. 2015. Web. 19 Jan. 2017.

ACCESS TO EDUCATION

Institutions of higher learning help to produce talent across all fifty states. As of 2016, there are 940 universities, colleges, community colleges, technical schools, and online institutions that offer programs or courses in game studies. The largest concentration of these game schools is located in California with 131 schools offering programs and courses in game studies, followed by New York with 74 schools, and Texas with 54 schools.

Top States for Game Education Courses and Programs



There are 940 institutions of higher education that offer courses or programs in video game studies

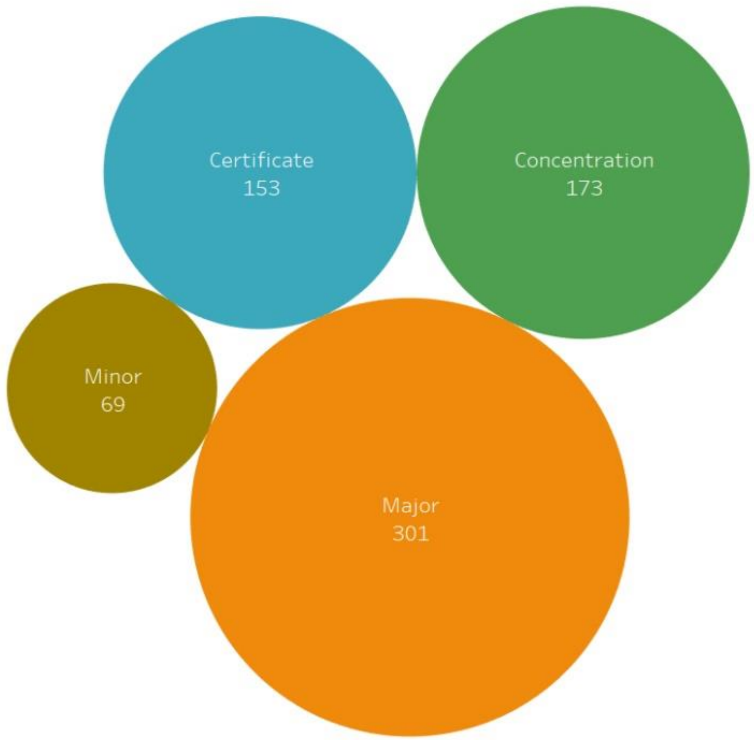
Game Studies Offered

Game education (also referred to in this report as "game studies") is any course or program in an accredited higher educational institution that teaches any skill specifically related to the creation of a video game product. These studies are across multiple disciplines including computer science, information technology, information systems design, digital media, art and animation, business, English, and music. Examples of programs offered in game studies are as follows:

2D Animation for Games
3D Animation for Games
Business in Media, Game Design
Cinematic Arts
Computer Game Science
Game Art
Game Design
Game Development
Game Engineering
Game Production
Game Programming
Game Scoring
Game Simulation
Game Writing
Graphic Communication
Graphics Development
Instructional Game Development
Interactive Technology
Mobile Game Development
Playable Media
Serious Games Design
Video Game Sound Design
Virtual Technology and Design

Game Studies Programs

481 of the 940 schools offering game education give programs in game studies. Among those schools, there are 696 game programs. Game programs are divided into four categories: (1) majors, (2) concentrations, (3) minors, and (4) certificates.

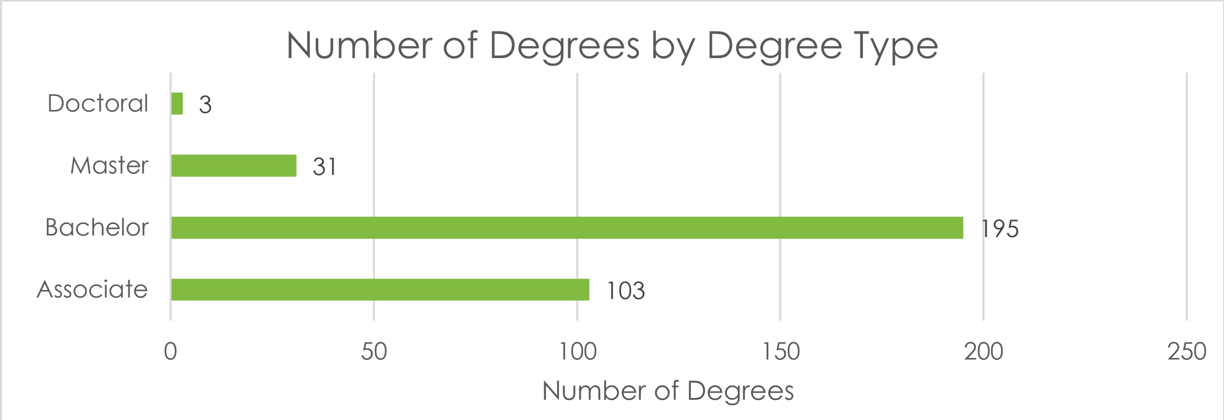


There are **481 schools offering 696 programs** in game studies

Majors

Majors are any associates, bachelors, masters, or doctoral degrees offered in game education. There are currently 301 individual majors offering a total of 332 degrees. The degree number is higher because several majors are offered across more than one degree.

58.73% of all degrees are Bachelor of Arts or Bachelor of Science degrees. 31.02% of degrees are associates degrees, primarily from community colleges. The remaining 10.25% of degrees are masters and doctoral degrees.



There are 332 degrees offered in video game studies

Concentrations

Concentrations are any specializations in game education that are part of a degree not affiliated with the game industry. For example, a program would be considered a concentration if the program awarded its recipient an associate, bachelor, master, or doctoral degree in computer science with a specialized track in game programming. While most concentrations are part of a computer science or engineering degree, other concentration areas include art, digital media, and information technology.

Minors

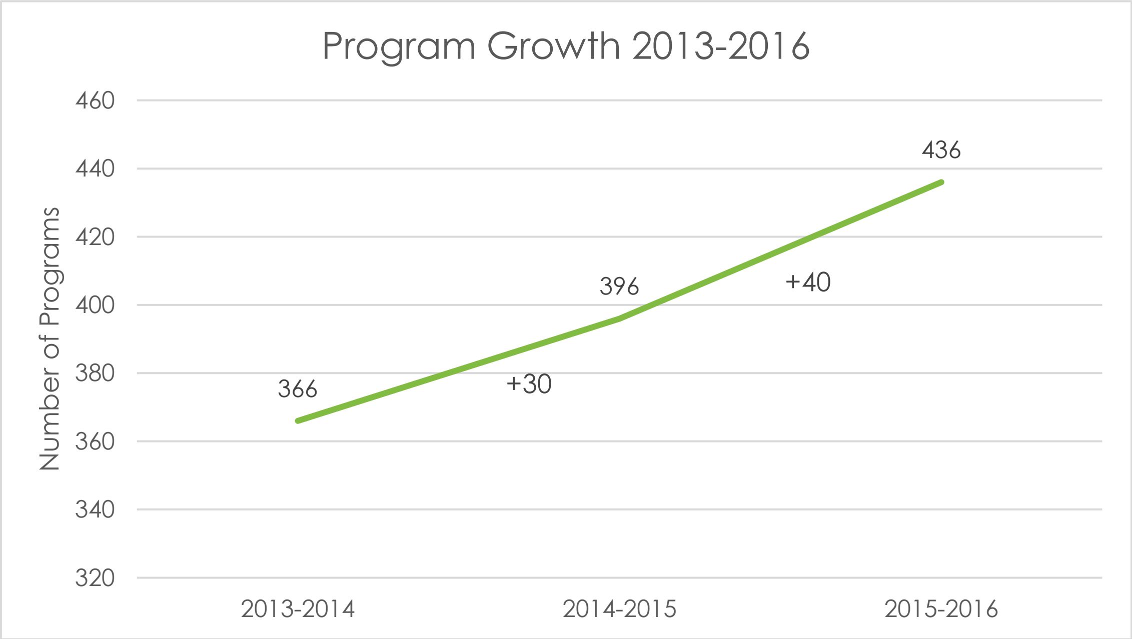
Minors are typically a less intensive version of a game education major, however, at several colleges and universities including Ithaca College and Cornell University, only a minor in game education can be taken.

Certificates

Certificates are commonly offered at community colleges in lieu of an associate's degree in game education. Certificates are less intensive programs than degree programs that certify practical skills in game design and are commonly add-ons to another degree.

Game Program Growth

Game programs in American schools are being added at an average growth rate of 9%. Growth between the 2014 to 2015 academic year and 2015 to 2016 academic year was 10% where schools—both new and existing—added 40 game education programs to their curriculum. Between the 2013 to 2016 academic school years, California, Texas, and Iowa have had the most school program additions.

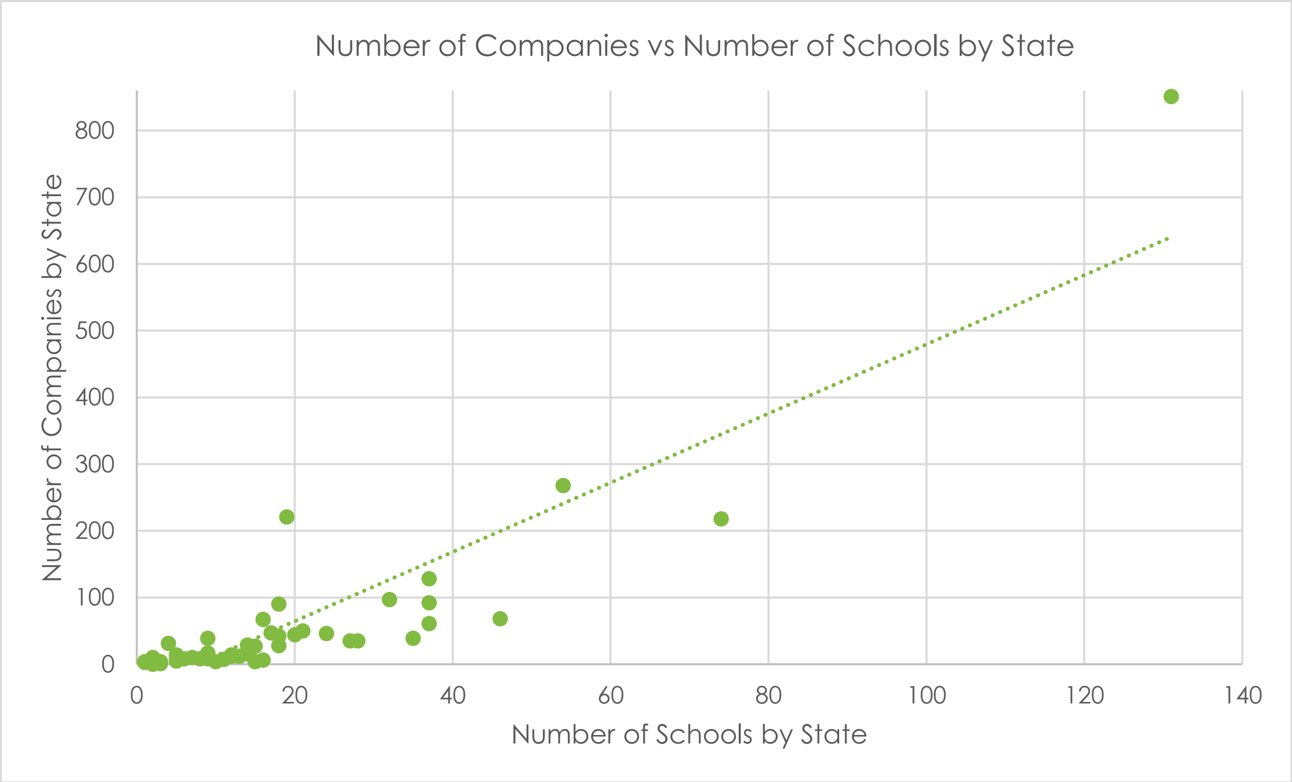


States Adding Five or More Programs between 2013 and 2016

State	School Program Additions (2013-2016)
California	9
Texas	7
Iowa	7
Ohio	6
Massachusetts	6
Illinois	6
Arkansas	5
Louisiana	5
Pennsylvania	5
Missouri	5

Company and Education Correlation

Further exemplifying the importance of skill development to the growth of game development, there is a strong correlation of .89 between the number of companies located in a state vs. the number of schools offering courses or programs in game development located in a state. The correlation between schools and companies suggests that as students graduate from college with skills in game development, design, programming, art, or other skills, graduates are beginning their own businesses within the same state as their alma mater. It also suggests that companies looking for talent are attracted to states with a large concentration of game education. In other words, more companies will be in a state with more schools 89% of the time.



89% **of the time, more schools offering game education will lead to more game companies within a given state**

APPENDIX

Game Company Methodology

Active American game companies were identified from an estimated 17,000 companies across several online and internal sources. The companies were retrieved utilizing automatic methods such as APIs, as well as through a manual search of over 40,000 webpages.

DEFINITION

A "game company" is defined as any company of one person or more that does one or more of the following:

- Develops, publishes, and/or distributes mobile, computer, online, social, and/or console games for for-profit and not-for-profit public release.
- Offers services to the game industry including character building, animation, scoring for games, sound editing, development packs, and localization.
- Produces hardware or graphics for game development and play including, but not limited to, game consoles, game accessories, and graphics cards.
- Produces software and game tools including game engines.

SOURCES

Game companies were retrieved from the following online game company databases and social media sites:

Desura
GameDevMap
Giant Bomb
Indie DB
International Game Developers Association
Kickstarter
LinkedIn
Modd DB
Day of the Ouya
Riot Pixel
Steam

All companies retrieved from the sources above were sorted through manually or automatically via the site's official API, if available. Sites where APIs were used to obtain company names include Steam and Giant Bomb.

Other sources, such as personal business cards and internal outreach to developers' associations, were used to identify active U.S. game companies.

CRITERIA

A game company is included as an active domestic game company if the company:

1.) Is based in the United States or a United States Territory
And
2.) Has been active on its social media account(s) (Facebook, Twitter, etc.) in either 2016 or 2015
Or
3.) Has a copyright of 2016 on its official website
Or
4.) Has a game currently in development

All data is relevant as of September, 2016.

Employee Count Methodology

The aggregate estimated direct employment count is broken down by a per company basis by location. 79% of all estimated employee counts were sourced from LinkedIn estimates, company financial statements, companies' official websites, news articles, or other primary sources. The remaining 21% of employee counts were estimated using applicable counts from the 79% of known employee data. Several statistical models were applied including a multiple linear regression, a k-Nearest Neighbors algorithm, clustering, and averaging to best estimate unknown employee counts.

The following employee counts have been excluded from the final per company employee estimates:

- Companies with unknown employee counts whose sample size for companies with known employee counts was too small to be conclusive. For example, companies with unknown employee counts who were based internationally with offices in the United States were removed due to a small sample size of known data matching the same criteria. These companies were omitted to avoid high standard error. Omitted companies made up 4% of the data.
- Companies that invested in other industries outside of the game industry including web and mobile service developers, board game publishers, casino gaming companies, and computer hardware manufacturers.
- Companies with estimated and known employee counts < 5.

- Companies who had not yet released a product or companies who had little information available about the entity outside of confirmed activity.

Growth Methodology

Growth rates are evaluated by (1) the number of new publishers, distributors, non-exclusive developers, service providers, and hardware/software manufacturers founded between 2013 and 2016 (2) by the number of new games released by a developer between 2013 and 2016.

The metric "number of first game released" is used to determine additions of new developers as opposed to the year the developer was founded for the following reasons:

1.) Given the time it may take a company to develop a game (anywhere from 0-10+ years), addition of the developer should be measured at the moment the company begins to contribute to the industry, not when they begin to design a game. It is possible that a company could be founded and never release a product.
2.) When locating U.S. game companies, many game companies will not publically begin to market themselves until they are ready to release their first product. Many companies founded in 2016 will likely not be easily found or show a great deal of participation in the game market until 2017 or 2018 depending on when their first product is finished and released.

The year a publisher was founded and the year a developer first released a product have been sourced through a company's official site, Facebook, or LinkedIn page, or through secondary sites including IGN, IndieDB, Steam, and YouTube.

School Methodology

All schools containing video game studies were sourced manually from key word searches in an institution of higher education's school academic catalogs. Schools include universities, colleges, trade and technical schools, and community colleges. For-profit colleges are included in this list. Theological, law, and medical schools were omitted.

All data is relevant as of September, 2016.

All States by Number of Schools

State	No. of Schools
California	131
New York	74
Texas	54
Pennsylvania	46
Florida	37
Massachusetts	37
North Carolina	37
Michigan	35
Illinois	32
New Jersey	28
Virginia	27
Arizona	24
Ohio	21
Minnesota	20
Washington	19
Georgia	18

Maryland	18
Missouri	18
Colorado	17
Kansas	16
Oregon	16
Oklahoma	15
Wisconsin	15
Indiana	14
Louisiana	14
Iowa	13
Connecticut	12
Tennessee	12
Alabama	11
West Virginia	10
Kentucky	9
New Hampshire	9
New Mexico	9

Utah	9
Maine	8
South Carolina	7
Arkansas	6
Hawaii	5
Rhode Island	5
Nevada	4
Alaska	3
Delaware	3
Mississippi	3
Montana	2
Nebraska	2
South Dakota	2
Vermont	2
Idaho	1
North Dakota	1
Wyoming	1

All States by Number of Companies

State	No. of Companies
California	853
Texas	268
Washington	221
New York	219
Massachusetts	128
Illinois	97
Florida	92
Georgia	90
Pennsylvania	68
Oregon	67
North Carolina	61
Ohio	50
Colorado	47
Arizona	46
Minnesota	44
Maryland	42
Michigan	39
Utah	39
New Jersey	35
Virginia	35
Nevada	31
Louisiana	29
Missouri	28
Wisconsin	27
Kentucky	17
Indiana	16
Tennessee	14
Connecticut	12
Iowa	12
New Hampshire	12
South Carolina	10
Vermont	10
Arkansas	8

All Metropolitan Statistical Areas by Number of Companies

Metropolitan Statistical Area	No. of Companies
Los Angeles-Long Beach-Santa Ana	331
San Francisco-Oakland-Hayward	307
New York-Northern New Jersey-Long Island	211
Seattle-Tacoma-Bellevue	193
Austin-Round Rock	141
Boston-Cambridge-Quincy	113
Chicago-Naperville-Joliet	84
Dallas-Fort Worth-Arlington	83
San Jose-Sunnyvale-Santa Clara	75
Atlanta-Sandy Springs-Roswell	75
San Diego-Carlsbad-San Marcos	62
Portland-Vancouver-Hillsboro	50
Washington-Arlington-Alexandria	48
Minneapolis-St. Paul-Bloomington, MN-WI	38
Phoenix-Mesa-Scottsdale	35
Orlando-Kissimmee	32
Philadelphia-Camden-Wilmington	31
Houston-Sugar Land-Baytown	30
Pittsburgh	30

Baltimore-Towson	28
Miami-Fort Lauderdale-Pompano Beach	27
Raleigh-Cary	27
Denver-Aurora-Lakewood	23
Las Vegas–Paradise	23
Riverside-San Bernardino-Ontario	20
Salt Lake City	20
St. Louis-St. Charles-Farmington, MO-IL	19
Detroit-Warren-Dearborn	17
Durham	16
Sacramento-Arden Arcade-Roseville	16
Baton Rouge-Pierre Part	15
Columbus	14
Provo-Orem	14
Madison	13
Albany-Schenectady-Troy	12
Cleveland–Elyria	12
Tampa-St. Petersburg-Clearwater	12
Boulder	11
Lexington-Fayette	11
Cincinnati, OH-KY-IN	10
Providence-New Bedford-Fall River, RI-MA	10
Santa Cruz-Watsonville	10
Rochester, NY	9
Charlotte-Gastonia-Concord	8
Eugene-Springfield	8
Indianapolis-Carmel	8
New Orleans-Metairie-Bogalusa	8
Ann Arbor	7
Hartford-West Hartford-East Hartford	7

Nashville-Davidson-Murfreesboro-Franklin	7
Reno–Sparks	7
Springfield	7
Tucson	7
Albuquerque	6
Burlington-South Burlington	6
Fort Collins-Loveland	6
Worcester	6
Champaign-Urbana	5
Fayetteville-Springdale-Rogers	5
Gainesville	5
Kalamazoo-Portage	5
Kansas City-Overland Park-Kansas City, MO-KS	5
Manchester-Nashua	5
Milwaukee-Waukesha-West Allis	5
Omaha-Council Bluffs	5
San Antonio	5
Spokane	5
Akron	4
Asheville	4
Bremerton-Silverdale	4
Dayton	4
Grand Rapids-Wyoming	4
Greenville-Anderson-Mauldin	4
Harrisburg-Carlisle	4
Honolulu	4
Richmond	4
Syracuse	4
Anchorage	3

Bellingham	**3**
Bend	3
Charlottesville	3
Cheyenne	3
Colorado Springs	3
Fresno	3
Huntsville-Decatur-Albertville	3
Lafayette-Opelousas-Morgan City	3
Lansing-East Lansing	3
Memphis	3
New Haven-Milford	3
Ogden-Clearfield	3
Olympia	3
Oxnard-Thousand Oaks-Ventura	3
Portland-South Portland-Biddeford	3
Saginaw	3
Savannah	3
Springfield-Branson	3
Warrensburg	3
Albany-Lebanon	2
Allentown-Bethlehem-Easton	2
Athens-Clarke County	2
Bakersfield	2
Barnwell County	2
Bennington	2
Bloomington, IN	2
Boise City-Nampa	2
Bowling Green	2
Buffalo-Cheektowaga-Niagara Falls	2
Cape Coral-Fort Myers	2
Chico	2
Des Moines-West Des Moines	2
Fargo	2
Grants Pass	2
Green Bay	2
Iowa City	2
Jacksonville	2
Knoxville	2
Lakeland-Winter Haven	2
Las Cruces	2
Lincoln	2
Little Rock-North Little Rock-Conway	2
Louisville-Jefferson County, KY-IN	2
North Port-Bradenton-Sarasota	2
Oklahoma City	2
Redding	2
Salem	2
Scranton-Wilkes-Barre	2
Southern Pines-Pinehurst	2
Tallahassee	2
Vallejo-Fairfield	2
Virginia Beach-Norfolk-Newport News	2
Visalia-Porterville	2
Waterloo-Cedar Falls	2
Whitewater	2
Aberdeen	1
Alamosa	1
Ames	1
Amsterdam	1
Appleton	1

Bangor	1
Bemidji	1
Berlin, NH-VT	1
Binghamton	1
Bloomington-Normal	1
Carroll County	1
Cedar Rapids	1
Charleston-North Charleston-Summerville	1
Chattanooga	1
Coeur d'Alene	1
Columbia	1
Concord	1
Corsicana	1
Corvallis	1
Crescent City	1
Decatur	1
Del Rio	1
Deltona-Daytona Beach-Ormond Beach	1
Dover	1
Dublin	1
Eau Claire	1
El Paso	1
Elizabethtown	1
Ellensburg	1
Erie	1
Eureka-Arcata-Fortuna	1
Evansville, IN-KY	1
Flagstaff	1
Fond du Lac	1
Fort Wayne	1

Galesburg	1
Gardnerville Ranchos	1
Garfield County	1
Grand Forks	1
Greeley	1
Gulfport-Biloxi	1
Harrisonburg	1
Helena	1
Holland	1
Huntington-Ashland	1
Huntsville	1
Johnson City	1
Kahului-Wailuku	1
Keene	1
Kennewick-Pasco-Richland	1
Kent County	1
La Crosse	1
Lancaster	1
Lawrence	1
Lebanon, NH-VT	1
Lubbock	1
Lynchburg	1
Macon	1
Mansfield	1
Marion	1
Marion-Herrin	1
Medford	1
Modesto	1
Monroe	1
Montgomery	1

Moultrie	**1**
Mount Vernon-Anacortes	1
Muscatine	1
Myrtle Beach-Conway-North Myrtle Beach	1
Naples-Marco Island	1
Norwich-New London	1
Ocala	1
Odessa	1
Palm Bay-Melbourne-Titusville	1
Pella	1
Pendleton-Hermiston	1
Phoenix Lake-Cedar Ridge	1
Piscataquis County	1
Port St. Lucie	1
Portsmouth	1
Pueblo	1
Refugio County	1
Rexburg	1
Richmond-Berea	1
Rochester, MN	1
Safford	1
San Luis Obispo-Paso Robles	1
Sanford	1
Santa Barbara-Santa Maria-Goleta	1
Show Low	1
Shreveport-Bossier City	1
South Bend-Mishawaka, IN-MI	1
Springfield, IL	1
St. Cloud	1
St. George	1
Torrington	1
Trenton-Ewing	1
Tulsa	1
Utica-Rome	1
Vineland-Millville-Bridgeton	1
Walla Walla	1
West Plains	1
Wheeling	1
Windham County	1
Winneshiek County	1
Winston-Salem	1
Wooster	1
Yuma	1

All States by Number of Employees

State	Employment Count
California	35,325
Washington	6,166
Texas	4,883
New York	4,675
Illinois	1,727
Florida	1,676
Massachusetts	1,463
Georgia	885
Maryland	879
North Carolina	821
Oregon	740
Nevada	569
Utah	541
Louisiana	537
Minnesota	528
Arizona	458
Colorado	450
Wisconsin	432
Pennsylvania	410
Virginia	382
New Jersey	357
Michigan	274
Ohio	230
Missouri	222
Kentucky	102
Tennessee	97
New Hampshire	89
Indiana	82
Connecticut	75
Iowa	74
Hawaii	67
South Carolina	66
Oklahoma	54
Maine	52
Vermont	52
Kansas	49
Nebraska	31
Arkansas	30
Alaska	28
New Mexico	26
West Virginia	20
Delaware	16
Wyoming	13
North Dakota	10
Alabama	<5
Idaho	<5
Mississippi	<5
Montana	<5
Rhode Island	<5
South Dakota	<5

All Metropolitan Statistical Areas by Number of Employees

Metropolitan Statistical Area	Employment Count
San Francisco-Oakland-Hayward	16,466
Los Angeles-Long Beach-Santa Ana	14,484
Seattle-Tacoma-Bellevue	6,031
New York-Northern New Jersey-Long Island	4,562
Austin-Round Rock	2,890
San Jose-Sunnyvale-Santa Clara	2,240
Dallas-Fort Worth-Arlington	1,491
San Diego-Carlsbad-San Marcos	1,392
Boston-Cambridge-Quincy	1,327
Chicago-Naperville-Joliet	1,286
Orlando-Kissimmee	1,067
Atlanta-Sandy Springs-Roswell	855
Baltimore-Towson	648
Las Vegas–Paradise	552
Raleigh-Cary	541
Washington-Arlington-Alexandria	525
Baton Rouge-Pierre Part	512
Minneapolis-St. Paul-Bloomington, MN-WI	508
Phoenix-Mesa-Scottsdale	406
Salt Lake City	354
Portland-Vancouver-Hillsboro	353
Houston-Sugar Land-Baytown	343
Madison	318
Albany-Schenectady-Troy	284
Champaign-Urbana	279
Miami-Fort Lauderdale-Pompano Beach	253
Pittsburgh	245
Denver-Aurora-Lakewood	208
Boulder	204
Bend	199
Sacramento-Arden Arcade-Roseville	172
Provo-Orem	169
Durham	168
St. Louis-St. Charles-Farmington, MO-IL	167
Philadelphia-Camden-Wilmington	151
Riverside-San Bernardino-Ontario	117
Detroit-Warren-Dearborn	111
Eugene-Springfield	109
Cincinnati, OH-KY-IN	108
Springfield	104
Gainesville	101
Springfield, IL	83
Lexington-Fayette	80
Rochester, NY	79
Honolulu	65
Kalamazoo-Portage	63
Barnwell County	62
Bloomington-Normal	60
Fond du Lac	60
Santa Cruz-Watsonville	60
Tampa-St. Petersburg-Clearwater	58
Hartford-West Hartford-East Hartford	56
Nashville-Davidson-Murfreesboro-Franklin	55
Ann Arbor	54

Indianapolis-Carmel	53
Charlotte-Gastonia-Concord	51
Syracuse	51
Oxnard-Thousand Oaks-Ventura	50
Spokane	49
Richmond	48
Warrensburg	43
Lansing-East Lansing	42
Columbus	40
Bennington	39
Worcester	37
Grants Pass	36
Manchester-Nashua	36
Waterloo-Cedar Falls	36
Whitewater	35
Kansas City-Overland Park-Kansas City, MO-KS	34
Salem	34
Providence-New Bedford-Fall River, RI-MA	31
Akron	30
Charlottesville	30
Eureka-Arcata-Fortuna	30
Jacksonville	30
Knoxville	30
Omaha-Council Bluffs	30
Piscataquis County	30
Southern Pines-Pinehurst	30
Tucson	30
Tulsa	30

Anchorage	28
Cleveland–Elyria	27
Buffalo-Cheektowaga-Niagara Falls	24
Harrisburg-Carlisle	24
Oklahoma City	24
Fayetteville-Springdale-Rogers	23
Palm Bay-Melbourne-Titusville	23
Visalia-Porterville	22
Albuquerque	21
Colorado Springs	19
Milwaukee-Waukesha-West Allis	19
New Haven-Milford	19
New Orleans-Metairie-Bogalusa	18
San Antonio	18
Fort Wayne	16
Mount Vernon-Anacortes	15
Phoenix Lake-Cedar Ridge	15
Cheyenne	13
Fort Collins-Loveland	13
Olympia	13
Bellingham	12
Galesburg	12
Ogden-Clearfield	12
Springfield-Branson	12
Asheville	11
Burlington-South Burlington	11
Bangor	10
Pella	10

Reno–Sparks	10
Savannah	10
Show Low	10
Wheeling	10
Bakersfield	9
Bremerton-Silverdale	8
Fresno	7
Gardnerville Ranchos	7
Lafayette-Opelousas-Morgan City	7
Sanford	7
Vineland-Millville-Bridgeton	7
Walla Walla	7
Winneshiek County	7
Aberdeen	6
Albany-Lebanon	6
Athens-Clarke County	6
Bemidji	6
Binghamton	6
Bloomington, IN	6
Cape Coral-Fort Myers	6
Carroll County	6
Cedar Rapids	6
Corsicana	6
Dover	6
Elizabethtown	6
Fargo	6
Flagstaff	6
Iowa City	6
Johnson City	6
Keene	6
Kennewick-Pasco-Richland	6

Letcher County	6
Little Rock-North Little Rock-Conway	6
Lynchburg	6
Mansfield	6
Marion	6
Medford	6
Memphis	6
Moultrie	6
Muscatine	6
Naples-Marco Island	6
Portsmouth	6
Pueblo	6
Redding	6
Richmond-Berea	6
Saginaw	6
St. Cloud	6
Vallejo-Fairfield	6
Virginia Beach-Norfolk-Newport News	6
West Plains	6
Winston-Salem	6
Yuma	6
Concord	5
Del Rio	5
Deltona-Daytona Beach-Ormond Beach	5
Louisville-Jefferson County, KY-IN	5
Macon	5
Portland-South Portland-Biddeford	5
Refugio County	5
Scranton-Wilkes-Barre	5
Allentown-Bethlehem-Easton	4

Charleston-North Charleston-Summerville	4
Grand Forks	4
Grand Rapids-Wyoming	4
Huntington-Ashland	4
Pendleton-Hermiston	4
San Luis Obispo-Paso Robles	4
Tallahassee	4
Harrisonburg	3
Des Moines-West Des Moines	2
Windham County	2
Helena	1
Kahului-Wailuku	1

Growth Rate (2013-2016): All States*

State	Growth Rate (2013-2016)
Indiana	150%
Utah	100%
Maryland	95%
Florida	83%
Louisiana	79%
Wisconsin	79%
Arizona	75%
Pennsylvania	72%
Georgia	67%
Colorado	65%
North Carolina	59%
Oregon	58%
Virginia	58%
New Jersey	57%
Michigan	52%
Ohio	52%
Illinois	51%
Washington	51%
Minnesota	46%
Texas	45%
California	40%
New York	37%
Massachusetts	34%

*Where company additions yearend 2013-2016 were > 6