



# Memorandum

Date: June 28, 2018

To: Newark Community Foundation

From: Jason Horwitz  
Director of Public Policy and Economic Analysis, Anderson Economic Group

Re: HQ2 in Newark: K-12 and Postsecondary Education in New Jersey and New York Metro Area

Cc:

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In September 2017, Amazon announced its intention to establish a second corporate headquarters (known as “HQ2”) in North America, and issued a detailed request for proposals (RFP) from interested cities or regions. Amazon received 238 responses and, in January 2018, announced 20 finalists, including Newark, New Jersey.

The Newark Community Foundation (NCF), a division of the Community Foundation of New Jersey, retained Anderson Economic Group to identify and characterize Newark’s education talent pipeline. The New Jersey K-12 education system has a reputation as one of the nation’s top school systems, ranking in the top three states nationwide according to several national rankings. This system feeds into a postsecondary education system that includes schools such as Princeton, Rutgers, and the Stevens Institute of Technology, as well as a plethora of higher education options throughout the New York metro area.

There are two benefits to Amazon of locating near high-quality K-12 and higher education options. First, local residents who attend these institutions are more likely than candidates from other regions to establish a family and career in Newark. Second, the ability to send children to high-quality K-12 is essential to providing a good quality of life for employees.

## Overview of Approach

In order to characterize Newark’s education talent pipeline, we reviewed national studies on state education quality, analyzed data from the Common Core Data (CCD) and the Integrated Postsecondary Education Database System (IPEDS), and reviewed rankings of Newark area K-12 schools and higher education institutions.

The Newark Community Foundation identified six competitor states. These six competitors contain cities that are finalists for the Amazon HQ2, including Georgia, Illinois, Texas, Massachusetts, Pennsylvania, and Washington D.C. We compared the New Jersey K-12 education system to these competing regions.

For an evaluation of the postsecondary education system, we used degree completion data for the New York metro area—which includes Newark—to showcase the workforce available in the Newark area. We compared the New York metro area to four competing metro areas, including Chicago, Boston, Atlanta, and Washington D.C. These competitors are the highest-ranking cities on our AEG HQ2 index that are not located on the West coast.

See “Methodology” on page 6 for the analysis approach and data sources used in this memo.

## Summary of Finding

*1. Across all eleven K-12 education metrics we analyzed, New Jersey ranks in the top three states among its competitors, and ranks number one in graduation rate and pupil-to-teacher ratio.*

New Jersey has one of the best K-12 education systems relative to competitor states. In 2017, public schools in New Jersey enrolled more than 1.3 million students, accounting for 82% of the state’s school-age population.<sup>1</sup> Its average expenditure per student enrolled in public elementary and secondary schools is well above the national average and expenditures in all competitor states, except the District of Columbia. In addition, New Jersey has one of the lowest pupil-to-teacher ratios in the country, with on average one teacher for every 12 students. New Jersey also has one of the most experienced teacher work forces. Over 57% of its public school teachers have over 10 years of teaching experience.

Results from our analysis demonstrate a strong performance among students attending public schools in New Jersey. Its high school graduation rate reached 90% in 2016, the highest among its peer states. Dropout rates were the lowest in New Jersey, with only 1.6% leaving high school each year without earning a degree.

In 2015, fourth graders in New Jersey public schools scored the second highest on average, behind Massachusetts, in the National Assessment of Educational Progress in Science. New Jersey ranked third, behind Massachusetts and Texas, among competitor states, but well above the national average. For college entrance exams, high school graduates in New Jersey scored an average of 23.4 on ACT in 2016, higher than the averages for all of its peer states except Massachusetts. The average SAT score in New Jersey was the third

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1. We used the U.S. census estimates for state’s population between ages 5 and 19 to represent the total school-age population in New Jersey.

highest among competitor states, after Illinois and Massachusetts.<sup>2</sup> Table 1 below shows the ranking of New Jersey and peer states in all of the metrics we analyzed.

**TABLE 1. K-12 Education Metric Rankings for New Jersey and Peer States**

State or Region	New Jersey	Washington D.C.	Georgia	Illinois	Texas	Massachusetts	Pennsylvania
<b>Graduation Rate</b>	1	7	6	4	2	3	5
<b>(Lowest) Dropout Rate</b>	1	7	6	5	3	4	2
<b>Pupil-to-Teacher Ratio</b>	1	2	7	5	6	3	4
<b>Teachers with Bachelor's Degree or Higher</b>	2	n/a	4	1	3	5	6
<b>Teachers with 10+ Years of teaching experience</b>	2	n/a	1	4	6	5	3
<b>ACT</b>	2	7	6	4	5	1	3
<b>SAT</b>	3	7	5	1	6	2	4
<b>NAEP 4th Grade Science</b>	2	n/a	4	5	3	1	n/a
<b>NAEP 8th Grade Science</b>	3	n/a	4	5	2	1	n/a
<b>Share of Student in Gifted Program</b>	3	7	1	5	2	6	4
<b>Expenditure per Student</b>	2	1	6	5	7	3	4

*Source: Anderson Economic Group analysis using base data from National Center of Education Statistics, Common Core data.*

2. Multiple national studies we examined have ranked New Jersey as one of the top three K-12 education systems in the nation.

In addition to our own analysis, we performed a survey on national studies that evaluated the performance of K-12 education system in all 50 states. All of these studies ranked New Jersey in the top three states nationwide for the strongest K-12 system. Table 2 shows the rankings of New Jersey and peer states in these studies.

**TABLE 2. K-12 Education System Rankings, Select States**

Publication	New Jersey	Washington D.C.	Georgia	Illinois	Texas	Massachusetts	Pennsylvania
<b>Education Week's Quality Counts Report (2018)</b>	2	29	33	16	41	1	8
<b>U.S. News (2017)</b>	3	n/a	35	14	33	1	11
<b>WalletHub (2017)</b>	2	48	38	11	34	1	16
<b>SmartAsset (2016)</b>	2	n/a	42	15	34	3	25

*Source: Anderson Economic Group review of national K-12 rankings, 2018.*

2. Average ACT and SAT scores for each state are calculated for students enrolled in both private and public high schools.

3. *The Newark area is home to the best STEM high school in the country and some of the top performing schools in the state.*

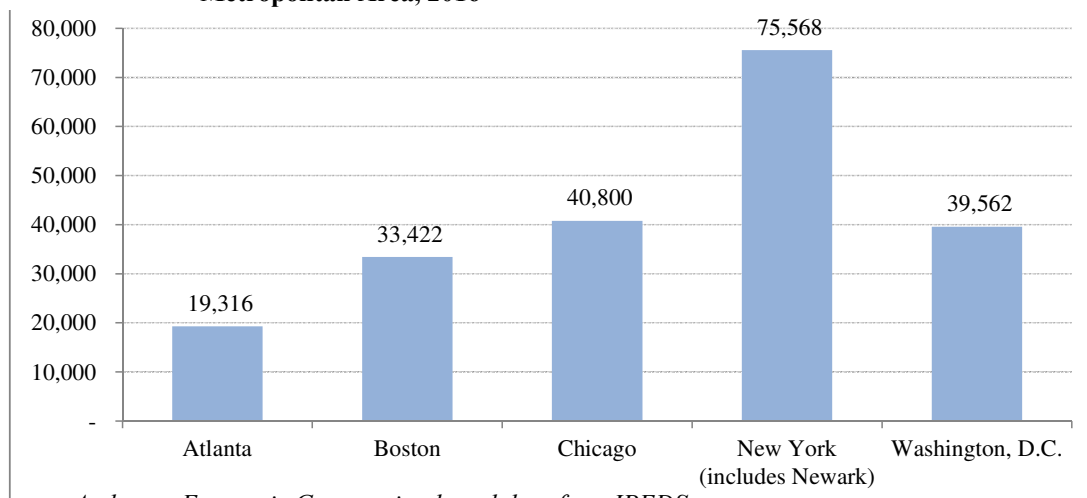
According to the U.S. News Education Ranking in 2017, 25 high schools in New Jersey were ranked in the top 500 schools in the country. Many of these schools are located in the Newark area, and are vital to a sustainable talent pipeline in the region.

High Technology High School in Monmouth County was ranked as the best high school in STEM education nationwide, and the best high school in New Jersey. It has a reputation for its rigorous curriculum in engineering and computer science education, and offers a capstone program in engineering design and development.

4. *Among competitor cities, the New York metro area—which includes Newark—awards by far the largest number of degrees and certificates in the fields that are relevant to Amazon HQ2.*

Universities and colleges in the New York metro area awarded over 75,000 degrees and certificates in relevant fields to Amazon HQ2 during the 2015-16 academic year. This number far surpassed the second-ranking metro area, Chicago, which awarded 40,800 during the same period. Figure 1 below shows the number of completions in relevant fields in each of the competitor metro area.

**FIGURE 1. Degrees and Certificates Awarded in Fields Relevant to Amazon HQ2 by Metropolitan Area, 2016**



Source: Anderson Economic Group using based data from IPEDS.

The State of New Jersey is home to 31 four-year colleges and universities, including Princeton University, one of the most prestigious higher-education institutions in the country. Many of these schools are located outside of the New York metro area, and are thus not included in the calculation of degree count presented above.

We show a list of top universities in the New York metro area and the state of New Jersey in Table 3 on page 5.

**TABLE 3. Top Universities and Colleges in the New York Metro Area and the State of New Jersey**

<b>Institution Name</b>	<b>Ranking<sup>a</sup></b>	<b>Location</b>
Princeton University	1	Princeton, NJ
Columbia University	5	New York, NY
New York University	30	New York, NY
Fordhan University	61	Bronx, NY
Rutgers University - New Brunswick	69	Piscataway, NJ
Stevens Institute of Technology	69	Hoboken, NJ
Yeshiva University	94	New York, NY
Barnard College	25 <sup>b</sup>	New York, NY

*Note:*

*a. Rankings from U.S. News.*

*b. U.S. News provides separate rankings for national universities and liberal arts colleges. Barnard College is ranked 25<sup>th</sup> in the national liberal arts college ranking.*

*Source: U.S. News Higher Education Best Colleges 2018.*

## Methodology

This appendix describes the data sources and methodology AEG used to complete this analysis.

### *Data Sources*

We used data from the following sources to complete our analysis:

- U.S. News for national rankings on universities, liberal arts colleges, public high schools, and STEM schools, as well as state ranking on public high schools in New Jersey;
- Education Week’s Quality Counts Report, U.S. News, WalletHub, and SmartAsset for rankings on state K-12 education systems;
- National Center for Education Statistics (NCES) Common Core Data for state-level data on average National Assessment of Educational Progress (NAEP) science scale score, public high school graduation and dropout rates, average ACT and SAT scores, percentage of public school students enrolled in gifted and talented programs, pupil/teacher ratio, teacher qualification by highest degree earned and years of full-time teaching experience, and expenditures per pupil;
- Integrated Postsecondary Education Data System (IPEDS) for data on degrees conferred; and
- U.S. Census estimates for New Jersey’s population between ages 5 and 19.

### *K-12 Education System Analysis*

We evaluated the K-12 education system in New Jersey and peer states using state-level data on a range of student and teacher-related metrics from the NCES. We used data for the academic year ending in 2016 where possible, and used the most recent year of data that is publicly available for metrics that did not report information for the 2015-16 school year. Table 4 on page 7 shows the scores for New Jersey and peer states on all the metrics we analyzed.

### *Degree Completions*

We estimated the total number of degrees and certificates granted by for-profit, nonprofit, and public higher education institutions in each of the competitor metro areas using data from the Integrated Postsecondary Education Data System (IPEDS). We only included fields of study that were particularly relevant for potential employees at HQ2. The degrees we included are in Table 5 on page 8, along with the corresponding Classification of Instructional Programs (CIP) code.

**TABLE 4. K-12 Education Metric Scores for New Jersey and Peer States**

<b>State or Region</b>	<b>New Jersey</b>	<b>Washington D.C.</b>	<b>Georgia</b>	<b>Illinois</b>	<b>Texas</b>	<b>Massachusetts</b>	<b>Pennsylvania</b>
<b>Graduation Rate</b>	89.7%	68.5%	78.8%	85.6%	89.0%	87.3%	84.8%
<b>Dropout Rate</b>	1.6%	7.0%	3.8%	2.9%	2.7%	2.8%	2.1%
<b>Pupil/Teacher Ratio</b>	12.4	12.9	15.6	15.3	15.5	13.5	14.3
<b>Teacher with Bachelor's Degree or Higher</b>	97%	n/a	96.6%	97.3%	96.7%	96.1%	95.5%
<b>Teacher with 10+ Years of teaching experience</b>	57.3%	n/a	59.5%	54.3%	50.8%	54.2%	56.8%
<b>ACT</b>	23.4	19.7	20.7	20.9	20.8	24.1	22.4
<b>SAT</b>	1501	1285	1459	1819	1393	1553	1487
<b>NAEP 4th Grade Science</b>	154.7	n/a	152.0	151.1	154.7	161.5	n/a
<b>NAEP 8th Grade Science</b>	155.6	n/a	152.2	149.8	156.2	161.6	n/a
<b>Share of Student in Gifted Program</b>	6.5%	0.1%	10.4%	3.5%	7.7%	0.7%	3.8%
<b>Expenditure per Student</b>	\$18,780	\$20,577	\$9,236	\$13,213	\$8,602	\$15,886	\$13,824

*Source: Anderson Economic Group analysis using base data from National Center of Education Statistics, Common Core data.*

**TABLE 5. Degrees Fields Relevant to Amazon HQ2**

<b>Field of Study</b>	<b>CIP Code</b>
Public Relations, Advertising, and Applied Communication	9.09
Publishing	9.10
Computer and Information Sciences and Support Services	11
Computer Engineering	14.09
Electrical, Electronics, and Communications Engineering	14.10
Systems Engineering	14.27
Operations Research	14.37
Computer Engineering Technologies/Technicians	15.12
Non-Professional General Legal Studies (Undergraduate)	22.00
Law	22.01
Legal Research and Advanced Professional Studies	22.02
Mathematics and Statistics	27
Interdisciplinary Study in Systems Science and Theory	30.06
Interdisciplinary Study in Mathematics and Computer Science	30.08
Interdisciplinary Study in Accounting and Computer Science	30.16
Interdisciplinary Study in Computational Science	30.30
Interdisciplinary Study in Human Computer Interaction	30.31
Economics	45.06
Design and Applied Arts <sup>a</sup>	50.04
Business, Management, Marketing, and Related Support Services <sup>b</sup>	52

*Source: Anderson Economic Group analysis using base data from IPEDS.*

- a. In the “Design and Applied Arts” category, we exclude “Fashion/Apparel Design” and “Interior Design.”
- b. In the “Business, Management, Marketing, and Related Support Services” category, we exclude “Hospitality Administration/Management,” “Real Estate,” and “Construction Management.”