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# U.S. AI Summer Camps

Opportunities and Gaps for Youth

CSET Data Brief



**AUTHORS**  
Claire Perkins  
Kayla Goode

## Executive Summary

Artificial intelligence (AI) education is an increasingly prominent topic in the United States. Educators, industry leaders, and policymakers alike have begun to prioritize AI education initiatives with the goal of maintaining the U.S. workforce's competitive edge and filling jobs in the technology sector.

However, U.S. AI education may have an overlooked program area: summer camps. In many communities, summer camps are a staple of the educational experiences of primary and secondary (K-12) students. Despite AI education's prioritization as a national security imperative, little is known about the current offerings of summer camps that specifically focus on AI education for K-12 students.

This brief details the current landscape of AI summer camps in the United States. Using a dataset on AI summer camps collected and curated by CSET, we examine the variation in camp programming, the U.S. states where they operate, which organizations run them, which student populations they target, and their cost.

Our analysis found:

- There are about 450 AI and AI-related summer camps across 48 U.S. states.
- Approximately 53 percent of these camps are concentrated in just 8 states: California, New York, Texas, Colorado, Pennsylvania, Massachusetts, Washington, and Virginia.
- AI summer camps are primarily offered by for-profit organizations, and 49 percent cost more than \$750 per student. Just 10 percent of the AI and AI-related camps we found are free, and these are mostly offered by universities and non-profit organizations.
- High school students are the largest target audience for these camps, but more than half target middle and elementary school students as well.

We acknowledge the AI education landscape is evolving—often rapidly—and new programs and curricula will surely emerge as

more schools and local governments realize the value of AI education. Nevertheless, our data brief provides a relevant and timely snapshot with information detailing the distribution and accessibility of these camps for U.S. K-12 youth.

## Introduction

The U.S. summer camp market is valued at nearly \$4 billion, with an estimated 12,000 camps in the United States.<sup>1</sup> Camps provide curriculum and structure to help children learn during the summer while operating outside of the confines of formal schooling. Summer camps include day camps, overnight camps, and virtual camps that focus on a particular area or set of activities.

For some students, AI and AI-related summer camps may offer one of the few opportunities for exposure to AI educational experiences. U.S. state and local governments oversee education governance and funding, and AI education has yet to be adopted nationwide. This has resulted in gaps or uneven AI education opportunities at the K-12 level.

AI summer camps provide an alternative to the traditional classroom and, for many children, can be an integral part of their AI educational experience. These camps provide unique opportunities to introduce students to essential technologies in creative and engaging ways outside the classroom. This early exposure to AI applications, concepts, and uses will help cultivate a domestic pool of AI talent, in addition to producing more informed users and consumers of AI— a U.S. national security priority.<sup>2</sup>

However, very little is known about U.S. AI summer camps. This brief addresses this information gap by providing new data on the nature and distribution of AI and AI-related summer camps in the United States. Our research reveals the scope and location of these AI summer camps, in addition to targeted populations and organizers.

Moreover, as a result of our research, we created a centralized resource with this data.\* We hope this report helps U.S. policymakers understand the current landscape of AI summer programs and where accessibility gaps exist. Additionally, we aim to inform students, parents, educators, education leaders, and anyone interested in AI education summer camps for today's youth.†

## Methodology

The decentralized nature of the U.S. education system does not lend itself to consolidated repositories of AI education initiatives. Therefore, we manually compiled data on AI and AI-adjacent summer camps in the United States in several steps. First, we researched programs offered by industry leaders in either AI or in education. Next, we examined state-led initiatives in AI summer education. This was done by searching key phrases online such as “AI summer camps,” or “computer science summer camps” to generally assess the kinds of camps available. We conducted the search in the spring of 2021 and therefore evaluated summer camps scheduled for 2020 and 2021. Not all programs were updated on the website during the time of our search. Lastly, we collected state-by-state data using the same search terms. Where information was publicly available, we collected the camp name, website, hosting organization, location, target grade level/age, number of students, duration, and cost.‡

We divided hosting organizations into into three classifications: university, for-profit, and non-profit. University programs are those hosted by academic departments in a university, non-profit

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\* The list of AI summer camps found for this paper can be located here: <https://github.com/georgetown-cset/AI-Summer-Camps-Brief-Data>.

† A broader AI education catalog is forthcoming and will highlight summer camps in addition to other education types including curriculum, afterschool programs, competitions, federal initiatives, scholarships, and conferences.

‡ Information about cost and targeted ages could not be found for all camps.

programs are defined as programs hosted by tax exempt organizations distinct from universities, and for-profit programs are those hosted by private, for-profit companies.

Since AI can encompass many subject areas and is prone to vague definitions, our research focused on summer camps that offered AI and AI-adjacent content. This includes camps that cover machine learning, computer science, or robotics, in addition to those that include AI in the program description. We chose to specifically focus on these subjects because their applications are more closely or exclusively aligned with AI applications, as opposed to mathematics or engineering camps, which can be much broader in their applications outside of AI.

For the search, we use the following criteria for defining “summer camp”:

- The camp must take place between May and August.
- The camp has a longer time commitment than a few hours per week.
- The camp is not just a one-on-one tutoring session or single class.
- The majority of the activities in the camp are synchronous (i.e. the camp is not just a list of online modules for the student to complete at their convenience).
- The organization hosting the camp markets it as a “Summer Camp.”
- The camp specifically markets AI, machine learning, robotics, or computer science education as a part of the curriculum.

The identified summer camps met all of the above established criteria. The established framework allows for camps other than the traditional sleepaway camps, such as day camps and virtual summer camps. We decided to include virtual camps since the COVID-19 pandemic forced many to reform their programming to accommodate virtual learning.

With limitations on information publicly available online, it is possible not all AI summer camps appeared in our data collection. In addition, we acknowledge that some AI summer camps may be organized locally through school districts or small organizations. These programs may not broadcast their offerings or have the ability to host program information online.

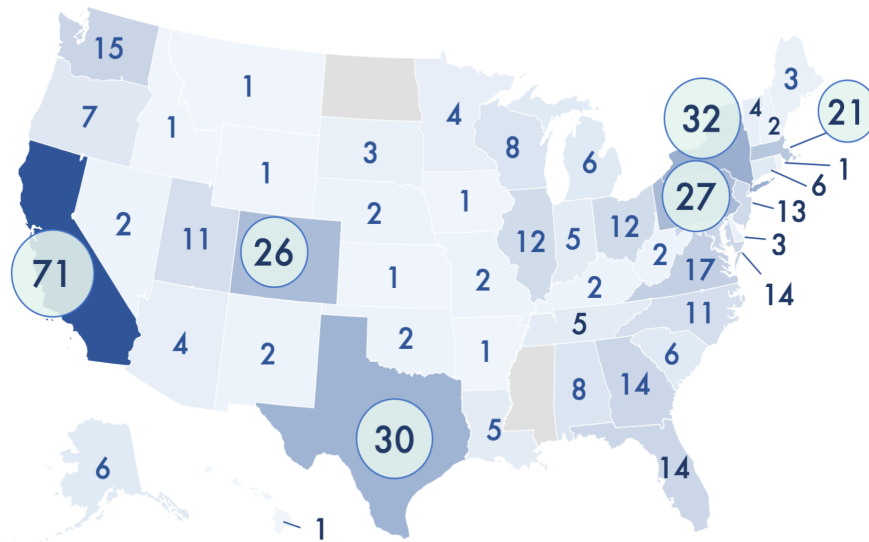
## Findings

Our research found 447 summer camps in the United States. Mississippi and North Dakota are the only two states where we did not identify an AI summer camp. As we show in Figure 1, the eight U.S. states with the highest quantity of camps have a notably greater number of AI summer camps than the remaining 40 states. This suggests a disparity in where AI camps are located. California ranks highest with 71 AI summer camps, about 16 percent of the total. New York and Texas, with the second and third highest number of AI camps, are far behind with totals of 32 and 30 respectively, showing an immediate drop. The top 8 states account for more than 50% of all U.S. AI summer camps but only about 40% of the country's total school-aged population.\*<sup>3</sup>

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\* AI summer camp totals can be dynamic and the totals in each state are subject to change making the top and bottom 50% summer camp state totals variable to change.

Figure 1: AI Summer Camps are Found in Every State but North Dakota and Mississippi



Note: We found no state-level AI summer camps offered in Mississippi and North Dakota. While there are 447 camps in the catalog, 448 camps are visualized on this map. This is due to 28 camps not visualized (23 virtual and 5 in Washington, DC) plus 4 camps that were offered in multiple states which added 29 camps to the map (i.e.,  $447 - 28 + 29$ ).

Source: CSET analysis of CSET's forthcoming AI Education Catalog.

### **Nature and Target Demographic of AI Summer Camps**

Our analysis shows that there are a wide array of camps available for K-12 youth. There are summer camps largely marketed towards elementary and middle school students that teach coding using computer games such as Minecraft and Roblox. For high school students, there are summer camps such as the NYU Tandon's Summer Program for Machine Learning that emulate college courses by teaching various programming languages.<sup>4</sup> Some robotics summer camps use Legos to teach children about robotics, such as Maine Robotics.<sup>5</sup>

We found AI summer camps range anywhere from two days to nine weeks, with five days being the most typical camp duration. We also found that AI summer camps exist for youth of all ages

and grades levels.\* There are offerings for children as young as four years old and as old as eighteen or graduated high school seniors.† Figure 2 shows the breakdown of the number of camps available for each target education level and the overlap between them. Although high school students have the largest access to AI summer camps, 46% of the camps are still accessible to all grade levels (Table 1).

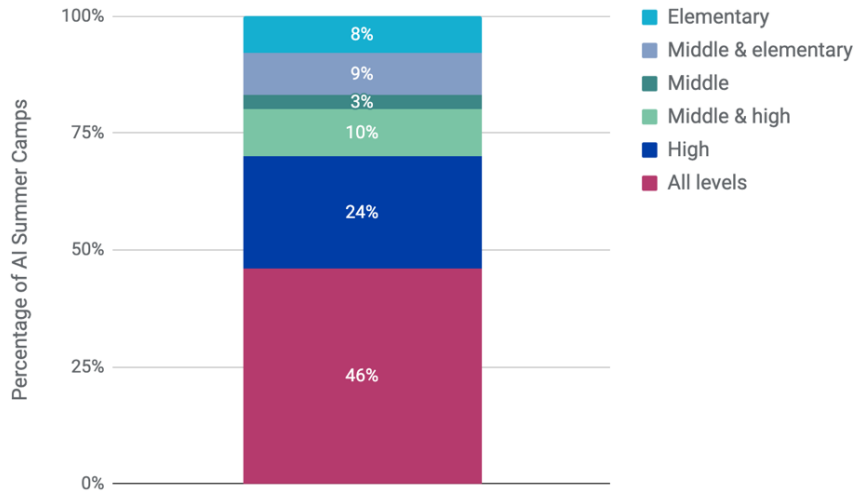
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\* Some summer camps only provided ages or grades as a means for a student's participation eligibility, therefore we divided the data by elementary, middle, and high school using the criteria mentioned below Figure 2 as a means of organizing the summer camps' school demographic.

† Camp offerings vary by state and not all states have camp opportunities for every K-12 student as a result.



Figure 2: High Schoolers are the Largest Target Demographic



Source: CSET analysis of CSET's forthcoming AI Education Catalog.

Table 1: A Substantial Amount of Camps Exist for Each Target Demographic

Target School	Percentage of Eligible Camps
Elementary	63%
Middle	68%
High	80%

Note: Elementary camps include grades K-5 or ages 5-10, middle school camps include grades 6-9 or ages 11-13, and high school camps include grades 9-12 or ages 14-18. There is overlap, with some camps represented in multiple target education levels. We only had target demographic information for 438 of the camps.

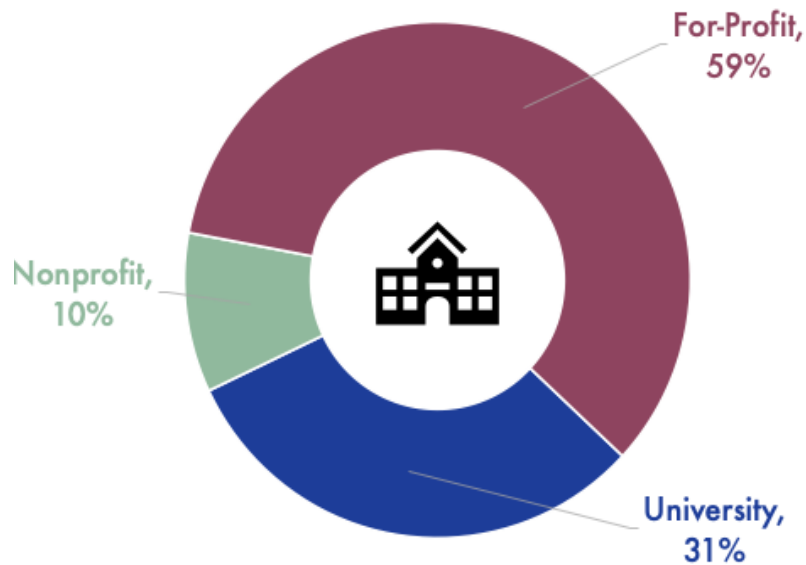
Source: CSET analysis of CSET's forthcoming AI Education Catalog.

We also found a mix of virtual, day, and overnight camps in the catalog. The majority of camps are hosted on a college campus, run by the university or a for-profit organization.

### **Organizational Composition**

Our data also allows us to understand the organizational composition of entities hosting the AI summer camps. We found that just under 60 percent of AI summer camps are run by for-profit organizations (Figure 3).

Figure 3: For-Profit Camps are the Largest Hosting Organization Type

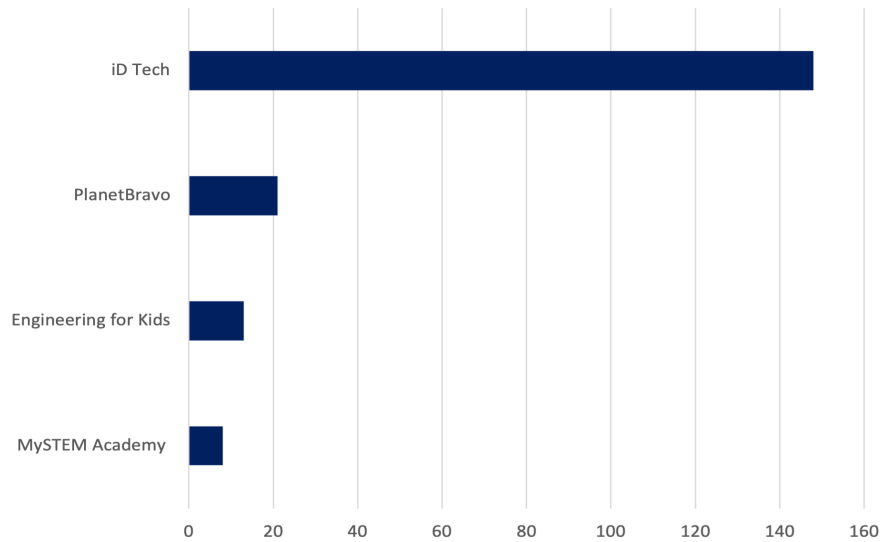


Source: CSET analysis of CSET's forthcoming AI Education Catalog.

Figure 4 shows the breakdown of the top for-profit AI summer camp organizations. Of the for-profit summer camps, about half (148) were run by iD Tech. iD Tech is a Silicon Valley company focused on STEM education programs around the United States.<sup>6</sup> The company states they work with an estimated 50,000 students each year and have an alumni network of about 500,000 students from more than 90 different countries.<sup>7</sup> PlanetBravo host the second most camps, with 20 virtual and in-person AI summer

programs around the United States.\*<sup>8</sup> A handful of camps are hosted by big tech companies. For example, Google, Microsoft and other tech companies partner with non-profit organizations that operate the summer camps.

Figure 4: iD Tech Hosts the Most Camps of the For-Profit Companies



Source: CSET analysis of CSET's forthcoming AI Education Catalog.

Although for-profit organizations such as iD Tech offer the majority of the camps, university programs and non-profit organizations host camps as well. University-led camps were more common in New York, Texas, and Utah, all of whom had at least 10 identified camps. Nine states did not have an identified university-led summer camp.

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\* Identical camps offered both online and in-person were counted as separate camps for the total.

## AI Summer Camp Cost

Figure 5 shows the breakdown of the cost of the summer camps. The cost of AI summer camps in the United States ranges from free to \$6,010 per person.\* Around 34 percent of the camps cost between \$700 and \$900, representing the most common price range for AI summer camps. Overnight camps run by for-profit organizations and universities, usually lasting around two or more weeks, tended to be more expensive. Non-profit and online camps were usually much cheaper, often under \$1,000 or free of cost.

In order to gauge the overall camp accessibility in terms of cost, we divided the camps into three different price categories.† The categories help provide a general overview of different cost access points. Figure 5 divides the price range at \$750 because it reflects the shift seen in cost from the online and day camps to the for-profit overnight camps.‡

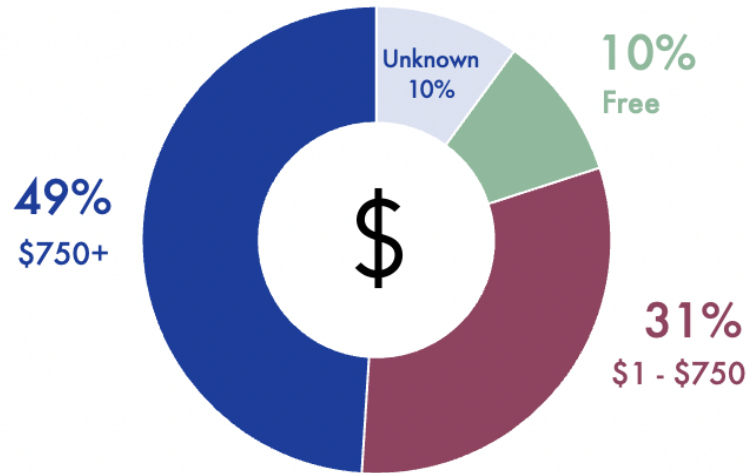
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\* 42 programs were identified as free and the program identified as \$6,010 is the 3-week Columbia University program for Matlab: Computer modeling for science and technology.

† Because many of the camps had price ranges depending on the duration of the camp or additional program add-ons, if a camp encompassed two of the categories selected, we took the price point on the lower end of the range.

‡ Even though \$750 was used to mark a shift, there were still for-profit overnight camps that were less than \$750 and virtual and day camps that were greater than \$750. \$750 was used because it created the clearest break in price points.

Figure 5: The Majority of AI Summer Camps are Not Free



Source: CSET analysis of CSET's forthcoming AI Education Catalog.

### **Gaps in Accessibility**

Our preliminary analysis reveals two main disparities likely to affect students' ability to access AI summer camps: location and cost. With about half of the camps located in only eight states, there are potential geographical barriers for many students. During the search, no camps were found for Mississippi and North Dakota and 16 states were found to only have one to two AI summer camps.

In addition, only about 10 percent of camps were free, and about 49 percent had a price tag greater than \$750. A determining factor for the cost of a given camp was its duration, whether or not it was a sleepaway camp, and if the camp was run by a non-profit organization. Some camps did have financial need scholarships available, but those opportunities do not guarantee every student with financial need has access to the camp they wish to attend.

Although this brief provides an initial assessment of U.S. AI summer camps' location, cost, and targeted age groups, there are still areas for further exploration. Future research on the demographics of the students who attend the camps, their formal education outcomes, and their access to formal AI education

outside of summer camps would be illuminating to further understand the opportunities and benefits provided by AI summer camps. Moreover, it would be interesting to explore whether or not AI summer camps have any prerequisites for students to attend. Additional information on the AI curricula and quality of courses offered by each camp could be particularly useful as the United States charts a path forward in K-12 AI education.

## Conclusion

Summer camps can be an integral part of a child's education, and AI summer camps can help expose children to AI applications at an earlier age. Although high school students are the largest target audience for these camps, more than half of the camps assessed in this brief support elementary and middle school students.

Location and cost are the largest barriers to a child's access to AI summer camps. The camps are heavily concentrated in three states: California, New York, and Texas. This uneven distribution is further demonstrated by the fact that eight states (CA, NY, TX, PA, CO, MA, VA, WA) alone host more camps than the other 40 states combined. In addition, most camps take place on a university campus, but the overwhelming majority of them are run by for-profit organizations. Even though cost is often dependent on factors such as duration, host organization type, and whether or not it is overnight, approximately half of the camps still have a price tag greater than \$750, which can be a deterrent for families.

While summer camps are not the only exposure that U.S. children might have to AI, they are nonetheless an important feature of many children's education. Therefore, more attention should be paid to extracurricular programs that educate K-12 youth on the technologies of the future. Such educational offerings are inextricably tied to U.S. leadership in innovative industries and, ultimately, U.S. national security.

## Authors

Claire Perkins is a semester research analyst at CSET, where Kayla Goode is a research analyst.

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## Endnotes

<sup>1</sup> "Summer Camps Industry in the US - Market Research Report." IBISWorld, July 13, 2020, [www.ibisworld.com/united-states/market-research-reports/summer-camps-industry/](http://www.ibisworld.com/united-states/market-research-reports/summer-camps-industry/). See also, "Who We Are," American Camp Association, accessed July 1, 2012, <https://www.acacamps.org/about>.

<sup>2</sup> A report from the National Security Commission on AI concluded the lack of talent is the greatest inhibitor for the United States in terms of national security purposes, National Security Commission on Artificial Intelligence, "Final Report," 2021, [www.nsc.ai.gov/2021-final-report/](http://www.nsc.ai.gov/2021-final-report/). In addition, 37% of businesses worldwide reported adopting AI, up from 10% in 2016. "Gartner Survey Shows 37 Percent of Organizations Have Implemented AI in Some Form," Gartner, January 21, 2019, [www.gartner.com/en/newsroom/press-releases/2019-01-21-gartner-survey-shows-37-percent-of-organizations-have](http://www.gartner.com/en/newsroom/press-releases/2019-01-21-gartner-survey-shows-37-percent-of-organizations-have).

<sup>3</sup> National Center for Education Statistics, "Estimated Total and School-Age Resident Populations, by State: Selected Years, 1970 Through 2018," 2019, [nces.ed.gov/programs/digest/d19/tables/dt19\\_101.40.asp?current=yes](http://nces.ed.gov/programs/digest/d19/tables/dt19_101.40.asp?current=yes).

<sup>4</sup> "High School Programs," New York University, accessed May 25, 2021, [www.nyu.edu/admissions/high-school-programs.html](http://www.nyu.edu/admissions/high-school-programs.html).

<sup>5</sup> Maine Robotics, accessed May 25, 2021, [www.mainerobotics.org/](http://www.mainerobotics.org/).

<sup>6</sup> "About iD Tech Camps, Academies & Alexa Café," iD Tech, accessed May 25, 2021, [www.idtech.com/about](http://www.idtech.com/about).

<sup>7</sup> iD Tech, "iD Tech Is Providing Social Time Kids Need Through Online Courses They Love," PR Newswire, May 27, 2020, [www.prnewswire.com/news-releases/id-tech-is-providing-social-time-kids-need-through-online-courses-they-love-301065756.html](http://www.prnewswire.com/news-releases/id-tech-is-providing-social-time-kids-need-through-online-courses-they-love-301065756.html). See also, "From Silicon Valley startup to industry leader," iD Tech, accessed July 1, 2021, <https://www.idtech.com/>.

<sup>8</sup> "Techno-tainment Summer Camp, Computers, Technology, Entertainment," PlanetBravo, accessed May 25, 2021, [www.planetbravo.com/camps/index.php](http://www.planetbravo.com/camps/index.php).