# State Reports

## About the Reports

The following reports summarize the status of computer science education from principals' input for 11 U.S. states with sufficient principal responses and offer recommendations for each state to broaden access to and participation in computer science learning. The reports are based on the 2014-15 Google-Gallup survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

Learn more at g.co/cseduresearch.

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Methodology

# California

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

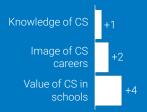
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

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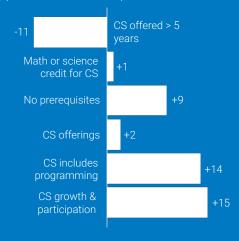
Compared to the U.S. average, California principals more likely value CS learning. However, CA schools are less likely to offer CS and AP CS classes but more likely to have afterschool CS programs. CS learning opportunities also more likely include programming. California principals report growing participation and demand among students and parents.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



### Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for California.

## Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for California schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In California, only 34% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 33% of California principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. California principals report CS students are most commonly White and, when compared to the U.S. average, are more often Hispanic or Asian but less often Black.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in California.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 9% of California principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in California at 40% (U.S. average 37%).
- Lack of teachers trained in CS (55%), not enough budget for a CS teacher (53%), and lack of necessary computer software (46%) were reported by California principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.
- · Prioritize funding to meet the demand for CS.
- Broaden student access to various computer technologies through a variety of paths in and out of school.

See **g.co/cseduresearch** for recommended resources.

Google GALLUP GALLUP



# California

### Data Tables

The descriptive data tables below show responses by 709 California K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | CA             | US             |
|--|----------------|----------------|
| Knowledge of CS (% no to both)   | 34             | 33             |
| Which of the following activities do you consider part of CS? (% no)   |                |                |
| Creating documents or presentations on the computer  | 37             | 35             |
| Searching the Internet   | 42             | 44             |
| Image of CS careers (average % positive)   | 89             | 87             |
| People who do CS make things that help improve lives. (% agree)  | 83             | 82             |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 92             | 90             |
| CS can be used in a lot of different types of jobs. (% agree)  | 91             | 89             |
| Value of CS in schools (average % positive)  | 76             | 72             |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 74             | 70             |
| Most students should be required to take a computer science course. (% agree)  | 65             | 59             |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |                |                |
| required courses like math, science, history and English?other elective courses like art, music, and foreign languages?  | 72<br>92       | 68<br>91       |
| Opportunities & Participation  | CA             | US             |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 39             | 49             |
| Math or science credit for CS ( % positive to either)  | 14             | 13             |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 10             | 10             |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)  | 82             | 73             |
| CS offerings (average % positive)  | 55             | 53             |
| About how many different types of CS courses are available in your school this year? (% 1+)  | 53             | 54             |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther   | 95<br>19<br>43 | 95<br>21<br>44 |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  | 48             | 43             |
| How many school clubs or after-school activities that expose students to CS are at your school? (% 1+)   | 72             | 62             |
| CS includes programming: Do the computer science opportunities offered in your school include any of the following elements?Computer programming and coding (%)            | 67             | 53             |

| Opportunities & Participation  | CA   | US   |
|--|--|--|
| CS growth & participation (average % positive)   | 61   | 46   |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)   | 68   | 51   |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)  | 63   | 49   |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)  | 06   | 07   |
| Girls  | 26<br>/57  | 27<br>/54  |
| White/Caucasian  | 42<br>/48  | 60 /32   |
| Black/African-American   | 15<br>/47  | 21<br>/43  |
| Hispanic/Latino  | 25<br>/50  | 21 /44   |
| Asian  | 36<br>/48  | 26<br>/41  |
| School Infrastructure  | CA   | US   |
| Demand for CS (average % positive)   | 33   | 27   |
| Demand for CS education among parents in your school is (%)HighIncreasing  | 9  | 7<br>36  |
| Departed for CC advanting appared at advantaging view as leading (0/)  |  |  |
| Demand for CS education among students in your school is (%)High   | 17   | 14   |
| High<br>Increasing   | 58   | 49   |
| HighIncreasing  Support for CS (average % positive)  | 58<br><b>40</b>  | 49<br><b>37</b>  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)   | 58<br><b>40</b><br>28                                    | <b>37</b> 24   |
| HighIncreasing  Support for CS (average % positive)  | 58<br><b>40</b>  | 49<br><b>37</b>  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our   | 58<br><b>40</b><br>28                                    | <b>37</b> 24   |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is  | 58<br>40<br>28<br>45                                     | 49<br>37<br>24<br>43                                     |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)   | 58<br>40<br>28<br>45<br>48                               | 37<br>24<br>43<br>45                                     |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge  | 58<br>40<br>28<br>45<br>48                               | 49<br>37<br>24<br>43<br>45                               |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there   | 58<br>40<br>28<br>45<br>48<br>49<br>58                   | 49<br>37<br>24<br>43<br>45<br>48<br>56                   |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)  | 58<br>40<br>28<br>45<br>48<br>49<br>58                   | 49<br>37<br>24<br>43<br>45<br>48<br>56                   |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)There are no teachers available at my school with the necessary skills to teach computer scienceThere is not enough money to train or hire a teacher. | 58<br>40<br>28<br>45<br>48<br>49<br>58<br>41<br>55<br>53 | 49<br>37<br>24<br>43<br>45<br>48<br>56<br>40<br>42<br>44 |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)There are no teachers available at my school with the necessary skills to teach computer science.   | 58<br>40<br>28<br>45<br>48<br>49<br>58<br>41             | 49<br>37<br>24<br>43<br>45<br>48<br>56<br>40             |

# Florida

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

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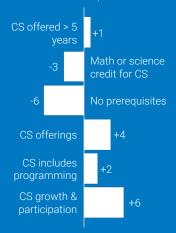
Compared to the U.S. average, a smaller portion of Florida principals correctly distinguish CS from computer literacy. They also less likely offer CS classes, and when offered, CS classes often have prerequisites and less likely count for math or science. However, a greater percentage report growth, demand, and support of CS in their schools.

Values below indicate percentage point difference from the U.S. average. See back for full data tables

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



## Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Florida.

## Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Florida schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Florida, only 28% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 26% of Florida principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. Florida principals most commonly report CS students are usually White, though they report greater frequencies of Black, Hispanic, Asian, and female students compared to the U.S. average.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Florida.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 8% of Florida principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Florida at 42% (U.S. average 37%).
- Focus on test preparation for other subject areas (51%), too little budget for computer equipment (41%) and software (40%), and not enough budget for a CS teacher (39%) were reported by Florida principals as the greatest barriers to offering CS for their schools.

### Recommendations

- Differentiate between computer literacy and computer science to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- Prioritize funding to meet the demand for CS.

See **g.co/cseduresearch** for recommended resources.



# Florida

## Data Tables

The descriptive data tables below show responses by 349 Florida K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions   | FL                   | US             |
|---|----------------------|----------------|
| Knowledge of CS (% no to both)  | 28                   | 33             |
| Which of the following activities do you consider   |                      |                |
| part of CS? (% no)Creating documents or presentations on the computer   | 30                   | 35             |
| Searching the Internet  | 39                   | 44             |
| Image of CS careers (average % positive)  | 86                   | 87             |
| People who do CS make things that help improve lives. (% agree)   | 81                   | 82             |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)  | 89                   | 90             |
| CS can be used in a lot of different types of jobs. (% agree)   | 89                   | 89             |
| Value of CS in schools (average % positive)   | 71                   | 72             |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)   | 70                   | 70             |
| Most students should be required to take a computer science course. (% agree)   | 54                   | 59             |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)   |                      |                |
| required courses like math, science, history and English?other elective courses like art, music, and foreign languages?   | 67<br>93             | 68<br>91       |
| Opportunities & Participation   | FL                   | US             |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)  | 51                   | 49             |
| Math or science credit for CS ( % positive to either)   | 10                   | 13             |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirement   | 9                    | 10             |
| A science requirement   | 8                    | 8              |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)   | 67                   | 73             |
| prerequisites: (% 110)  |                      | 53             |
|   | 57                   |                |
| CS offerings (average % positive)  About how many different types of CS courses are available in your   | <b>57</b> 50         | 54             |
| CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)   | 50                   |                |
| CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP courses   | 50<br>99<br>22       | 54<br>95<br>21 |
| CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther  | 50<br>99<br>22<br>50 | 95<br>21<br>44 |
| CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther  As far as you know, is CS taught as part of other classes at your school? (% yes) | 50<br>99<br>22       | 95<br>21<br>44 |
| CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther  As far as you know, is CS taught as part of other classes at your                 | 50<br>99<br>22<br>50 | 95<br>21       |

| Opportunities & Participation   | FL               | US        |
|---|------------------|-----------|
| CS growth & participation (average % positive)  | 52               | 46        |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)          | 59               | 51        |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)     | 56               | 49        |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)Girls                                    | 37               | 27        |
| White/Caucasian   | /50<br>54        | /54<br>60 |
| Black/African-American  | /37              | /32<br>21 |
| Hispanic/Latino   | /44<br>31        | /43<br>21 |
| Asian   | /52<br>35        | /44<br>26 |
| School Infrastructure   | /45<br><b>FL</b> | /41<br>US |
| Demand for CS (average % positive)  | 29               | 27        |
| Demand for CS education among parents in your school is (%)   |                  |           |
| High<br>Increasing  | 8<br>42          | 7<br>36   |
| Demand for CS education among students in your school is (%)HighIncreasing  | 16<br>50         | 14<br>49  |
| Support for CS (average % positive)   | 42               | 37        |
| CS education is currently a top priority for my school. (% agree)   | 28               | 24        |
| My school board believes CS education is important to offer in our schools. (% agree)   | 50               | 43        |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)                                       | 46               | 45        |
| Teacher availability (average % positive)   | 49               | 48        |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)                                    | 56               | 56        |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)              | 42               | 40        |
| Barriers  |                  |           |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)                        |                  |           |
| We have to devote most of our time to other courses that are related to testing requirements and computer science is not.               | 51               | 47        |
| We do not have sufficient budget to purchase the necessary computer equipmentWe do not have sufficient budget to purchase the necessary | 41               | 34        |
| computer software.  What was the largest barrier your school had to overcome to offer   |                  |           |
| CS? (%)Not enough money to purchase necessary computer equipment.   | 21               | 13        |

# Georgia

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as we as support and infrastructure.

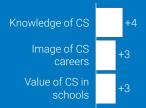
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals and superintendents.

g.co/cseduresearch

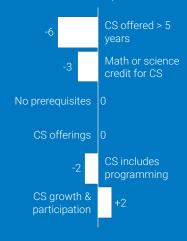
Georgia principals more often correctly distinguished CS from computer literacy and have a positive image and value of CS, compared to the average U.S. principal. They also more likely have afterschool CS, but less likely have CS classes. Overall, a greater percentage report demand for CS in their schools.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



### School Infrastructure



### Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Georgia.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Georgia schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Georgia, only 37% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 24% of Georgia principals reporting offering CS classes with programming and coding (U.S. average 26%).
- **CS offerings often appeal to and serve a subset of students**. Georgia principals report CS students are mostly White, but slightly more often Black than the U.S. average.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Georgia.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 8% of Georgia principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Georgia at 38% (U.S. average 37%).
- Not enough budget for a CS teacher (45%), lack of teachers trained in CS (40%), and focus on test preparation for other subject areas (40%) were reported by Texas principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Prioritize funding to meet the demand for CS.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.

See **g.co/cseduresearch** for recommended resources.



# Georgia

## Data Tables

The descriptive data tables below show responses by 305 Georgia K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | GA       | US       |
|--|----------|----------|
| Knowledge of CS (% no to both)   | 37       | 33       |
| Which of the following activities do you consider part of CS? (% no)   |          |          |
| Creating documents or presentations on the computerSearching the Internet  | 39<br>51 | 35<br>44 |
| Image of CS careers (average % positive)   | 90       | 87       |
| People who do CS make things that help improve lives. (% agree)  | 87       | 82       |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 91       | 90       |
| CS can be used in a lot of different types of jobs. (% agree)  | 92       | 89       |
| Value of CS in schools (average % positive)  | 75       | 72       |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 74       | 70       |
| Most students should be required to take a computer science course. (% agree)  | 60       | 59       |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |          |          |
| required courses like math, science, history and English?<br>other elective courses like art, music, and foreign languages?  | 74<br>93 | 68<br>91 |
| Opportunities & Participation  | GA       | US       |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 44       | 49       |
| Math or science credit for CS ( % positive to either)  | 10       | 13       |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 7        | 10       |
| No prerequisites: Do CS classes offered in your school have  | 73       | 73       |
| prerequisites? (% no)  |          |          |
| CS offerings (average % positive)  | 53       | 53       |
| About how many different types of CS courses are available in your school this year? (% 1+) $$   | 49       | 54       |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP courses  | 95<br>20 | 95<br>21 |
| Other  | 41       | 44       |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  | 41       | 43       |
| How many school clubs or after-school activities that expose students to CS are at your school? (% 1+)   | 72       | 62       |
| <b>CS includes programming</b> : Do the computer science opportunities offered in your school include any of the following elements?                                       | 51       | 53       |

| Opportunities & Participation  | GA  | US   |
|--|---|--|
| CS growth & participation (average % positive)   | 47  | 46   |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)   | 50  | 51   |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)  | 50  | 49   |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)Girls   | 26  | 27   |
|  | /56   | /54  |
| White/Caucasian  | 48<br>/43   | 60<br>/32                                    |
| Black/African-American   | 26<br>/57   | 21<br>/43                                    |
| Hispanic/Latino  | 18<br>/48   | 21 /44                                       |
| Asian  | 33  | 26   |
|  | /43   | /41  |
| School Infrastructure  | GA  | US   |
| Demand for CS (average % positive)   | 30  | 27   |
| Demand for CS education among parents in your school is (%)HighIncreasing  | 8<br>40   | 7 36   |
| Demand for CS education among students in your school is (%)   | 70  | 50   |
| HighIncreasing   | 15<br>57  | 14<br>49                                     |
| Support for CS (average % positive)  | 38  | 37   |
| oupport for oo (average % positive)  | 30  |  |
| CS education is currently a top priority for my school. (% agree)  | 23  | 24   |
|  |   |  |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our  | 23  | 24   |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is   | 23<br>43  | 24<br>43                                     |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  | 23<br>43<br>48                                      | 24<br>43<br>45                               |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge   | 23<br>43<br>48<br><b>50</b>                         | 24<br>43<br>45<br><b>48</b>                  |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there   | 23<br>43<br>48<br><b>50</b><br>58                   | 24<br>43<br>45<br><b>48</b><br>56            |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers  As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)   | 23<br>43<br>48<br><b>50</b><br>58<br>42             | 24<br>43<br>45<br>48<br>56<br>40             |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers  As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%) There is not enough money to train or hire a teacher.   | 23<br>43<br>48<br><b>50</b><br>58<br>42             | 24<br>43<br>45<br>48<br>56<br>40             |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers  As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%) There is not enough money to train or hire a teacher. There are no teachers available at my school with the necessary skills to teach computer science. We have to devote most of our time to other courses that are  | 23<br>43<br>48<br><b>50</b><br>58<br>42             | 24<br>43<br>45<br>48<br>56<br>40             |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers  As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%) There is not enough money to train or hire a teacher. There are no teachers available at my school with the necessary skills to teach computer science. We have to devote most of our time to other courses that are related to testing requirements and computer science is not. | 23<br>43<br>48<br><b>50</b><br>58<br>42<br>45<br>40 | 24<br>43<br>45<br>48<br>56<br>40<br>44<br>42 |
| CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers  As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%) There is not enough money to train or hire a teacher. There are no teachers available at my school with the necessary skills to teach computer science. We have to devote most of our time to other courses that are  | 23<br>43<br>48<br><b>50</b><br>58<br>42<br>45<br>40 | 24<br>43<br>45<br>48<br>56<br>40<br>44<br>42 |

# Illinois

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

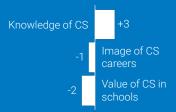
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

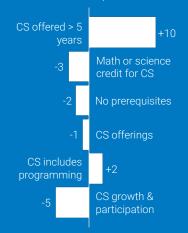
Illinois principals more often correctly distinguished CS from computer literacy, yet less valued CS, compared to the U.S. average. They less likely offer CS classes, but of those who do, more have had CS for over five years. A smaller portion of Illinois principals report having CS afterschool and fewer reported growth in CS.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



### Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Illinois.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Illinois schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Illinois, only 36% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 24% of Illinois principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. Illinois principals report CS students are most often White.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Illinois.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 11% of Illinois principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Illinois at 36% (U.S. average 37%).
- Focus on test preparation for other subject areas (43%), lack of teachers trained in CS (40%), and not enough budget for a CS teacher (38%) were reported by Illinois principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- Promote diverse participation by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.
- Prioritize funding to meet the demand for CS.

See **g.co/cseduresearch** for recommended resources.



# Illinois

### Data Tables

The descriptive data tables below show responses by 338 Illinois K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | IL             | US             |
|--|----------------|----------------|
| Knowledge of CS (% no to both)   | 36             | 33             |
| Which of the following activities do you consider part of CS? (% no)   |                |                |
| Creating documents or presentations on the computerSearching the Internet  | 37<br>46       | 35<br>44       |
| Image of CS careers (average % positive)   | 86             | 87             |
| People who do CS make things that help improve lives. (% agree)  | 80             | 82             |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 90             | 90             |
| CS can be used in a lot of different types of jobs. (% agree)  | 88             | 89             |
| Value of CS in schools (average % positive)  | 70             | 72             |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 69             | 70             |
| Most students should be required to take a computer science course. (% agree)  | 56             | 59             |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |                |                |
| required courses like math, science, history and English?<br>other elective courses like art, music, and foreign languages?  | 65<br>90       | 68<br>91       |
| Opportunities & Participation  | IL             | US             |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 59             | 49             |
| Math or science credit for CS ( % positive to either)  | 10             | 13             |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 10             | 10             |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)  | 71             | 73             |
| CS offerings (average % positive)  | 52             | 53             |
| About how many different types of CS courses are available in your school this year? (% 1+)  | 48             | 54             |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther   | 96<br>22<br>43 | 95<br>21<br>44 |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  | 45             | 43             |
| How many school clubs or after-school activities that expose students to CS are at your school? (% 1+)   | 57             | 62             |
| CS includes programming: Do the computer science opportunities offered in your school include any of the following elements?Computer programming and coding (%)            | 55             | 53             |

| <u> </u>  |            |           |
|---|------------|-----------|
| Opportunities & Participation   | IL         | US        |
| CS growth & participation (average % positive)  | 41         | 46        |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)      | 44         | 51        |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase) | 43         | 49        |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)Girls                                | 24         | 27        |
|   | /58        | /54       |
| White/Caucasian   | 67<br>/26  | 60<br>/32 |
| Black/African-American  | 18<br>/44  | 21<br>/43 |
| Hispanic/Latino   | 18<br>/46  | 21 /44    |
| Asian   | 21 /42     | 26<br>/41 |
| School Infrastructure   | IL         | US        |
| Demand for CS (average % positive)  | 25         | 27        |
| Demand for CS education among parents in your school is (%)   |            |           |
| HighIncreasing  | 11<br>33   | 7<br>36   |
| Demand for CS education among students in your school is (%)HighIncreasing  | 12<br>46   | 14<br>49  |
| Support for CS (average % positive)   | 36         | 37        |
| CS education is currently a top priority for my school. (% agree)   | 24         | 24        |
| My school board believes CS education is important to offer in our schools. (% agree)   | 43         | 43        |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)                                   | 41         | 45        |
| Teacher availability (average % positive)   | 48         | 48        |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)                                | 54         | 56        |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)          | 43         | 40        |
| Barriers  |            |           |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)                    |            |           |
| We have to devote most of our time to other courses that are related to testing requirements and computer science is not.           | 43         | 47        |
| There are no teachers available at my school with the necessary skills to teach computer science.                                   | 40<br>38   | 42        |
| There is not enough money to train or hire a teacher.  What was the largest barrier your school had to overcome to offer            | <i>3</i> 8 | 44        |
| CS? (%)There were too many other courses that students have to take in order to prepare for college.                                | 19         | 16        |

# Michigan

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals and superintendents.

g.co/cseduresearch

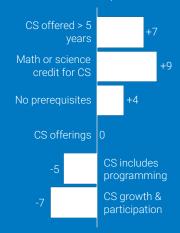
Michigan principals report lower value, growth, demand, and support in CS, compared to the U.S. average. However, those who offer CS more often report having it for over five years, more likely count CS as math or science credit, and less likely have prerequisites. But, these CS opportunities are less likely to include programming.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



### Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Michigan.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Michigan schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Michigan, only 31% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 24% of Michigan principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. Michigan principals report CS students are mostly White and, when compared to the U.S. average, less often girls and slightly less often Black or Asian.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Michigan.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 6% of Michigan principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Michigan at 32% (U.S. average 37%).
- Focus on test preparation for other subject areas (47%), not enough budget for a CS teacher (44%), and lack of teachers trained in CS (40%) were reported by Michigan principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- Prioritize funding to meet the demand for CS.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.

See **g.co/cseduresearch** for recommended resources.



# Michigan

### Data Tables

The descriptive data tables below show responses by 400 Michigan K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions   | MI       | US |
|---|----------|----|
| Knowledge of CS (% no to both)  | 31       | 33 |
| Which of the following activities do you consider   |          |    |
| part of CS? (% no)Creating documents or presentations on the computer   | 33       | 35 |
| Searching the Internet  | 45       | 44 |
| Image of CS careers (average % positive)  | 86       | 87 |
| People who do CS make things that help improve lives. (% agree)   | 83       | 82 |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)  | 90       | 90 |
| CS can be used in a lot of different types of jobs. (% agree)   | 85       | 89 |
| Value of CS in schools (average % positive)   | 70       | 72 |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)   | 70       | 70 |
| Most students should be required to take a computer science course. (% agree)   | 56       | 59 |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important) |          |    |
| required courses like math, science, history and English?other elective courses like art, music, and foreign languages?   | 64<br>89 | 6  |
| Opportunities & Participation   | МІ       | US |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)  | 56       | 49 |
| Math or science credit for CS ( % positive to either)   | 22       | 13 |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)                                   | 17       | 1/ |
| A math requirementA science requirement   | 13       | 1( |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)   | 77       | 7  |
| CS offerings (average % positive)   | 53       | 53 |
| About how many different types of CS courses are available in your school this year? (% 1+)   | 52       | 54 |
| For each of the CS classes available this year, how many are (% 1+)   | 0.4      | 0  |
| Introductory levelAP courses  | 94<br>19 | 9  |
| / (1 COUISCS  | 46       | 4  |
| Other   |          | 4  |
|   | 44       |    |
| Other As far as you know, is CS taught as part of other classes at your   | 60       | 6  |

| Opportunities & Participation   | MI               | US               |
|---|------------------|------------------|
| CS growth & participation (average % positive)  | 39               | 46               |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)                        | 42               | 51               |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)                   | 40               | 49               |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)Girls  | 22               | 27               |
| White/Caucasian   | /50<br>62        | /54<br>60        |
| Black/African-American  | /25<br>21        | /32<br>21        |
| Hispanic/Latino   | /39              | /43<br>21        |
| Asian   | /36<br>24<br>/39 | /44<br>26<br>/41 |
| School Infrastructure   | MI               | US               |
| Demand for CS (average % positive)  | 23               | 27               |
| Demand for CS education among parents in your school is (%)   |                  |                  |
| High<br>Increasing  | 6<br>30          | 7<br>36          |
| Demand for CS education among students in your school is (%)HighIncreasing  | 12<br>45         | 14<br>49         |
| Support for CS (average % positive)   | 32               | 37               |
| CS education is currently a top priority for my school. (% agree)   | 17               | 24               |
| My school board believes CS education is important to offer in our schools. (% agree)   | 38               | 43               |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)   | 40               | 45               |
| Teacher availability (average % positive)   | 47               | 48               |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  | 56               | 56               |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)                            | 37               | 40               |
| Barriers  |                  |                  |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)                                      |                  |                  |
| We have to devote most of our time to other courses that are related to testing requirements and computer science is not.                             | 47               | 47               |
| There is not enough money to train or hire a teacherThere are no teachers available at my school with the necessary skills to teach computer science. | 44<br>40         | 44<br>42         |
| What was the largest barrier your school had to overcome to offer CS? (%)   |                  |                  |
| There were too many other courses that students have to take in order to prepare for college.   | 17               | 16               |

# North Carolina

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

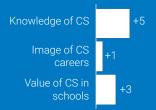
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

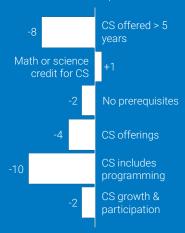
A greater portion of North Carolina principals correctly distinguish CS from computer literacy and value CS than the U.S. average. Yet, they much less likely offer AP CS, other CS classes, and afterschool programs with CS, with fewer including programming. North Carolina principals also report less CS support from school stakeholders.

Values below indicate percentage point difference from the U.S. average. See back for full data tables

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



### Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for North Carolina.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for North Carolina schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In North Carolina, only 39% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 21% of North Carolina principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. North Carolina principals report CS students are most often White, and more often girls and slightly more often Black compared to the U.S. average.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in North Carolina.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 6% of North Carolina principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in North Carolina at 34% (U.S. average 37%).
- Not enough budget for a CS teacher (48%), focus on test preparation for other subject areas (45%), and lack of teachers trained in CS (40%) were reported by North Carolina principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Prioritize funding to meet the demand for CS.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.

See **g.co/cseduresearch** for recommended resources.



# North Carolina

### Data Tables

The descriptive data tables below show responses by 411 North Carolina K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | NC             | US             |
|--|----------------|----------------|
| Knowledge of CS (% no to both)   | 39             | 33             |
| Which of the following activities do you consider  |                |                |
| part of CS? (% no)Creating documents or presentations on the computer  | 40             | 35             |
| Searching the Internet   | 50             | 44             |
| Image of CS careers (average % positive)   | 88             | 87             |
| People who do CS make things that help improve lives. (% agree)  | 83             | 82             |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 89             | 90             |
| CS can be used in a lot of different types of jobs. (% agree)  | 91             | 89             |
| Value of CS in schools (average % positive)  | 74             | 72             |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 69             | 70             |
| Most students should be required to take a computer science course. (% agree)  | 59             | 59             |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |                |                |
| required courses like math, science, history and English?other elective courses like art, music, and foreign languages?  | 74<br>94       | 68<br>91       |
| Opportunities & Participation  | NC             | US             |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 41             | 49             |
| Math or science credit for CS ( % positive to either)  | 14             | 13             |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 12<br>5        | 10             |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)  | 71             | 73             |
| CS offerings (average % positive)  | 49             | 53             |
| About how many different types of CS courses are available in your school this year? (% 1+)  | 55             | 54             |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther   | 96<br>13<br>36 | 95<br>21<br>44 |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  | 34             | 43             |
| How many school clubs or after-school activities that expose students to CS are at your school? (% 1+)   | 59             | 62             |
| CS includes programming: Do the computer science opportunities offered in your school include any of the following elements?Computer programming and coding (%)            | 43             | 53             |

| Opportunities & Participation   | NC        | US        |
|---|-----------|-----------|
| CS growth & participation (average % positive)  | 44        | 46        |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)      | 49        | 51        |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase) | 46        | 49        |
| <b>Students who learn CS</b> : How often are students who learn CS at your school (% usually/sometimes)                             | 0.4       | 07        |
| Girls   | 24<br>/66 | 27<br>/54 |
| White/Caucasian   | 58<br>/38 | 60 /32    |
| Black/African-American  | 19<br>/58 | 21<br>/43 |
| Hispanic/Latino   | 17<br>/51 | 21<br>/44 |
| Asian   | 23<br>/48 | 26<br>/41 |
| School Infrastructure   | NC        | US        |
| Demand for CS (average % positive)  | 26        | 27        |
| Demand for CS education among parents in your school is (%)   |           |           |
| High<br>Increasing  | 6<br>35   | 7<br>36   |
| Demand for CS education among students in your school is (%)HighIncreasing  | 12<br>50  | 14<br>49  |
| Support for CS (average % positive)   | 34        | 37        |
| CS education is currently a top priority for my school. (% agree)   | 19        | 24        |
| My school board believes CS education is important to offer in our schools. (% agree)   | 40        | 43        |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)                                   | 41        | 45        |
| Teacher availability (average % positive)   | 48        | 48        |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)                                | 56        | 56        |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)          | 40        | 40        |
| Barriers  |           |           |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)                    |           |           |
| There is not enough money to train or hire a teacherWe have to devote most of our time to other courses that are                    | 48        | 44        |
| related to testing requirements and computer science is not.  | 45        | 47        |
| There are no teachers available at my school with the necessary skills to teach computer science.                                   | 40        | 42        |
| What was the largest barrier your school had to overcome to offer CS? (%)   | 10        | 10        |
| There was not enough money to train or hire a teacher.  | 18        | 13        |

# New York

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

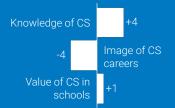
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

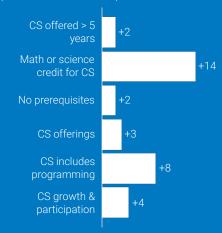
Besides their less positive image of CS careers, New York principals fare better than the U.S. average. A greater portion properly distinguish CS from computer literacy, report growth and demand for CS, offer AP CS and CS in other classes and afterschool, with more including programming, and provide math or science credit for CS.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



## Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for New York.

## Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for New York schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In New York, only 37% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 30% of New York principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. New York principals report CS students are mostly White, and when compared to the U.S. average are more often girls or Black and slightly more often Hispanic or Asian.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in New York.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 10% of New York principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in New York at 38% (U.S. average 37%).
- Not enough budget for a CS teacher (48%), focus on test preparation for other subject areas (45%), and lack of teachers trained in CS (43%) were reported by New York principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Prioritize funding to meet the demand for CS.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.

See **g.co/cseduresearch** for recommended resources.



# New York

### Data Tables

The descriptive data tables below show responses by 410 New York K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | NY             | US             |
|--|----------------|----------------|
| Knowledge of CS (% no to both)   | 37             | 33             |
| Which of the following activities do you consider part of CS? (% no)Creating documents or presentations on the computerSearching the Internet                              | 39<br>47       | 35<br>44       |
| Image of CS careers (average % positive)   | 83             | 87             |
| People who do CS make things that help improve lives. (% agree)  | 77             | 82             |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 86             | 90             |
| CS can be used in a lot of different types of jobs. (% agree)  | 85             | 89             |
| Value of CS in schools (average % positive)  | 73             | 72             |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 70             | 70             |
| Most students should be required to take a computer science course. (% agree)  | 63             | 59             |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |                |                |
| required courses like math, science, history and English?<br>other elective courses like art, music, and foreign languages?  | 71<br>89       | 68<br>91       |
| Opportunities & Participation  | NY             | US             |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 52             | 49             |
| Math or science credit for CS ( % positive to either)  | 27             | 13             |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 26<br>11       | 10             |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)  | 75             | 73             |
| CS offerings (average % positive)  | 56             | 53             |
| About how many different types of CS courses are available in your school this year? (% 1+)  | 54             | 54             |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther   | 94<br>27<br>47 | 95<br>21<br>44 |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  | 49             | 43             |
| How many school clubs or after-school activities that expose students to CS are at your school? (% 1+)   | 69             | 62             |
| CS includes programming: Do the computer science opportunities offered in your school include any of the following elements?Computer programming and coding (%)            | 62             | 53             |

| Opportunities & Participation  | NY               | US               |
|--|------------------|------------------|
| CS growth & participation (average % positive)   | 50               | 46               |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)                               | 58               | 51               |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)                          | 54               | 49               |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)Girls   | 37               | 27               |
| White/Caucasian  | /45<br>65<br>/22 | /54<br>60<br>/32 |
| Black/African-American   | 30<br>/44        | 21<br>/43        |
| Hispanic/Latino  | 31 /39           | 21 /44           |
| Asian  | 35<br>/35        | 26<br>/41        |
| School Infrastructure  | NY               | US               |
| Demand for CS (average % positive)   | 28               | 27               |
| Demand for CS education among parents in your school is (%)HighIncreasing  | 10<br>40         | 7 36             |
| Demand for CS education among students in your school is (%)HighIncreasing   | 17<br>47         | 14<br>49         |
| Support for CS (average % positive)  | 38               | 37               |
| CS education is currently a top priority for my school. (% agree)  | 28               | 24               |
| My school board believes CS education is important to offer in our schools. (% agree)  | 43               | 43               |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  | 43               | 45               |
| Teacher availability (average % positive)  | 48               | 48               |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)   | 56               | 56               |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)                                   | 40               | 40               |
| Barriers   |                  |                  |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)   |                  |                  |
| There is not enough money to train or hire a teacherWe have to devote most of our time to other courses that are   | 48<br>45         | 44<br>47         |
| related to testing requirements and computer science is notThere are no teachers available at my school with the necessary skills to teach computer science. | 43               | 42               |
| What was the largest barrier your school had to overcome to offer CS? (%)There were too many other courses that students have to take in                     | 20               | 16               |
| order to prepare for college.  |                  |                  |

# Ohio

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as we as support and infrastructure.

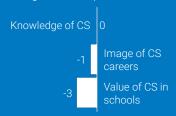
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

A smaller portion of Ohio principals have positive perceptions of CS and fewer offer CS, with less including programming, than the U.S. average. CS classes less often count as math or science and more often have prerequisites. Fewer Ohio principals report growth, demand, and support in CS as well as having qualified CS teachers.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



## Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Ohio.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Ohio schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Ohio, only 33% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 21% of Ohio principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. Ohio principals report CS students are most commonly White and, compared to the U.S. average, less often Hispanic, Asian, Black, or female.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Ohio.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 7% of Ohio principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Ohio at 32% (U.S. average 37%).
- Focus on test preparation for other subject areas (52%), not enough budget for a CS teacher (50%), and lack of teachers trained in CS (48%) were reported by Ohio principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- Promote diverse participation by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- Prioritize funding to meet the demand for CS.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.

See **g.co/cseduresearch** for recommended resources.



# Ohio

### Data Tables

The descriptive data tables below show responses by 442 Ohio K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions   | ОН       | US       |
|---|----------|----------|
| Knowledge of CS (% no to both)  | 33       | 33       |
| Which of the following activities do you consider   |          |          |
| part of CS? (% no)Creating documents or presentations on the computer   | 34       | 35       |
| Searching the Internet  | 44       | 44       |
| Image of CS careers (average % positive)  | 86       | 87       |
| People who do CS make things that help improve lives. (% agree)   | 81       | 82       |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)  | 88       | 90       |
| CS can be used in a lot of different types of jobs. (% agree)   | 88       | 89       |
| Value of CS in schools (average % positive)   | 69       | 72       |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)   | 68       | 70       |
| Most students should be required to take a computer science course. (% agree)   | 55       | 59       |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)                     |          |          |
| required courses like math, science, history and English?<br>other elective courses like art, music, and foreign languages?   | 64<br>91 | 68<br>91 |
| Opportunities & Participation   | ОН       | US       |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)  | 51       | 49       |
| Math or science credit for CS ( % positive to either)   | 8        | 13       |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirement                                     | 7        | 10       |
| A science requirement   | 3        | 8        |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)   | 68       | 73       |
| CS offerings (average % positive)   | 50       | 53       |
| About how many different types of CS courses are available in your school this year? (% 1+)   | 50       | 54       |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP courses   | 96<br>19 | 95       |
| Other   | 48       | 44       |
| As far as you know is CS taught as part of other alasses of your  | 40       | 43       |
|   |          |          |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  How many school clubs or after-school activities that expose students to CS are at your school? (% 1+) | 48       | 62       |

| Opportunities & Participation  | ОН   | US   |
|--|--|--|
| CS growth & participation (average % positive)   | 39   | 46   |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)   | 42   | 51   |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)  | 43   | 49   |
| Students who learn CS: How often are students who learn CS at  |  |  |
| your school (% usually/sometimes)Girls   | 22   | 27   |
|  | /56  | /54  |
| White/Caucasian  | 67<br>/25  | 60<br>/32  |
| Black/African-American   | 18   | 21   |
|  | /40  | /43  |
| Hispanic/Latino  | 14<br>/30  | 21<br>/44  |
| Asian  | 18   | 26   |
|  | /32  | /41  |
| School Infrastructure  | ОН   | US   |
| Demand for CS (average % positive)   | 24   | 27   |
| Demand for CS education among parents in your school is (%)  | 7  | 7  |
| HighIncreasing   | 7<br>31  | 7<br>36  |
|  |  |  |
| Demand for CS education among students in your school is (%)   |  |  |
| High   | 13   | 14   |
| High<br>Increasing   | 45   | 49   |
| HighIncreasing  Support for CS (average % positive)  | 45<br><b>32</b>  | 49<br><b>37</b>  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)   | 45<br><b>32</b><br>20  | 49<br><b>37</b><br>24  |
| HighIncreasing  Support for CS (average % positive)  | 45<br><b>32</b>  | 49<br><b>37</b>  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our   | 45<br><b>32</b><br>20  | 49<br><b>37</b><br>24  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is  | <ul><li>45</li><li>32</li><li>20</li><li>37</li></ul>                                  | 49<br>37<br>24<br>43   |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)   | 32<br>20<br>37<br>39   | <ul><li>49</li><li>37</li><li>24</li><li>43</li><li>45</li></ul> |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge  | <ul><li>45</li><li>32</li><li>20</li><li>37</li><li>39</li><li>41</li></ul>            | 49<br>37<br>24<br>43<br>45                                       |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive)  I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)  Would you have to hire a new teacher to teach CS or is there  | <ul><li>45</li><li>32</li><li>20</li><li>37</li><li>39</li><li>41</li><li>51</li></ul> | 49<br>37<br>24<br>43<br>45<br>48<br>56                           |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn   | <ul><li>45</li><li>32</li><li>20</li><li>37</li><li>39</li><li>41</li><li>51</li></ul> | 49<br>37<br>24<br>43<br>45<br>48<br>56                           |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)We have to devote most of our time to other courses that are  | <ul><li>45</li><li>32</li><li>20</li><li>37</li><li>39</li><li>41</li><li>51</li></ul> | 49<br>37<br>24<br>43<br>45<br>48<br>56                           |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)We have to devote most of our time to other courses that are related to testing requirements and computer science is notThere is not enough money to train or hire a teacher.   | 32<br>20<br>37<br>39<br>41<br>51<br>32   | 49<br>37<br>24<br>43<br>45<br>48<br>56<br>40                     |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)We have to devote most of our time to other courses that are related to testing requirements and computer science is not.   | 45<br>32<br>20<br>37<br>39<br>41<br>51<br>32   | 49<br>37<br>24<br>43<br>45<br>48<br>56<br>40                     |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)  Barriers As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)We have to devote most of our time to other courses that are related to testing requirements and computer science is notThere is not enough money to train or hire a teacherThere are no teachers available at my school with the necessary | 45<br>32<br>20<br>37<br>39<br>41<br>51<br>32<br>52<br>50                               | 49<br>37<br>24<br>43<br>45<br>48<br>56<br>40<br>47<br>44         |

# Pennsylvania

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

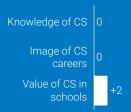
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

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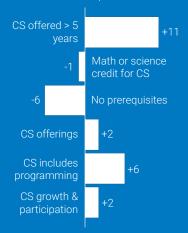
Pennsylvania principals more often perceive value, growth, and support in CS and report they have a CS qualified teacher, compared to the U.S. average. A greater portion also indicate offering CS classes, with more offered for over five years and including programming, though fewer are introductory or AP classes and more have prerequisites.

Values below indicate percentage point difference from the U.S. average. See back for full data tables

### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



## Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Pennsylvania.

## Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Pennsylvania schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Pennsylvania, only 33% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 33% of Pennsylvania principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. More Pennsylvania principals than the U.S. average report CS students are usually White, but slightly more report they are usually girls, Black, or Asian.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Pennsylvania.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 6% of Pennsylvania principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Pennsylvania at 41% (U.S. average 37%).
- Not enough budget for a CS teacher (48%), focus on test preparation for other subject areas (44%), and lack of teachers trained in CS (43%) were reported by Pennsylvania principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Prioritize funding to meet the demand for CS.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.

See **g.co/cseduresearch** for recommended resources.



# Pennsylvania

### Data Tables

The descriptive data tables below show responses by 318 Pennsylvania K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | PA       | US       |
|--|----------|----------|
| Knowledge of CS (% no to both)   | 33       | 33       |
| Which of the following activities do you consider  |          |          |
| part of CS? (% no)Creating documents or presentations on the computer  | 35       | 35       |
| Searching the Internet   | 44       | 44       |
| Image of CS careers (average % positive)   | 87       | 87       |
| People who do CS make things that help improve lives. (% agree)  | 84       | 82       |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 87       | 90       |
| CS can be used in a lot of different types of jobs. (% agree)  | 91       | 89       |
| Value of CS in schools (average % positive)  | 73       | 72       |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 67       | 70       |
| Most students should be required to take a computer science course. (% agree)  | 60       | 59       |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |          |          |
| required courses like math, science, history and English?other elective courses like art, music, and foreign languages?  | 72<br>93 | 68<br>91 |
| Opportunities & Participation  | PA       | US       |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 60       | 49       |
| Math or science credit for CS ( % positive to either)  | 12       | 13       |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 10<br>7  | 10       |
| No prerequisites: Do CS classes offered in your school have  | 67       | 73       |
| prerequisites? (% no)  |          |          |
| CS offerings (average % positive)  | 56       | 53       |
| About how many different types of CS courses are available in your school this year? (% 1+)  | 60       | 54       |
| For each of the CS classes available this year, how many are (% 1+)  | 00       | ٥٢       |
| Introductory level<br>AP courses   | 93<br>19 | 95<br>21 |
| Other  | 52       | 44       |
|  | 48       | 43       |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  |          |          |
|  | 62       | 62       |

| Omnastruišias 9 Dautiainatiau   | DΛ        | IIC       |
|---|-----------|-----------|
| Opportunities & Participation   | PA        | US        |
| CS growth & participation (average % positive)  | 48        | 46        |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)      | 52        | 51        |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase) | 51        | 49        |
| <b>Students who learn CS</b> : How often are students who learn CS at your school (% usually/sometimes)                             |           |           |
| Girls   | 36<br>/45 | 27<br>/54 |
| White/Caucasian   | 72        | 60        |
| Black/African-American  | /23<br>28 | /32       |
| Hispania / Letina   | /41<br>21 | /43       |
| Hispanic/Latino   | /42       | 21<br>/44 |
| Asian   | 33<br>/42 | 26<br>/41 |
| School Infrastructure   | PA        | US        |
| Demand for CS (average % positive)  | 26        | 27        |
| Demand for CS education among parents in your school is (%)   |           | _         |
| High<br>Increasing  | 6<br>39   | 7<br>36   |
| Demand for CS education among students in your school is (%)HighIncreasing  | 11<br>48  | 14<br>49  |
| Support for CS (average % positive)   | 41        | 37        |
| CS education is currently a top priority for my school. (% agree)   | 29        | 24        |
| My school board believes CS education is important to offer in our schools. (% agree)   | 46        | 43        |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)                                   | 48        | 45        |
| Teacher availability (average % positive)   | 52        | 48        |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)                                | 59        | 56        |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)          | 44        | 40        |
| Barriers  |           |           |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)                    |           |           |
| There is not enough money to train or hire a teacherWe have to devote most of our time to other courses that are                    | 48        | 44        |
| related to testing requirements and computer science is not.  | 44        | 47        |
| There are no teachers available at my school with the necessary skills to teach computer science.                                   | 43        | 42        |
| What was the largest barrier your school had to overcome to offer CS? (%)   |           |           |
| There was not enough money to purchase the necessary computer equipment.  | 20        | 13        |

# Texas

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as wel as support and infrastructure.

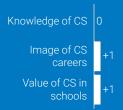
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

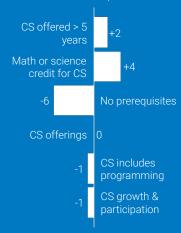
Responses from Texas principals are similar to the average U.S. principal, with a slightly greater portion who report offering AP CS and afterschool CS programs, though CS classes more often have prerequisites. A greater portion of Texas principals also indicate support for CS in their school, yet less believe they have qualified teachers.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

### Knowledge & Perceptions



### Opportunities & Participation



### School Infrastructure



### Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Texas.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Texas schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Texas, only 33% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 26% of Texas principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. Texas principals report CS students are mostly White; but, when compared to the U.S. average, fewer indicate CS students are girls or White and more indicate they are Hispanic.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Texas.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 9% of Texas principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Texas at 40% (U.S. average 37%).
- Focus on test preparation for other subject areas (43%), lack of teachers trained in CS (38%), and not enough budget for a CS teacher (33%) were reported by Texas principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- Integrate CS via flexible curricula, empowering teachers to use CS in their subjects.
- Allow CS classes to count towards graduation and college admissions to encourage participation.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.
- Prioritize funding to meet the demand for CS.

See **g.co/cseduresearch** for recommended resources.



# Texas

### Data Tables

The descriptive data tables below show responses by 700 Texas K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | ТХ                   | US                        |
|--|----------------------|---------------------------|
| Knowledge of CS (% no to both)   | 33                   | 33                        |
| Which of the following activities do you consider  |                      |                           |
| part of CS? (% no)Creating documents or presentations on the computer  | 35                   | 35                        |
| Searching the Internet   | 47                   | 44                        |
| Image of CS careers (average % positive)   | 88                   | 87                        |
| People who do CS make things that help improve lives. (% agree)  | 83                   | 82                        |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 90                   | 90                        |
| CS can be used in a lot of different types of jobs. (% agree)  | 90                   | 89                        |
| Value of CS in schools (average % positive)  | 73                   | 72                        |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 70                   | 70                        |
| Most students should be required to take a computer science course. (% agree)  | 59                   | 59                        |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)  |                      |                           |
| required courses like math, science, history and English?other elective courses like art, music, and foreign languages?  | 73<br>91             | 68<br>91                  |
| Opportunities & Participation  | TX                   | US                        |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 51                   | 49                        |
| Math or science credit for CS ( % positive to either)  | 17                   | 13                        |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement   | 12<br>10             | 10                        |
| No prerequisites: Do CS classes offered in your school have  | 67                   | 73                        |
|  |                      |                           |
| prerequisites? (% no)  |                      |                           |
|  | 53                   | 53                        |
| prerequisites? (% no)  | <b>53</b> 55         | <b>5</b> 3                |
| prerequisites? (% no)  CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)   | 55                   | 54                        |
| prerequisites? (% no)  CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  |                      |                           |
| prerequisites? (% no)  CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther  | 55<br>94             | 5 <sup>2</sup><br>9!<br>2 |
| prerequisites? (% no)  CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP courses   | 55<br>94<br>28       | 54<br>9;<br>21<br>44      |
| prerequisites? (% no)  CS offerings (average % positive)  About how many different types of CS courses are available in your school this year? (% 1+)  For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther  As far as you know, is CS taught as part of other classes at your | 55<br>94<br>28<br>43 | 54                        |

| Opportunities & Participation   | TX        | US        |
|---|-----------|-----------|
| CS growth & participation (average % positive)  | 45        | 46        |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)            | 47        | 51        |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)       | 50        | 49        |
| <b>Students who learn CS</b> : How often are students who learn CS at your school (% usually/sometimes)                                   | 0.0       | 07        |
| Girls   | 20<br>/60 | 27<br>/54 |
| White/Caucasian   | 49<br>/40 | 60<br>/32 |
| Black/African-American  | 18 /45    | 21 /43    |
| Hispanic/Latino   | 26<br>/54 | 21 /44    |
| Asian   | 23 /44    | 26<br>/41 |
| School Infrastructure   | TX        | US        |
| Demand for CS (average % positive)  | 26        | 27        |
| Demand for CS education among parents in your school is (%)   |           |           |
| HighIncreasing  | 9<br>35   | 7<br>36   |
| Demand for CS education among students in your school is (%)HighIncreasing  | 13<br>46  | 14<br>49  |
| Support for CS (average % positive)   | 40        | 37        |
| CS education is currently a top priority for my school. (% agree)   | 26        | 24        |
| My school board believes CS education is important to offer in our schools. (% agree)   | 48        | 43        |
| The majority of teachers and counselors in my school think it is important to offer CS. (% agree)   | 48        | 45        |
| Teacher availability (average % positive)   | 45        | 48        |
| I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree)                                      | 54        | 56        |
| Would you have to hire a new teacher to teach CS or is there teacher at your school could teach CS? (% there is a teacher)                | 37        | 40        |
| Barriers  |           |           |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. (%)                          |           |           |
| We have to devote most of our time to other courses that are related to testing requirements and computer science is not.                 | 43        | 47        |
| There are no teachers available at my school with the necessary skills to teach computer science.   | 38        | 42        |
| There is not enough money to train or hire a teacher.   | 33        | 44        |
| What was the largest barrier your school had to overcome to offer CS? (%)There were no teachers available at my school with the necessary | 16        | 15        |
| skills to teach computer science.   |           |           |

# Wisconsin

This report summarizes the status of computer science (CS) education from a 2014 survey of 9,693 U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

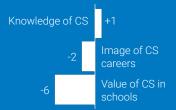
These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

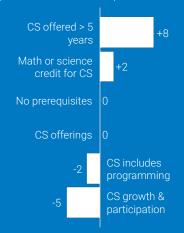
Fewer Wisconsin principals report a positive image and value of CS than the U.S. average. Less have introductory, AP, or afterschool CS; however, more have offered CS for over five years and count it as math or science. A smaller portion indicate growth, demand, and support for CS, yet more report having a teacher qualified for CS.

Values below indicate percentage point difference from the U.S. average. See back for full data tables.

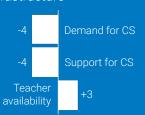
### Knowledge & Perceptions



### Opportunities & Participation



#### School Infrastructure



## Background

Broadening equitable student access to computer science (CS) is critical to our future, not only because of the increasing demand created by computing-related jobs but also because it develops critical thinking to solve complex problems, creativity to foster new ideas, and skills to drive innovation. To inform progress in ensuring *Computer Science for All*, this report provides a status of CS education and recommendations for Wisconsin.

### Findings

Results from the 2014-15 Google-Gallup study indicate that improvement is needed for Wisconsin schools to implement CS education for all students.

- Most confuse CS as basic computer literacy. In Wisconsin, only 34% of principals surveyed correctly identified computer literacy activities as *not* computer science (U.S. average 33%).
- **CS offerings are limited**, with 24% of Wisconsin principals reporting offering CS classes with programming and coding (U.S. average 26%).
- CS offerings often appeal to and serve a subset of students. Wisconsin principals report CS students are mostly White, and they are less often Hispanic or Black compared to the U.S. average.

To help prepare schools for CS education, the study also identified challenges to providing CS education for all students in Wisconsin.

- Parents' demand for CS is not heard; 91% of U.S. parents want their child to learn CS, whereas only 5% of Wisconsin principals believed there was high demand for CS (U.S. average 7%).
- Principals perceive low school board and staff support for CS in Wisconsin at 33% (U.S. average 37%).
- Lack of teachers trained in CS (45%), not enough demand from parents (42%), and not enough budget for a CS teacher (40%) were reported by Wisconsin principals as the greatest barriers to offering CS for their schools.

### Recommendations

- **Differentiate between computer literacy and computer science** to ensure students not only learn to use technology, but learn to create technologies.
- **Expand CS offerings** by connecting with communities, legislators, and organizations advocating for CS.
- **Promote diverse participation** by integrating equity practices into CS pedagogy, encouraging participation through various pathways, and diversifying portrayals of CS to build confidence and identities.
- **Increase qualified CS teachers** through incentives and support of quality teacher preparation and certification.
- **Gauge demand for CS** by actively seeking input from students and parents to inform school leaders and policymakers.
- Prioritize funding to meet the demand for CS.

See **g.co/cseduresearch** for recommended resources.



# Wisconsin

### Data Tables

The descriptive data tables below show responses by 327 Wisconsin K-12 principals compared to the full sample of 9,693 U.S. K-12 principals, surveyed Nov.-Dec. 2014; sample size may vary by question. Percentage point differences from the U.S. for each category were calculated from the percentages bolded below. Full methodology is at **g.co/cseduresearch**.

| Knowledge & Perceptions  | WI             | US             |
|--|----------------|----------------|
| Knowledge of CS (% no to both)   | 34             | 33             |
| Which of the following activities do you consider part of CS? (% no)Creating documents or presentations on the computerSearching the Internet                              | 35<br>47       | 35<br>44       |
|  |                |                |
| Image of CS careers (average % positive)   | 85             | 87             |
| People who do CS make things that help improve lives. (% agree)  | 78             | 82             |
| There are a lot of good jobs available in the U.S. for people who know CS. (% agree)   | 91             | 90             |
| CS can be used in a lot of different types of jobs. (% agree)  | 85             | 89             |
| Value of CS in schools (average % positive)  | 65             | 72             |
| It is a good idea to try to incorporate CS education into other subjects at school. (% agree)  | 67             | 70             |
| Most students should be required to take a computer science course. (% agree)  | 49             | 59             |
| Do you think offering opportunities to learn CS is more important, just as important, or less important to a student's future success than (% just as/more important)      |                |                |
| required courses like math, science, history and English?<br>other elective courses like art, music, and foreign languages?  | 61<br>86       | 68<br>91       |
| Opportunities & Participation  | WI             | US             |
| CS offered > 5 years: How long has your school offered opportunities to learn computer science? (% greater than 5 years)   | 57             | 49             |
| Math or science credit for CS ( % positive to either)  | 15             | 13             |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. (%)A math requirementA science requirement | 13             | 10             |
| No prerequisites: Do CS classes offered in your school have prerequisites? (% no)  | 73             | 73             |
| CS offerings (average % positive)  | 53             | 53             |
| About how many different types of CS courses are available in your school this year? (% 1+)  | 53             | 54             |
| For each of the CS classes available this year, how many are (% 1+)Introductory levelAP coursesOther   | 93<br>17<br>51 | 95<br>21<br>44 |
| As far as you know, is CS taught as part of other classes at your school? (% yes)  | 53             | 43             |
| How many school clubs or after-school activities that expose students to CS are at your school? (% 1+)   | 50             | 62             |
| CS includes programming: Do the computer science opportunities offered in your school include any of the following elements?Computer programming and coding (%)            | 51             | 53             |

| Opportunities & Participation   | WI   | US   |
|---|--|--|
| CS growth & participation (average % positive)  | 41   | 46   |
| [Of those offering CS] In the last 3 years, has CS participation increased, stayed about the same, or decreased? (% increased)  | 49   | 51   |
| In the next 3 years, will the number of opportunities to learn CS in your school increase, stay the same, or decrease? (% increase)   | 42   | 49   |
| Students who learn CS: How often are students who learn CS at your school (% usually/sometimes)Girls  | 30   | 27   |
| ulis  | /50  | /54  |
| White/Caucasian   | 74<br>/20  | 60<br>/32  |
| Black/African-American  | 17<br>/39  | 21<br>/43  |
| Hispanic/Latino   | 17<br>/38  | 21 /44   |
| Asian   | 24   | 26   |
|   | /43  | /41  |
| School Infrastructure   | WI   | US   |
| Demand for CS (average % positive)  | 22   | 27   |
| Demand for CS education among parents in your school is (%)HighIncreasing   | 5<br>29  | 7<br>36  |
|   |  |  |
| Demand for CS education among students in your school is (%)High  | 12   | 14   |
| High<br>Increasing  | 43   | 49   |
| HighIncreasing  Support for CS (average % positive)   | 43<br><b>33</b>  | 49<br><b>37</b>  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  | 43<br>33<br>19   | 49<br><b>37</b><br>24  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)   | 43<br><b>33</b>  | 49<br><b>37</b>  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our  | 43<br>33<br>19   | 49<br><b>37</b><br>24  |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is   | 43<br>33<br>19<br>39   | <ul><li>49</li><li>37</li><li>24</li><li>43</li></ul>            |
| HighIncreasing  Support for CS (average % positive)  CS education is currently a top priority for my school. (% agree)  My school board believes CS education is important to offer in our schools. (% agree)  The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  | <ul><li>43</li><li>33</li><li>19</li><li>39</li><li>40</li></ul>                       | <ul><li>49</li><li>37</li><li>24</li><li>43</li><li>45</li></ul> |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge   | <ul><li>43</li><li>33</li><li>19</li><li>39</li><li>40</li><li>50</li></ul>            | 49<br>37<br>24<br>43<br>45                                       |
| HighIncreasing  Support for CS (average % positive) CS education is currently a top priority for my school. (% agree) My school board believes CS education is important to offer in our schools. (% agree) The majority of teachers and counselors in my school think it is important to offer CS. (% agree)  Teacher availability (average % positive) I could easily identify a staff member with the skills and knowledge to teach a CS course. (% agree) Would you have to hire a new teacher to teach CS or is there  | <ul><li>43</li><li>33</li><li>19</li><li>39</li><li>40</li><li>50</li><li>57</li></ul> | 49<br>37<br>24<br>43<br>45<br>48<br>56                           |
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# State Reports Methods

The state reports summarize the status of computer science (CS) education from a 2014 survey of U.S. K-12 school principals. Topics include perceptions, opportunities and participation, as well as support and infrastructure.

These data are from a multi-year Google-Gallup study of U.S. students, parents, teachers, principals, and superintendents.

g.co/cseduresearch

### **Data Sources**

The state reports are based on English language web surveys completed by 9,693 K-12 (including elementary, middle and high school) principals between November 11-December 10, 2014. Principals were contacted using a sample provided by an established education sample provider. The sample sources are comprehensive but the data are not representative of all principals currently in the U.S.

We produced state reports for states with 300 or more principal respondents. These are California (n = 709), Florida (n = 349), Georgia (n = 305), Illinois (n = 338), Michigan (n = 400), North Carolina (n = 411), New York (n = 410), Ohio (n = 442), Pennsylvania (n = 318), Texas (n = 700), and Wisconsin (n = 327). Comparisons are made between principals in the state and the overall U.S. principals surveyed in this study (n = 9,693).

In addition to sampling error, question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of public opinion polls.

To ensure that respondents were thinking only about computer science — and not computer use more generally — respondents were provided with a definition of computer science after answering initial questions about computer science activities. In addition, respondents were reminded multiple times throughout the survey that computer science involves using programming/coding to create more advanced artifacts, such as software, apps, games, websites and electronics, and that computer science is not equivalent to general computer use.

## Analysis

Positive percentages for survey questions are calculated as indicated in the right column for each question below. Summary percentages by topic for the data tables on the reports are calculated as noted in the "value =" definition from each of the bolded categories below. Percentage point differences are

calculated from the difference between the state percent value and the overall U.S. percent value; percentage point differences are rounded after calculations. These percentage point differences from the U.S. are also represented in the charts on the front of the reports.

| Knowledge & Perceptions  |                        |
|--|------------------------|
| Knowledge of CS (value = % no to both, NULL if any are NULL)   |                        |
| Based on what you have seen or heard, which of the following activities do you consider part of computer science?Creating documents or presentations on the computer [Yes, No, Don't know]Searching the Internet [Yes, No, Don't know] | % no<br>% no           |
| Image of CS careers (value = average % of 3 questions, NULL if any are NULL)   |                        |
| People who do computer science make things that help improve people's lives. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]   | % agree/strongly agree |
| There are a lot of good jobs available in the United States for people who know computer science. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]  | % agree/strongly agree |
| Computer science can be used in a lot of different types of jobs. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]  | % agree/strongly agree |

| Value of CS in schools (value = average % of 4 questions, NULL if any are NULL)   |  |
|---|--|
| It is a good idea to try to incorporate computer science education into other subjects at school. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]   | % agree/strongly agree                                   |
| Most students should be required to take a computer science course. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]   | % agree/strongly agree                                   |
| Do you think offering opportunities to learn computer science is more important, just as important, or less important to a student's future success thanrequired courses like math, science, history and English? [More important, Just as important, Less important, Don't know]other elective courses like art, music, and foreign languages? [More important, Just as important, Less important, Don't know] | % just as/more important % just as/more important        |
| Opportunities & Participation   |  |
| CS offered > 5 years (value = % more than 5 years)  |  |
| How long has your school offered opportunities to learn CS? [This is the first year, 1 year, 2 years, 3 years, 4 years, 5 years, More than 5 years, Don't know]   | % more than 5 years                                      |
| Math or science credit for CS (value = % selected for either)   |  |
| Which of the following describe how credit is given for computer science courses offered at your school? Select all that apply. A math requirement  | % selected   |
| A science requirement   | % selected   |
| Prerequisites (value = % no)  |  |
| As far as you know, do computer science classes offered in your school have prerequisites? [Yes, No, Don't know]  | % no   |
| CS offerings (value = average % of 6 questions, NULL if any are NULL)   |  |
| About how many types of computer science courses are available in your school this year? [0, 1-2, 3-5, More than 5, Don't know]*  | % with 1 or more   |
| [Of those offering CS] For each of the different computer science classes available in your school this year, how many are? [None, 1, 2, 3, 4, 5, More than 6, Don't know]  |  |
| Introductory levelAdvanced Placement (AP) coursesOther  | % with 1 or more<br>% with 1 or more<br>% with 1 or more |
| As far as you know, is computer science taught as part of any other classes at your school? [Yes, No, Don't know]   | % yes  |
| Approximately how many school-sponsored clubs or after-school activities that expose students to computer science are available to students in your school? [0, 1-2, 3-5, More than 5, Don't know]  | % with 1 or more   |
| CS includes programming (value = % selected)  |  |
| Do the computer science opportunities offered in your school include any of the following elements. Select all that applyComputer programming and coding*   | 9/ palastad  |
|   | % selected   |
| CS growth & participation (value = average % of both; NULL if both are NULL)  [Of those offering CS] Has participation in opportunities to learn computer science in your school increased,   | % ingraced   |
| stayed about the same, or decreased in the last three years? [Increased, Stayed about the same, Decreased, Don't know]  | % increased  |
| Do you expect the number of opportunities to learn computer science in your school will increase, stay the same, or decrease in the next three years? [Increase, Stay the same, Decrease, Don't know]   | % increase   |

#### Students who learn CS

Now, please think about the types of students who participate in opportunities to learn computer science at your school. As you read each group below, please indicate whether students who learn computer science in your school are usually from this group, sometimes from this group, not often from this group, or never from this group. [Usually from this group, Sometimes from this group, Not often from this group, Never from this group, Don't know]

...White/Caucasian ..Black/African-American ..Hispanic/Latino .Asian

% usually/sometimes % usually/sometimes % usually/sometimes % usually/sometimes % usually/sometimes

<sup>\*</sup>To calculate the overall percentage of principals whose schools offer computer science classes with programming and coding, the total who reported their computer science opportunities include computer programming and coding was divided by the total number of principals who responded to the question about how many types of computer science courses are available.

| School Infrastructure  |                        |
|--|------------------------|
| Demand for CS (value = average % of 4 questions, NULL if any are NULL)   |                        |
| Which of the following best describes the demand for computer science education among parents in your school? Is demand[High, Moderate, Low, Don't know][Increasing, Decreasing, Staying the same, Don't know]   | % high<br>% increasing |
| Which of the following best describes the demand for computer science education among students in your school? Is demand[High, Moderate, Low, Don't know][Increasing, Decreasing, Staying the same, Don't know]  | % high<br>% increasing |
| Support for CS (value = average % of 3 questions, NULL if any are NULL)  |                        |
| Computer science education is currently a top priority for my school. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]  | % agree/strongly agree |
| My school board believes computer science education is important to offer in our schools. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]  | % agree/strongly agree |
| The majority of teachers and guidance counselors in my school think it is important to offer opportunities to learn computer science. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]  | % agree/strongly agree |
| Teacher availability (value = average % of both questions, NULL if any are NULL)   |                        |
| If the opportunity presented itself to offer a new computer science course at my school, I could easily identify a staff member with the skills and knowledge necessary to teach the course. [Strongly disagree, Disagree, Neutral, Agree, Strongly agree, Don't know]   | % agree/strongly agree |
| If there were new opportunities to offer computer science in your school, would you have to hire a new teacher or is there a teacher currently at your school that could teach computer science? [Would have to hire a new teacher, There is a teacher currently at the school that could teach a new computer science offering, Don't know]   | % there is a teacher   |
| Barriers   |                        |
| As far as you know, why doesn't your school offer any ways to learn computer science? Select all that apply. There are no teachers available at my school with the necessary skills to teach computer science. There are no teachers available to hire with the necessary skills to teach computer science. There is not enough classroom space. There is not enough money to train or hire a teacher. We do not have the necessary computer equipment. We do not have sufficient budget to purchase the necessary computer equipment. We do not have sufficient budget to purchase the necessary computer software. Internet connectivity is poor at my school. There is not enough demand from students. There is not enough demand from parents. There are too many other courses that students have to take in order to prepare for college. We have to devote most of our time to other courses that are related to testing requirements and computer science is not Don't know (Programmer: If this option if selected, uncheck all other boxes) | % selected             |
| As far as you know, which of the following barriers was the largest barrier your school had to overcome in order to offer ways to learn computer science?There were no teachers available at my school with the necessary skills to teach computer scienceThere were no teachers available to hire with the necessary skills to teach computer science.  | % selected             |

- ...There was not enough classroom space. ..There was not enough money to train or hire a teacher.

- .... I here was not enough money to train or hire a teacher.
  ....We did not have the necessary computer equipment.
  ....We did not have the necessary computer software.
  ....There was not enough money to purchase the necessary computer equipment.
  ....There was not enough money to purchase the necessary computer software
  ....Poor internet connectivity
  ....There was little demand from students.
  ....There was little demand from parents

- There were too many other courses that students have to take in order to prepare for college.