

# Washington State

## STEM Education Innovation Alliance

### 2024 STEM Education Report Card

Science

Technology

Engineering

Math

#### In This Report:

2024 Year in Review – A Snapshot

Washington's STEM Challenge From Early Learning to Postsecondary and the Labor Market

2024 Legislative Session Highlights



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**Lead Author: Daryl Monear**  
Associate Director of Research, Washington Student Achievement Council  
dmonear@wsac.wa.gov

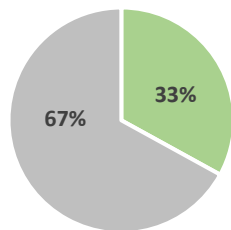
## 2024 STEM Year in Review – A Snapshot

**In 2024, Washington remains one of the leading states in the country for STEM employment.**

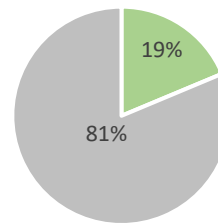
- #1** In share of workers in STEM occupations as a percentage of total state employment.<sup>1</sup>
- #1** In projected employer demand for STEM workers by 2030.<sup>2</sup>
- #2** Among states for jobs in science and technology.<sup>3</sup>
- #3** Among states where innovation is a primary driver of economic growth.<sup>4</sup>

**Strong demand for workers in STEM and STEM-related health occupations are seen in job postings data.<sup>5</sup>** Among all job postings in Washington in 2024, 33 percent were for occupations in STEM or health. Almost 20 percent of all jobs in Washington in 2024 were in STEM or health occupations.

**Share of Unique Job Postings in STEM & Health Compared to All Other Occupations in Washington in 2024**



**Share of STEM and Health Occupations as a Percent of All Jobs in Washington State in 2024**



■ STEM and Health Occupations ■ All Other Occupations

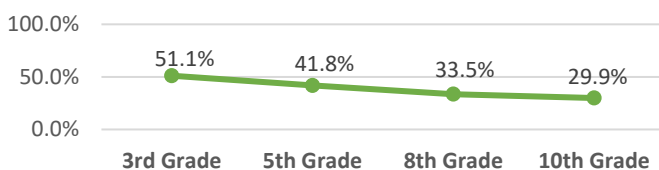
■ STEM & Health Jobs ■ All Other Jobs

Source: WSAC analysis of Lightcast Q4 2024 labor market data set.

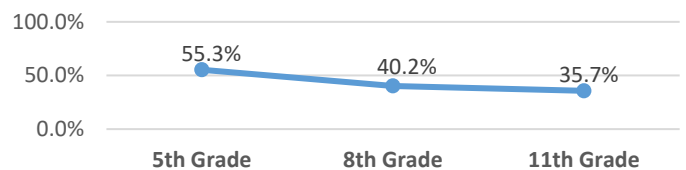
This demand presents a challenge and an opportunity for Washington to help residents attain the education they need to prepare for high wage careers in STEM. Getting off to a strong start in early learning, meeting standards, and staying on track as they progress through K-12 education is a critical key to student’s academic success and achievement.

**The percent of students in Washington meeting standard in math and science tend to decline significantly as students proceed from elementary school through 10<sup>th</sup> and 11<sup>th</sup> grade.** In the 2023-24 academic year, only 29.9 percent in math in 10<sup>th</sup> grade and 35.7 percent in science in 11<sup>th</sup> grade were on track and prepared for college-level studies.

**Percent of all WA Students Meeting Standard on Smarter Balanced Assessments in Math 2023-24**



**Percent of all WA students meeting standard on WCAS Assessments in Science 2023-24**

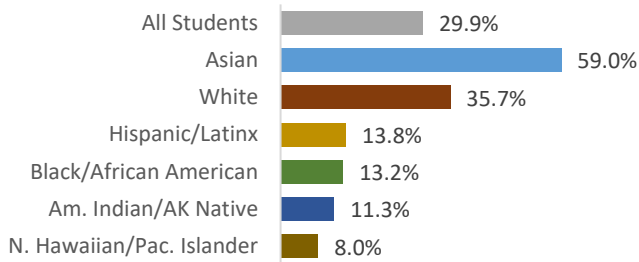


Source: Washington State Office of Superintendent of Public Instruction, Report Card. Smarter Balanced and WCAS Assessments.

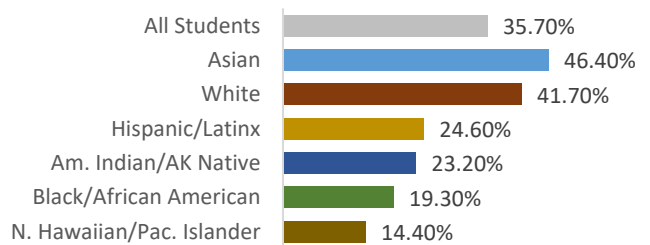
**The percent of students meeting standard in math and science from racial and ethnic groups furthest from equity are lower**

Among students from low-income families and racial/ethnic groups that have been historically underrepresented in postsecondary education, the percentage meeting standard in math and science in 10<sup>th</sup> and 11<sup>th</sup> grade are significantly lower than the percentage for all students, indicating that they may need more support to prepare for college-level academics.

**Percent of Students Meeting Standard in Math in 10th Grade by Race and Ethnicity 2023-24**



**Percent of Students Meeting Standard in Science in 11th Grade by Race and Ethnicity 2023-24**

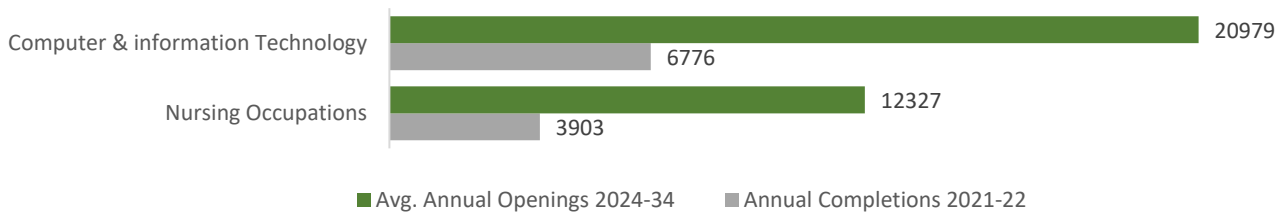


Source: Washington State Office of Superintendent of Public Instruction, Report Card. Smarter Balanced and WCAS Assessments.

**STEM Education and the Labor Market**

The STEM education and labor market outlook shows significant misalignment in key fields. For example, in the fields of computer & information technology and nursing, projected annual job openings are far outpacing annual degree completions.

**Gaps between Projected Annual Job Openings and STEM Degree & Certificate Completions in Key Occupational Fieds**



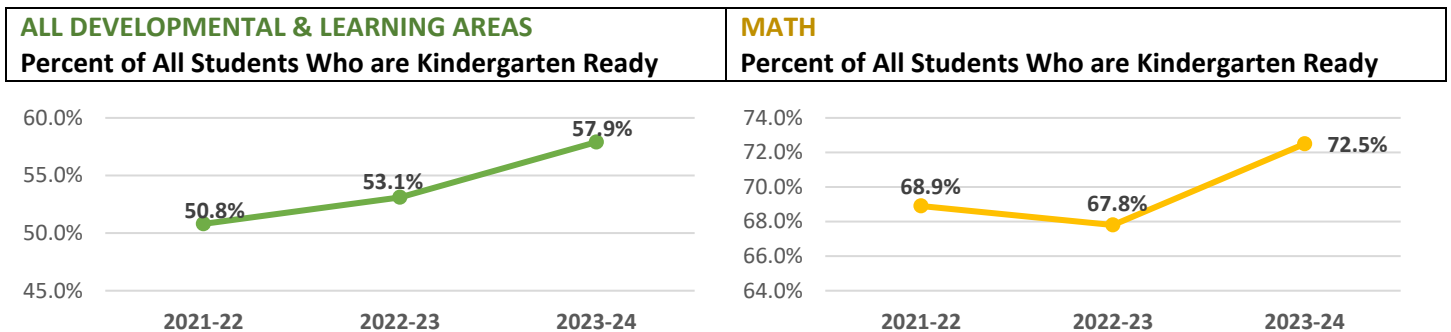
WSAC staff analysis of IPEDS and Lightcast Q4 2024 labor market data. This report uses a broad definition of STEM that includes healthcare as an important STEM-related field.

## Early Learning



**Kindergarten readiness is a critical transition point.** Studies have shown that kindergarten readiness is strongly associated with later academic achievement as students progress in K-12 education and beyond.<sup>6</sup> Students who demonstrate kindergarten readiness in math, literacy, and other developmental areas are more likely to meet standards in math and English language arts assessments in 3rd grade and beyond.

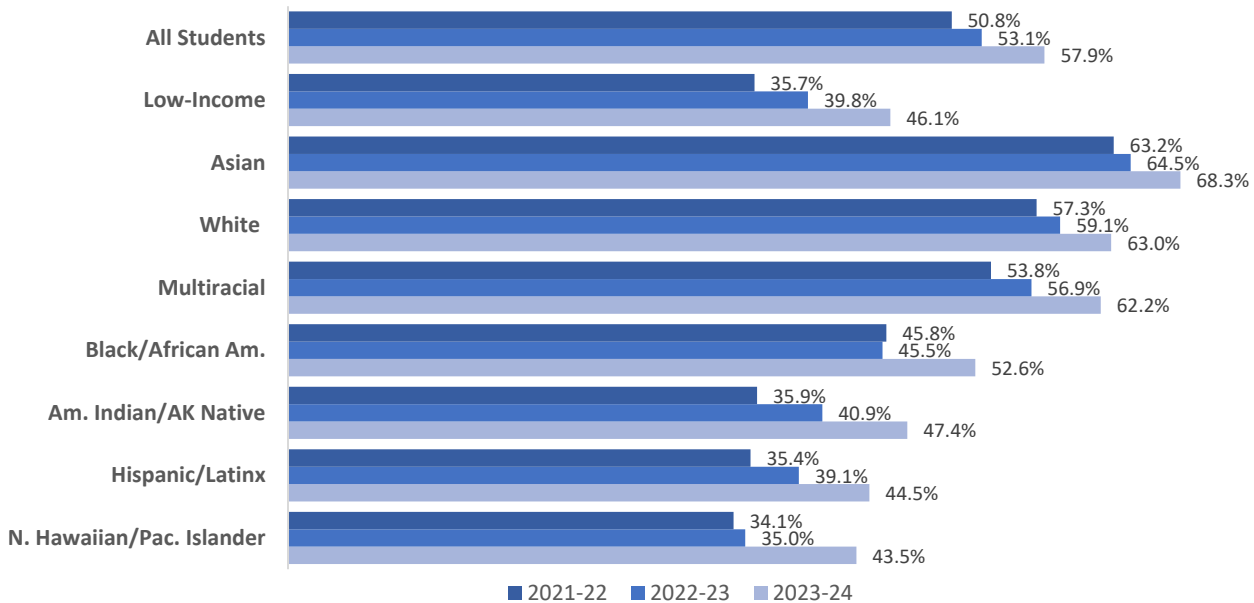
Rates of kindergarten readiness have been rising in recent years, but there is still more work to be done to ensure that all Washington kids are prepared for success in school. According to the Washington Kindergarten Inventory of Developing Skills (WaKIDS) assessment, the percent of students who were kindergarten ready in math rose from 68.9 percent in 2022 to 72.5 percent in 2024. The percent of students who were kindergarten ready in all developmental and learning areas rose from 50.8 percent in 2022 to 57.9 percent in 2024.



Washington State Office of Superintendent of Public Instruction, Report Card. Washington Kindergarten Inventory of Developing Skills (WaKIDS)

However, readiness is not evenly spread across racial and ethnic groups. The chart below reveals that low-income students and Black/African American, American Indian/Alaskan Native, Hispanic/Latinx, and Native Hawaiian/Pacific Islander students are significantly less likely to be prepared with the skills and abilities necessary to succeed as they enter kindergarten.

### Kindergarten Readiness in All Areas by Income & Race/Ethnicity 2022-24



Washington State Office of Superintendent of Public Instruction, Report Card. Washington Kindergarten Inventory of Developing Skills (WaKIDS)

More effort is needed to help students be fully prepared at this stage for their educational journey, particularly for those from demographic groups furthest from educational equity.

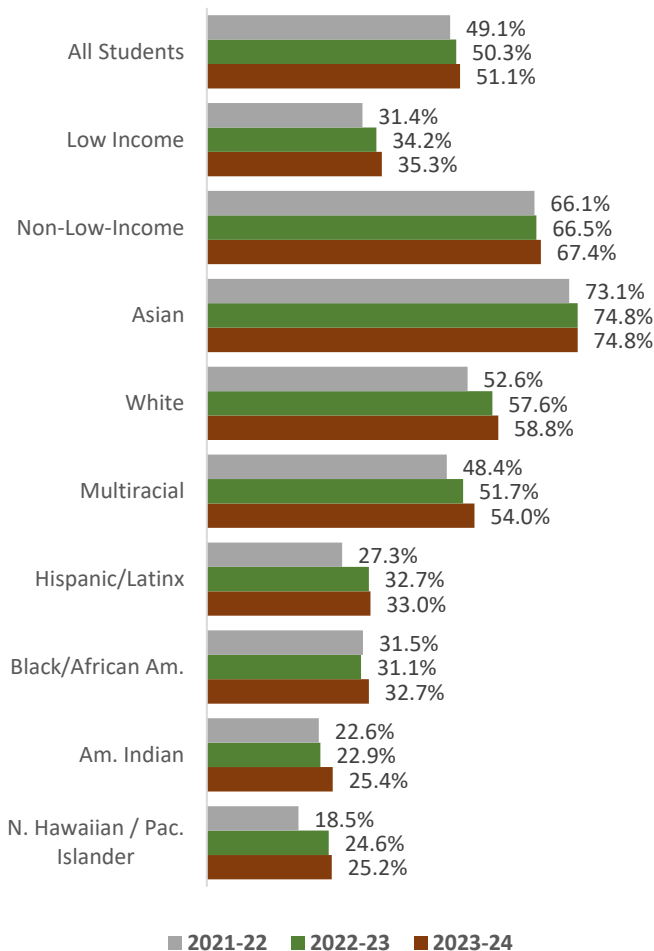
# K-12 Education

## Percent of K-12 Students Meeting Standard in Math

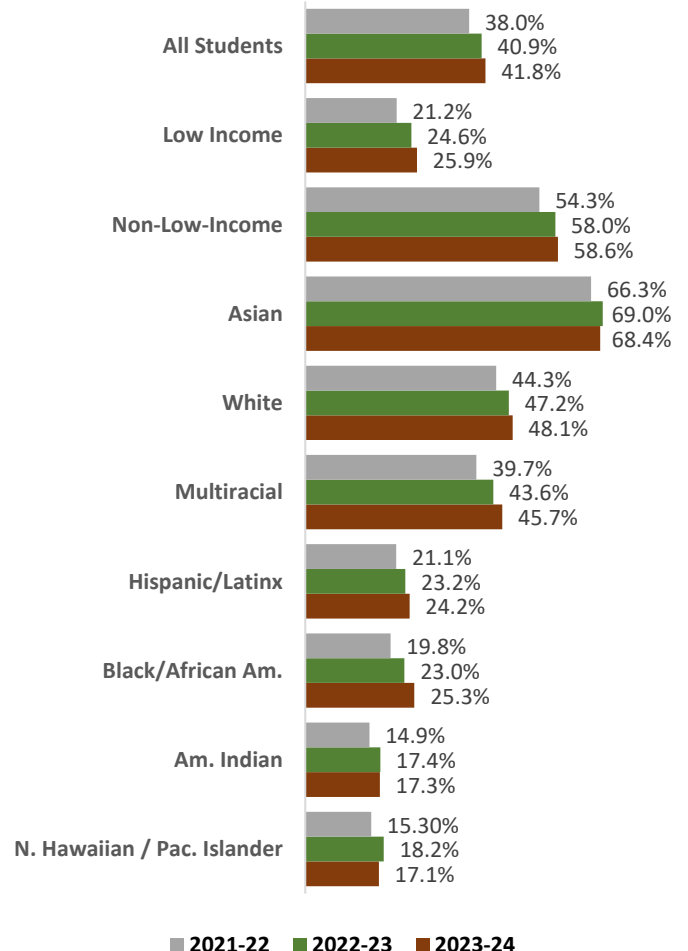
### The percentage of students meeting standard in math tend to decline through grades 3 to 10

As students proceed through successive grades in the K–12 system, the knowledge and skills they acquire at each level are crucial to their academic success at the next level. The Smarter Balanced Assessment (SBA) measures student progress to determine if they are meeting established learning standards. Smarter Balanced Assessment (SBA) Results show a decline over the last three years, across all demographic groups, in the number of students meeting standard in math, as they progress through successive grades. The percentages decreased at each grade level, through 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, and 10<sup>th</sup> grades. In addition, low-income, American Indian/Alaskan Native, African American, and Hispanic/ Latinx students meeting Smarter Balanced learning standards in math and science remain relatively low. This is a point of concern and indicates a need for expanded student support services to help them stay on track.

**3rd Grade Math  
Percent Meeting Standard**

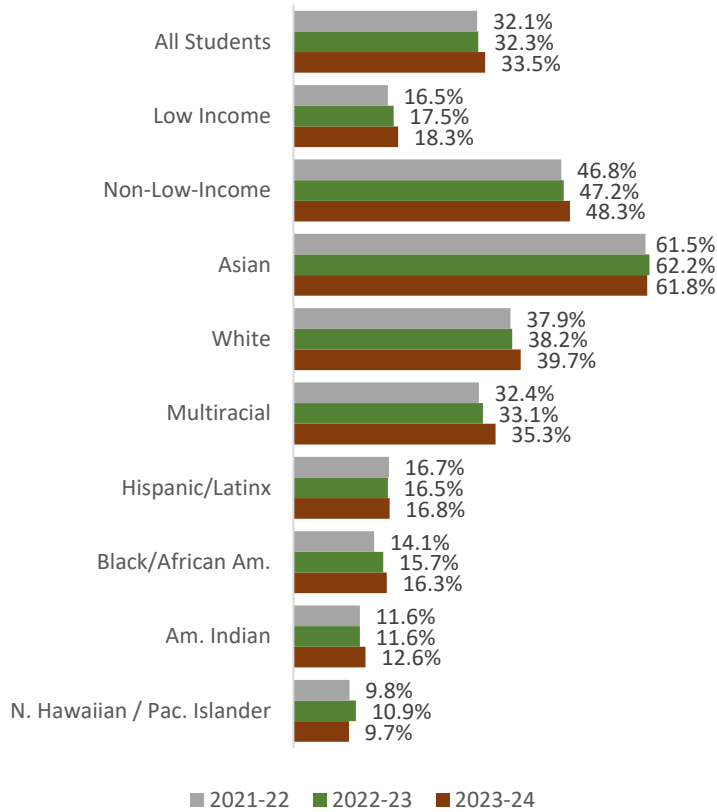


**5th Grade Math  
Percent Meeting Standard**

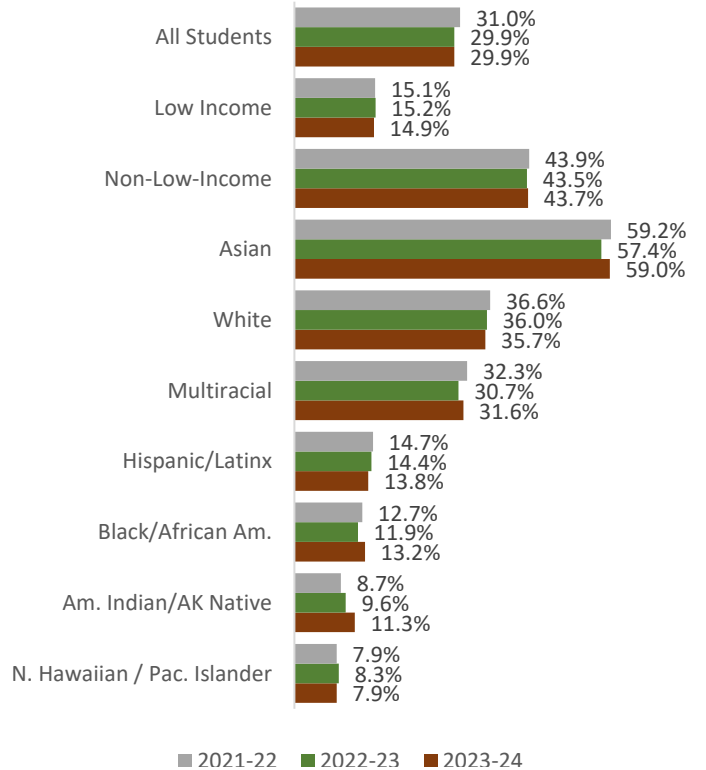


Source: Washington State Office of Superintendent of Public Instruction, Report Card. Smarter Balanced Assessments.

### 8th Grade Math Percent Meeting Standard



### 10th Grade Math Percent of Washington Students Meeting Standard

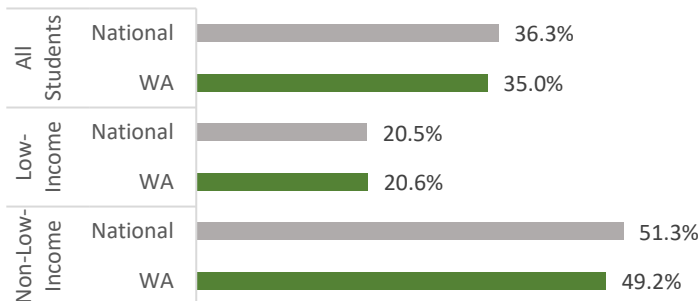


Source: Washington State Office of Superintendent of Public Instruction, Report Card. Smarter Balanced Assessments.

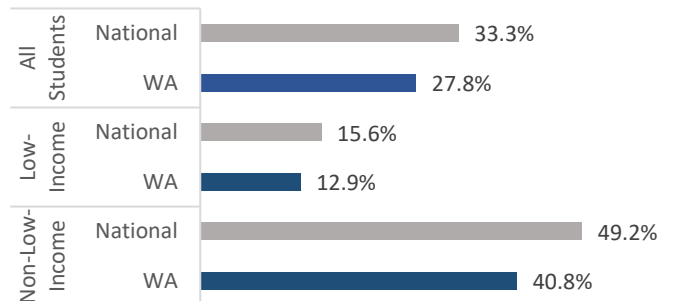
### The percent of students meeting standard in math in grades 4 and 8 is below the national average

The National Assessment of Educational Progress (NAEP) mathematics assessment is given every two years to students at grades 4 and 8. The assessment measures both mathematics knowledge and the students' ability to apply their knowledge in problem-solving situations. The results present a broad view of students' mathematics knowledge, skills, and performance over time. In 2022, the assessment showed the largest score declines at grades 4 and 8 since initial assessments in 1990.<sup>7</sup> Washington scores were below the national average for percent meeting standard for all students and for low-income and non-low-income students at the 8th grade level and in all but one category at the 4th grade level.

#### NAEP Math Scores - 4th Grade (2022) Percentage at Proficient Level or Higher



#### NAEP Math Scores - 8th Grade (2022) Percentage at Proficient Level or Higher



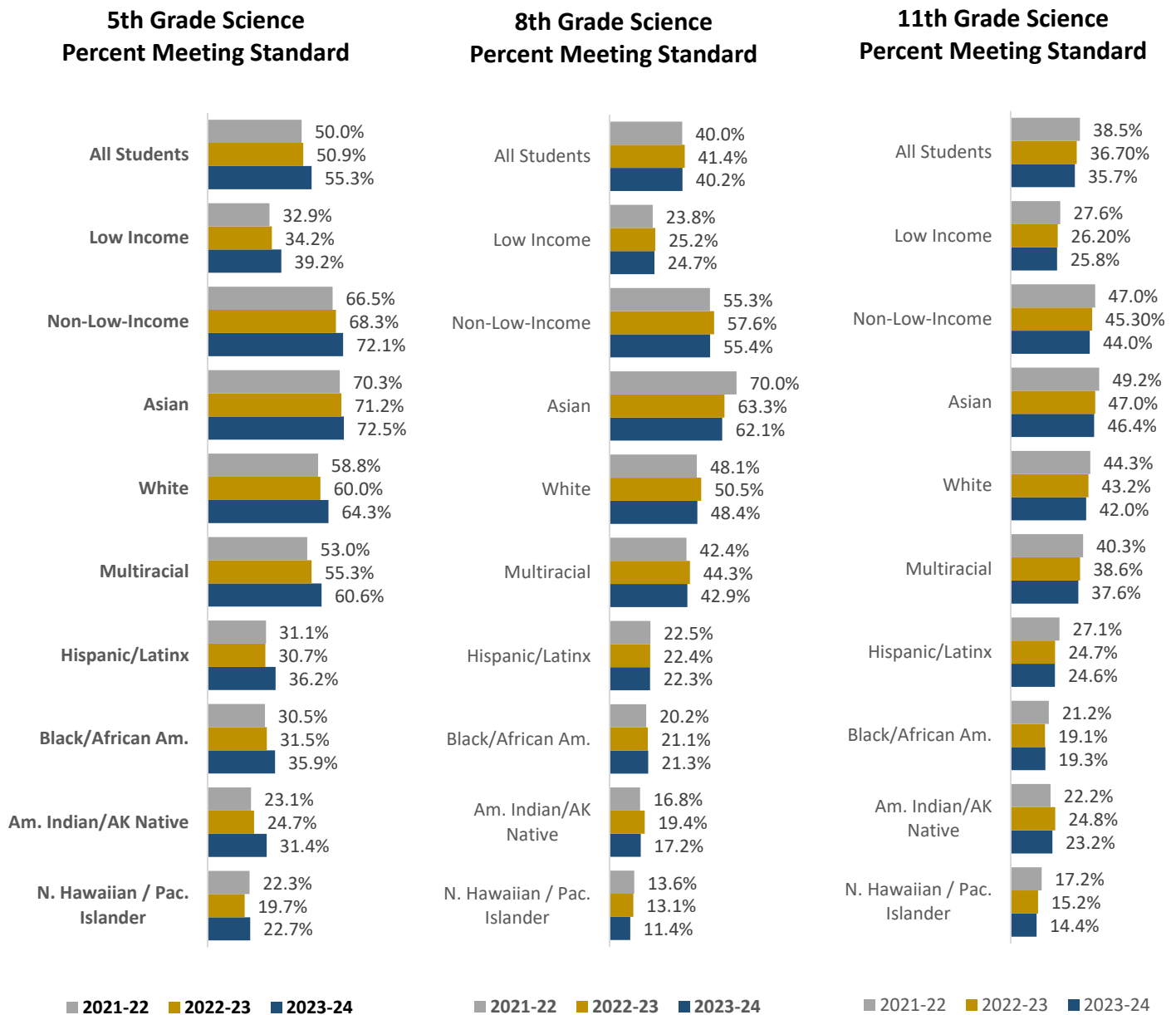
Source: National Center for Education Statistics (NCES), National Assessment of Education Progress (NAEP). As of the writing of this report, the 2024 assessment results were not yet available.

Percent of K-12 Students Meeting Standard in Science

**The percent of students meeting standard in science reveals the challenges that low-income, Hispanic/Latinx, Black, American Indian, and Native Hawaiian/Pacific Islander students face**

The Washington Comprehensive Assessment of Science (WCAS) measures the level of proficiency that Washington students have achieved based on the Washington State K-12 Science Learning Standards, which are the Next Generation Science Standards (NGSS). All students are assessed on their knowledge of the standards at grades 5, 8, and 11.

The overall trend in percentages meeting standard shows a steady decline as students move from 5th grade to the 11<sup>th</sup>. For example, the percentage of all students meeting standard in academic year 2023-24 shows a decline from 55.3 percent in 5th grade to 40.2 percent in 8<sup>th</sup> Grade and 35.7 percent in 11<sup>th</sup> grade. The assessment shows that the percentage meeting standard for low-income students and students from underserved minorities (Hispanic/Latinx, Black/African/American, American Indian, and Native Hawaiian/Pacific Islander) are significantly lower.



Source: Washington State Office of Superintendent of Public Instruction, Report Card. Washington Comprehensive Assessment of Science (WCAS).

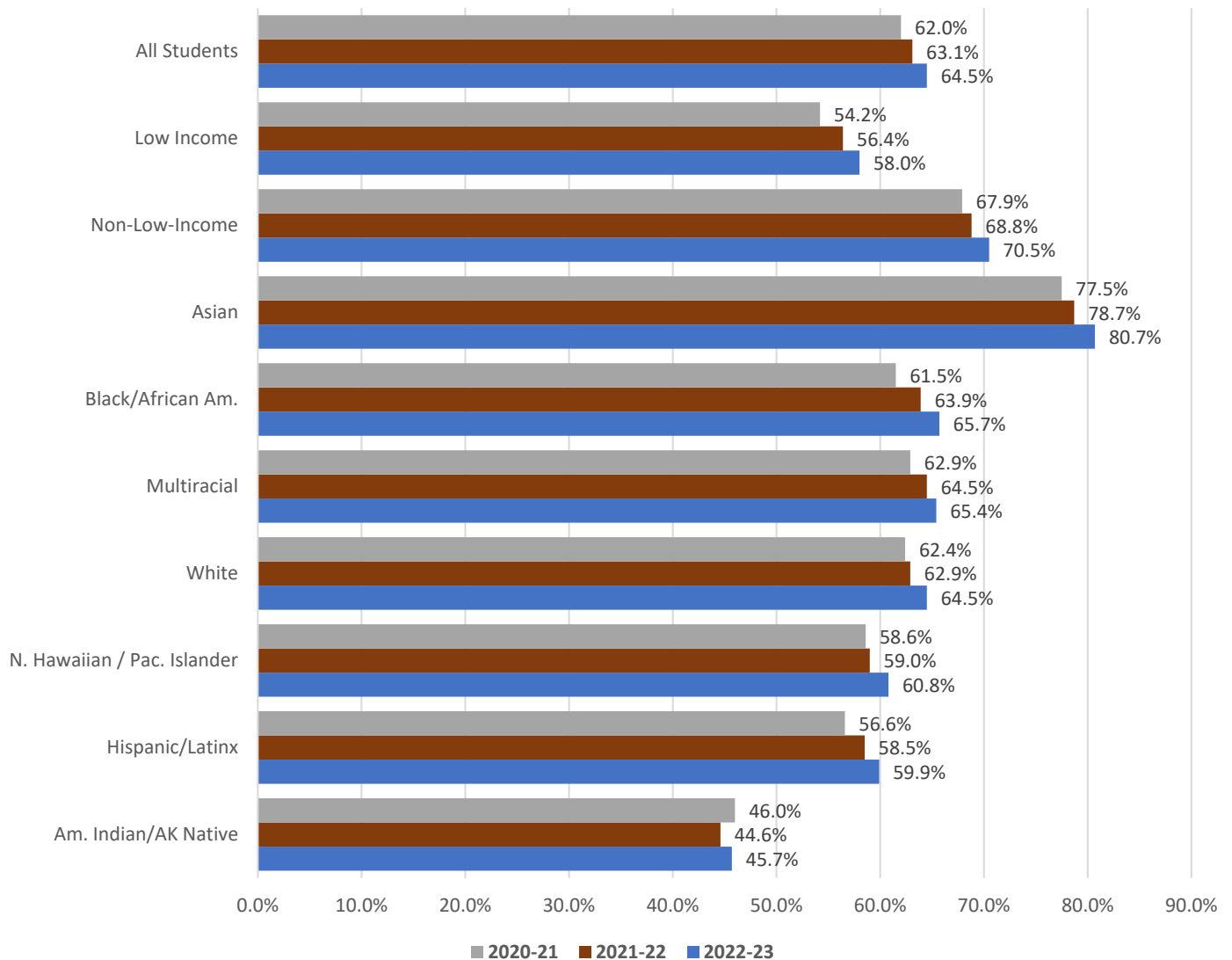


## Dual Credit Classes

Dual credit programs allow students to earn credit for their high school diploma and college at the same time, while helping them prepare for the challenges of college-level work. They include Running Start, CTE Dual Credit (formerly Tech Prep), College in High School, Advanced Placement, International Baccalaureate, and Cambridge International courses.

The percent of Washington high school students completing dual credit courses have been increasing in recent years, but fewer students from low-income households and students from underserved racial and ethnic groups are taking advantage of this opportunity.

**Percent of High School Students Who Have Completed at Least One Dual Credit Course by Income Level, Race/Ethnicity, and Academic Year**

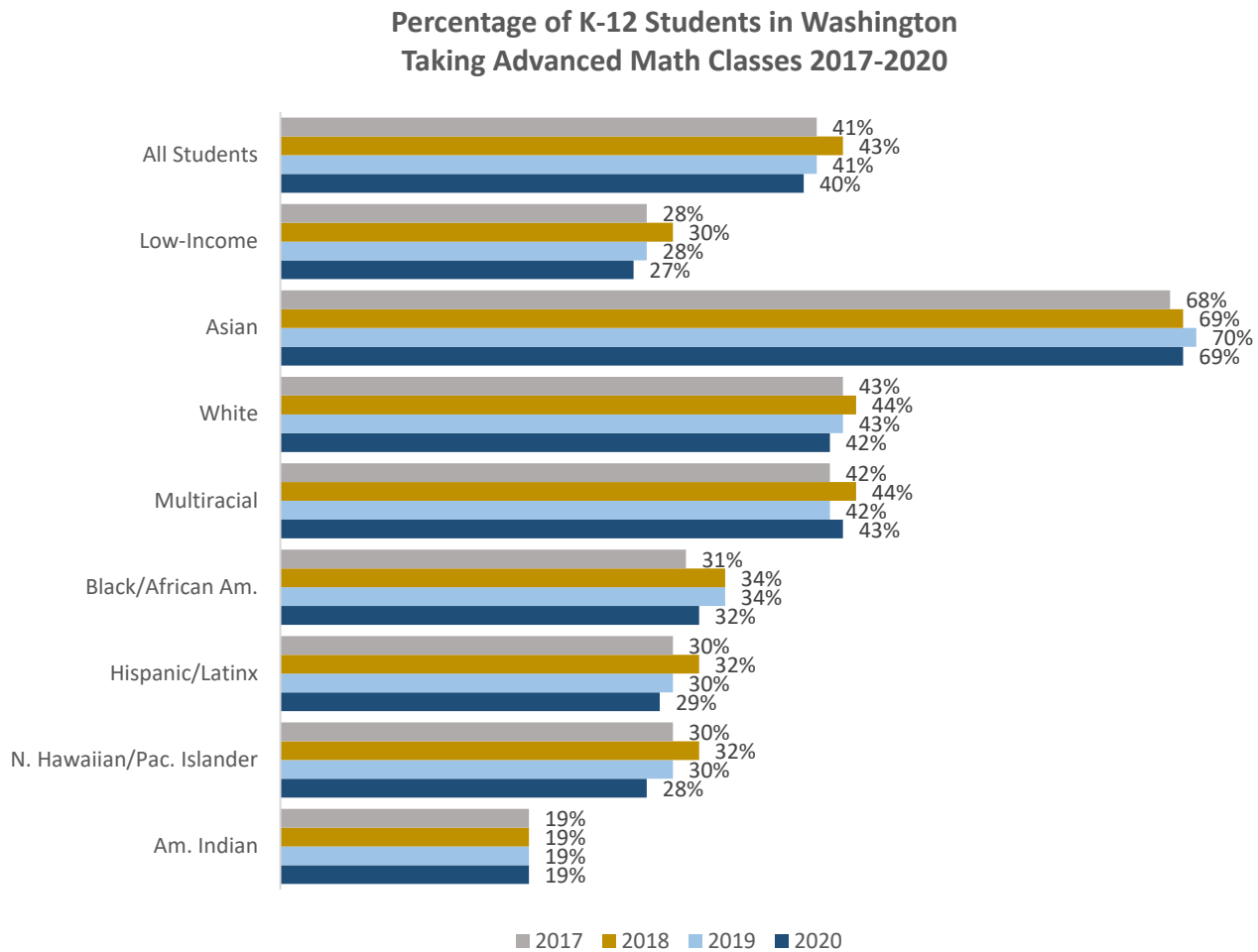


Source: Washington State Office of Superintendent of Public Instruction, Report Card.

## Percent of Students Taking Advanced Math Classes

### Low-income students and students from underserved minorities are less likely to take advanced math classes in high school

In 2020, 40 percent of all Washington students graduating high school had taken advanced math classes beyond algebra 2. That figure matches the national percentage.<sup>8</sup> There has been slight variation from year to year since 2017, but the percentage has not changed significantly. More concerning is the trend showing that low-income students and students from underserved minorities are less likely to take these courses. Studies have shown that students' who take advanced math coursework in high school have an easier time transitioning to college STEM courses and are more likely to persist in STEM studies and to enter STEM careers.<sup>9</sup>

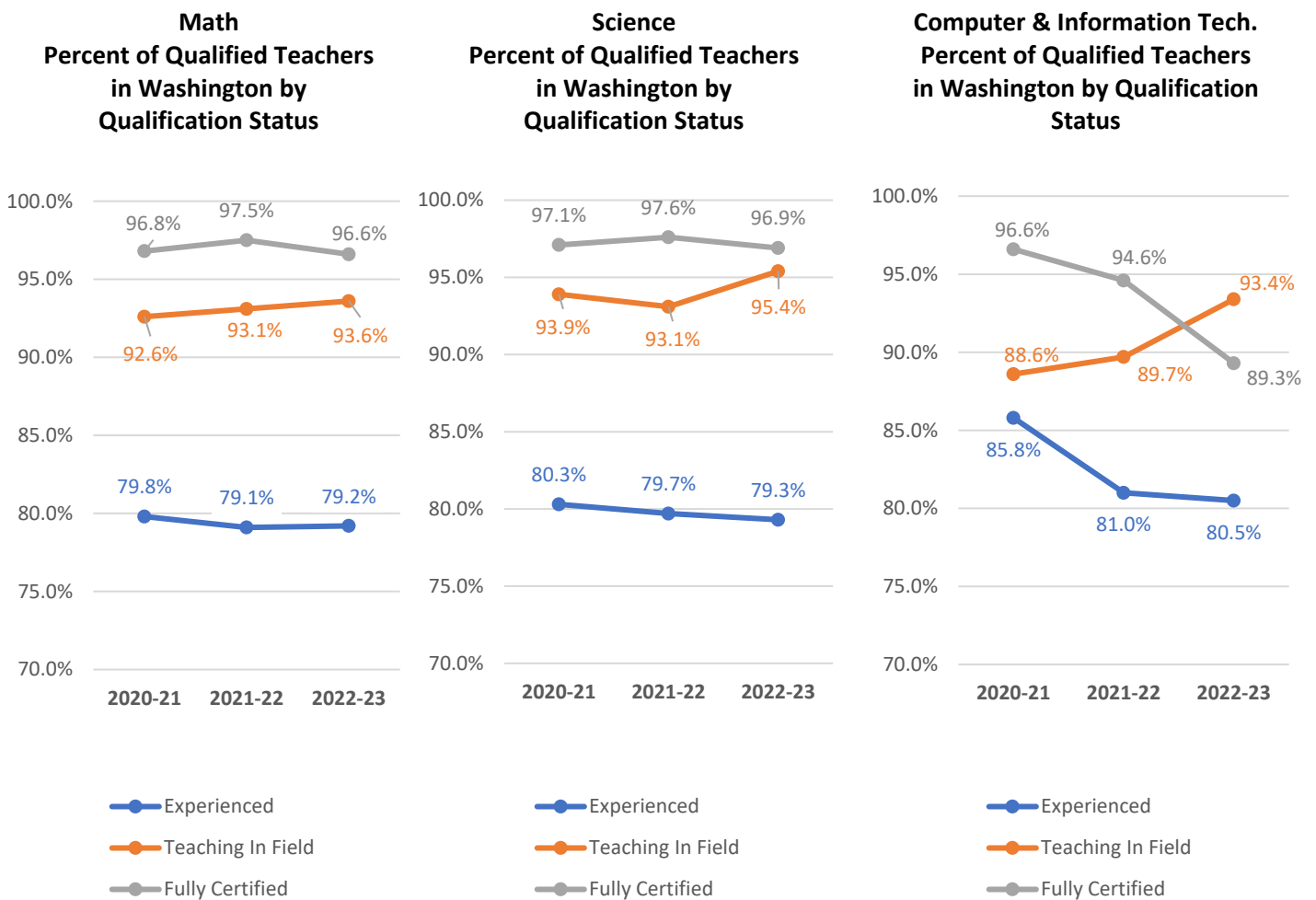


Source: Education Research and Data Center (ERDC) analysis of OSPI data.

## STEM Teacher Qualifications

The percentage of teachers who are fully certified in Math, Science, or Computer Science is above 96 percent, but the percentage with more than 5 years of experience teaching in field is significantly lower. For example, in academic year 2023, less than 80 percent of math and science teachers had more than 5 years of experience in the field. And the percent of experienced teachers in computer science was only slightly higher at 80.5 percent. Adequate experience in teaching is important in the STEM field, since many of the concepts involved are relatively complex and effective teachers must develop an expansive repertoire of teaching strategies and instructional approaches for a diverse range of students with varying levels of preparation. Developing and retaining qualified teachers is crucial to advancing STEM education.<sup>10</sup>

## Percent of Qualified High School Teachers in Washington by Subject, Qualification Status and Academic Year



Source: Washington State Office of Superintendent of Public Instruction, Report Card.

## Spotlight on Computer Science

**Demand for computer & information technology skills remains strong in a wide range of industries.** <sup>11</sup>

Opportunities for high wage jobs in computer & Information technology remain widespread. Nationally, nine out of ten jobs in computer & information technology are in companies outside the tech sector.<sup>12</sup> Washington data on IT jobs reflects this trend. In addition to retail trade, which is dominated by e-commerce firms such as Amazon, many IT jobs are in industries such as scientific & technical services, manufacturing, finance and insurance, and health care. Operations in many industries are becoming increasingly digital, requiring workers skilled in information technology.

### Unique Job Postings in Computer & Information Technology by Industry in 2024



Source: WSAC analysis of Lightcast Q4 2024 Data Set

Only 50 percent of high schools in Washington offer foundational computer science courses, compared with 60 percent nationally. Foundational computer science courses go beyond simply covering general elements of computing and integrate the fundamental concepts with a substantial amount of time applying those concepts through programming.<sup>13</sup> Examples include Computer Science Principles and AP Computer Science A.

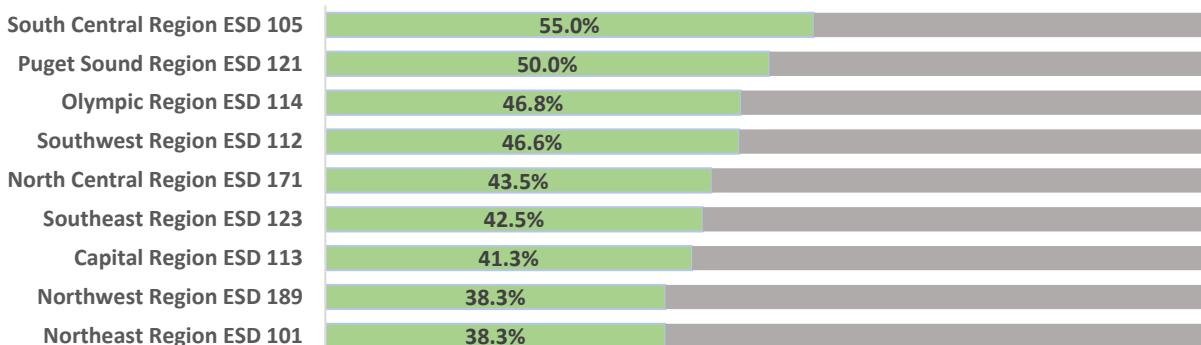
### Percent of Washington High Schools offering Foundational Computer Science Courses in 2023-24



Source: Code.org Advocacy Coalition

These are already inadequate numbers to meet the need for access to computer science in the state’s high schools. But percentages also vary widely by region, with some areas, particularly in more rural parts of the state, with much lower computer science availability. The enrollment numbers are even more concerning.

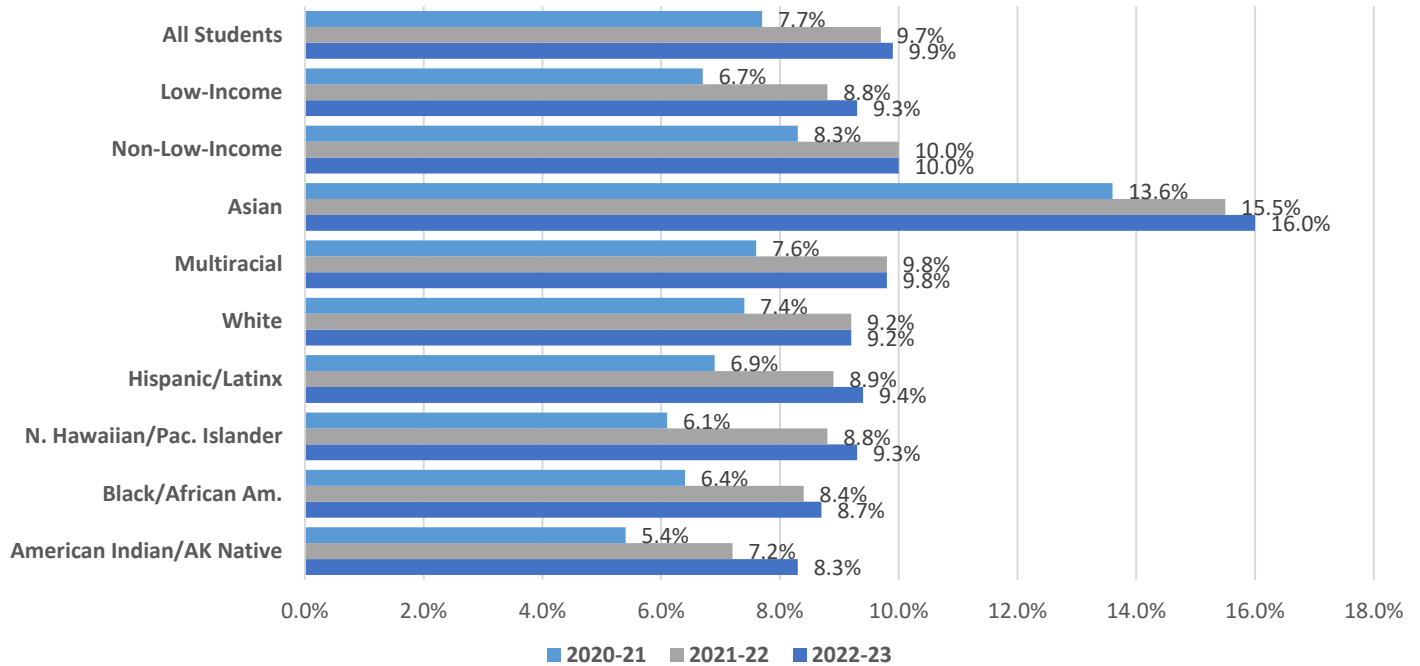
### Percent of Washington High Schools offering Foundational Computer Science Courses by Region 2022-23



Source: CS For All Washington

The percentage of Washington students enrolled in computer science courses have been increasing in recent years. The percentage of all students enrolled in at least one computer science course rose from 7.7 percent in 2022-23 to 9.9 percent in 2021-22.

### Percentage of Washington Middle School and High School Students Enrolled in Computer Science Courses 2020-23

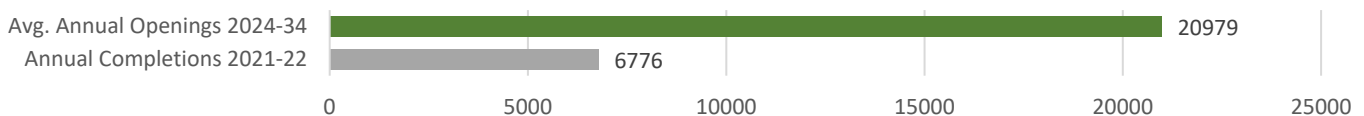


Source: Washington State Office of Superintendent of Public Instruction (OSPI), K-12 Computer Science Education Data Summary

### Opportunities for high wage jobs in computer & information technology continue to be abundant

Employer demand for skilled workers in computer and information technology remain strong, with projected annual job openings widely outpacing annual certificate and degree completions. Nationally, nine out of ten jobs in computer & information technology are in companies outside the tech sector.<sup>14</sup> Washington data on jobs reflects this same trend. In fact, most information technology jobs are in industries such as professional and scientific services, finance and insurance, retail, healthcare and manufacturing. Operations in all these industries are becoming increasingly digital, requiring workers skilled in Information technology.

### Projected Annual Job openings in Computer & information Technology 2024-34 Compared to Annual Certificate and Degree Completions in 2021-22



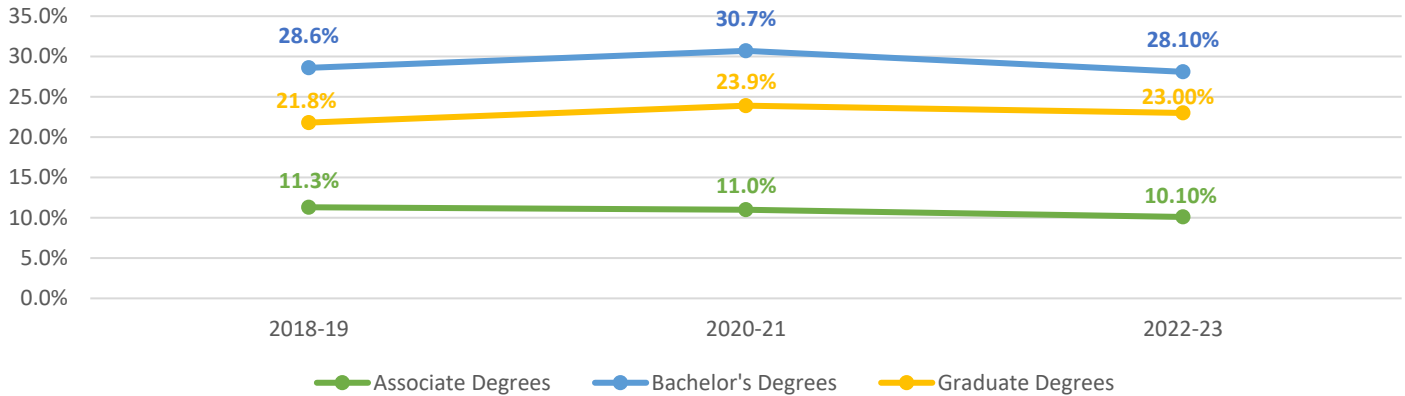
Source: WSAC staff analysis of IPEDS and Lightcast Q4 2024 labor market data.

## Postsecondary

**STEM Degree Completions as a percentage of all degrees at the associate, bachelor's, and graduate levels have shown volatility in recent years.**

From academic year 2019 to academic year 2021, STEM degree and certificate percentages at the bachelor's and graduate levels increased by 2 percentage points, then declined in 2023. The percent of associate degree completions as a percent of all completions declined slightly from academic years 2019 to 2023.

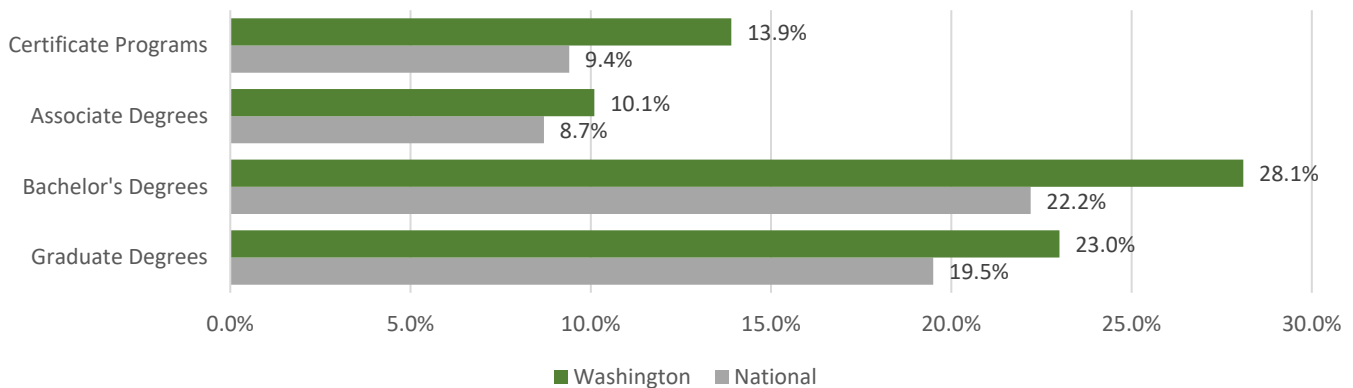
**Percent of STEM Completions as a Percent of All Completions by Degree Level and Academic Year 2019-2023**



Source: WSAC analysis of Integrated Postsecondary Education Data System (IPEDS) data.

A national comparison for the 2022-23 academic year shows that Washington STEM completion percentages exceed the national average in most categories. STEM bachelor's degree completions represented 28.1 percent of all bachelor's degrees and exceeded the national average (22.2 percent) by nearly 6 percentage points. Graduate Degree completions in STEM fields as a percentage of all graduate degrees (23.0 percent) exceeded the national average (19.5 percent) by over 3 percentage points.

**Percent of STEM Completions as a Percent of All Completions by Degree Level 2022-23  
Washington Compared to National Data**



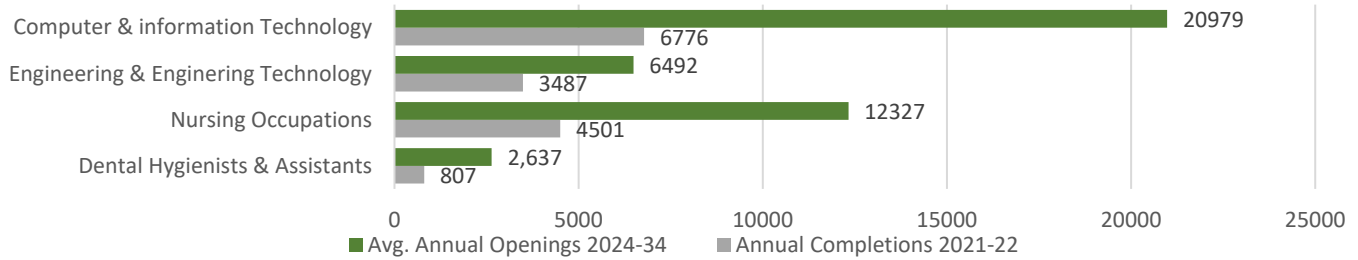
Source: WSAC analysis of Integrated Postsecondary Education Data System (IPEDS) data.

# The STEM Labor Market

## Keeping pace with rising employer demand for skilled, STEM-educated workers remains a challenge

Demand for workers with STEM skills remains strong, with projected annual job openings outpacing the number of students completing STEM degree and certificate programs each year. In the computer and information technology field, annual job openings from 2024 to 2034 are projected to be nearly 21,000 compared to only 6,776 annual completions in academic year 2022-23.

**Gaps in Key STEM and Health Fields between Projected Annual Job Openings from 2024 to 2034 and STEM Degree & Certificate Completions 2022-23**



Source: WSAC staff analysis of IPEDS and Lightcast Q4 2023 labor market data

## STEM and STEM-related health employment opportunities are prevalent in all regions of the state

Projected STEM job openings vary by region but share some commonalities. In addition to strong demand for healthcare professionals, projected annual openings in computer, engineering, and scientific occupations are prominent in all areas of the state. Projected growth rates in STEM fields over the next ten years are also consistently high.

### Capital Region ESD 113

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Computer and Information Technology	7,692	715	27%
Healthcare Practitioners and Technical	6,715	546	15%
Registered Nurse/Nurse Practitioner	4,617	312	13%
Life, Physical, and Social Sciences	3,816	400	17%
Engineering and Architecture	2,810	259	19%

### North Central Region ESD 171

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Healthcare Practitioners and Technicians	3,324	263	20%
Registered Nurse/ Nurse Practitioner	2,202	182	21%
Computer and Information Technology	2,040	205	32%
Life, Physical, Social Sciences	1,811	201	8%
Engineering and Architecture	1,551	170	32%

### Northeast Region ESD 101

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Healthcare Practitioners and Technicians	12,677	949	16%
Registered Nurse/ Nurse Practitioner	8,926	665	12%
Computer and Information Technology	7,115	615	21%
Engineering and Architecture	4,415	373	13%
Life, Physical, Social Sciences	3,422	358	11%

### Northwest Region ESD 189

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Computer and Information Technology	18,662	1,500	17%
Healthcare Practitioners and Technicians	16,653	1,176	12%
Engineering and Architecture	14,815	1,066	7%
Registered Nurses/ Nurse Practitioners	9,268	650	15%
Life, Physical, Social Sciences	6,011	614	14%

### Olympic Region ESD 114

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Engineering and Architecture	5,310	427	7%
Healthcare Practitioners and Technicians	5,038	361	13%
Computer and Information Technology	3,869	366	26%
Registered Nurses/ Nurse Practitioners	2,808	204	11%
Life, Physical, Social Sciences	2,384	246	13%

### Puget Sound Region ESD 121

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Computer and Information Technology	167,976	14,649	23%
Healthcare Practitioners and Technicians	64,356	4,350	11%
Registered Nurses/ Nurse Practitioners	42,915	3,093	11%
Engineering and Architecture	40,670	3,244	13%
Life, Physical, Social Sciences	25,436	2442	13%

### South Central Region ESD 105

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Healthcare Practitioners and Technicians	4,578	343	15%
Registered Nurses/ Nurse Practitioners	2,850	206	15%
Computer and Information Technology	2,569	245	27%
Life, Physical, Social Sciences	2,345	252	10%
Engineering and Architecture	2,001	210	29%

### Southeast Region ESD 123

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Healthcare Practitioners and Technicians	6,475	471	15%
Registered Nurses/ Nurse Practitioners	4,770	361	14%
Engineering and Architecture	4,748	326	1%
Life, Physical, Social Sciences	4,433	441	7%
Computer and Information Technology	3,540	294	18%

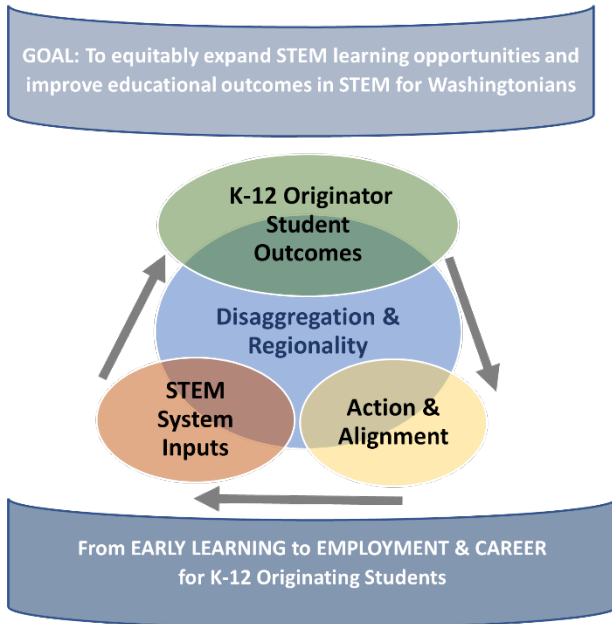
### Southwest Region ESD 112

Occupations	2024 Jobs	Avg. Annual Openings	Projected Growth 2024-34
Healthcare Practitioners and Technicians	9,379	767	22%
Computer and Information Technology	8,795	822	26%
Registered Nurses/ Nurse Practitioners	5,647	481	21%
Engineering and Architecture	4,944	417	15%
Life, Physical, Social Sciences	2,508	245	12%

Source: WSAC staff analysis of Lightcast Q4 2024 labor market data



## STEM Education Innovation Alliance Framework for Action & Accountability



## Measuring Progress

In October 2022, the STEM Alliance approved a revised Framework for Action and Accountability, with an expanded set of progress indicators. The overarching goal of the Alliance is to provide the Governor with vision, guidance, assistance, and advice on strategies to increase learning opportunities and improve educational outcomes in STEM across the full spectrum from early learning to employment and careers. The Framework pictured to the left captures the dynamics of how various measures associated with STEM System Inputs, Student Outcomes, and Action & Alignment elements are tracked to monitor progress, with Disaggregation and Regionality acting as guiding principles.

## 2024 Legislative Session Highlights<sup>15</sup>

### Early Learning

- \$132,698,000 in fiscal year 2024 and \$156,585,000 in fiscal year 2025 from the general fund (plus \$91,810,000 from the education legacy trust account and \$80,000,000 from the opportunity pathways account) for the early childhood education and assistance program (ECEAP), supporting 16,778 slots in 2024 and 17,278 slots in 2025.

### K-12

- \$135,000 in fiscal year 2024 and \$135,000 in fiscal year 2025 for STEM lighthouse projects.
- \$100,000 in fiscal year 2024 and \$100,000 in fiscal year 2025 for the Mobius science center to expand mobile outreach of STEM education to students in rural, tribal, and low-income communities.
- \$62,000 fiscal year 2024 and \$62,000 in fiscal year 2025 for competitive grants to increase capacity of high schools to offer AP computer science courses.
- \$2,527,000 in fiscal year 2024 and \$2,527,000 in fiscal year 2025 for annual startup, expansion, or maintenance of core plus programs in maritime, construction, aerospace, and advanced manufacturing programs.

### Postsecondary

- \$1,020,000 for Eastern Washington University to establish and provide operating support for a MESA program.
- \$150,000 in fiscal year 2024, \$150,000 in fiscal year 2025 for University of Washington MESA programs to provide enrichment opportunities to students who are traditionally underrepresented in these programs.
- \$4,112,000 for Washington State University to establish a bachelor's degree program in cybersecurity operations.
- \$14,000,000 for expansion of the UW school of computer science and engineering to increase capacity to award additional 200 degrees per year focusing on traditionally underrepresented students.
- \$2,636,000 for Eastern Washington University to maintain a computer engineering degree program in the college of science, technology, engineering, and math.
- \$3,426,000 for Western Washington University to maintain access to science, technology, engineering, and mathematics degrees.

## Concluding Comments

STEM education is vital to Washington’s innovation-driven economy and aligning the state’s STEM education system with labor market demand is imperative. The focus must be on improving the full spectrum from early learning and K-12 to career-connected learning and postsecondary programs. All stages are crucial to helping students develop the key STEM skills and credentials they will need to prepare for good career opportunities in Washington’s dynamic and evolving economy. Expanding institutional enrollment capacity in key fields may remove barriers that are driving some of the skilled worker supply and demand gaps, particularly in fields such as computer science and information technology. Another key to advancing STEM education and labor market alignment is to address equity issues, to ensure that groups that have been historically underrepresented and underserved, including low-income students and students from racial and ethnic minorities, are given the supports and resources they need to succeed in their education and career goals.

## References

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- <sup>3</sup> Stebbins, S. op. cit.
- <sup>4</sup> McCann, A. op. cit.
- <sup>5</sup> This report incorporates an expansive definition of STEM that includes the health field as a key STEM-related area.
- <sup>6</sup> Came, Deb. (2022). Kindergarten Readiness and 3<sup>rd</sup> Grade Outcomes: A Predictive Analysis Using 2015-16 WaKIDS and 2028-19 3rd Grade SBA Data. [https://ospi.k12.wa.us/sites/default/files/2023-08/kindergarten-readiness-and-3rd-grade-outcomes\\_0.pdf](https://ospi.k12.wa.us/sites/default/files/2023-08/kindergarten-readiness-and-3rd-grade-outcomes_0.pdf). Washington State Institute for Public Policy, “Outcome Evaluation of Washington State’s Early Childhood Education and Assistance Program,” December 2014, [https://www.wsipp.wa.gov/ReportFile/1576/Wsipp\\_Outcome-Evaluation-of-Washington-StatesEarly-Childhood-Education-and-Assistance-Program\\_Report.pdf](https://www.wsipp.wa.gov/ReportFile/1576/Wsipp_Outcome-Evaluation-of-Washington-StatesEarly-Childhood-Education-and-Assistance-Program_Report.pdf)
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- <sup>15</sup> The STEM investments highlighted in this section use a broad definition of STEM that includes healthcare as an important STEM-related field.



# Washington State STEM Education Innovation Alliance

The STEM Education Innovation Alliance, legislatively created in 2013, brings together leaders from a broad range of business, labor, education, government, and nonprofit organizations, with the role of advising Washington's governor and legislature on policy and strategic planning in support of STEM education initiatives.

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