

The background of the slide is a composite image. The top-left portion shows a line of yellow school buses with "SCHOOL BUS" written on their fronts. The bottom-left portion shows a classroom with blue walls, several desks with chairs, and colorful balloons hanging from the ceiling. A white diagonal line separates the two images.

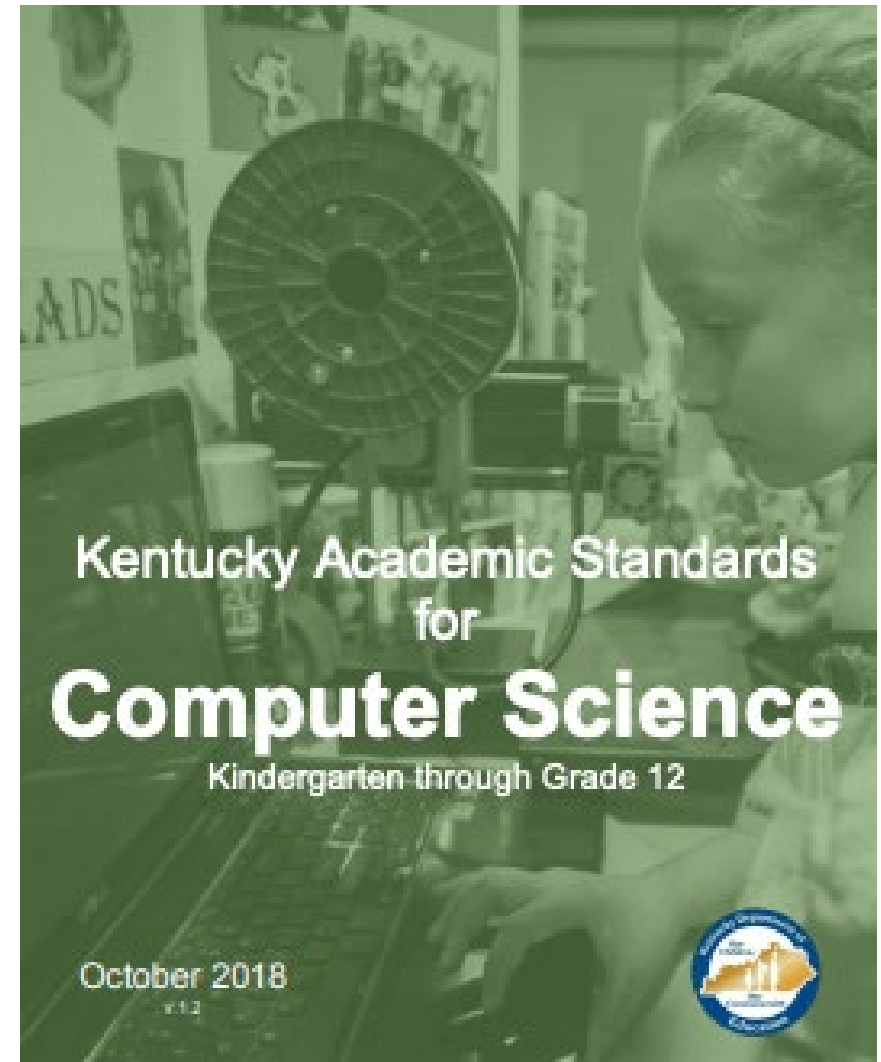
Computer Science Program Update

Dr. Sean Jackson
K-12 Computer Science Lead
Office Of Education Technology

Define and Prepare

704 KAR 8:010 *Kentucky Academic Standards (KAS) for Computer Science*

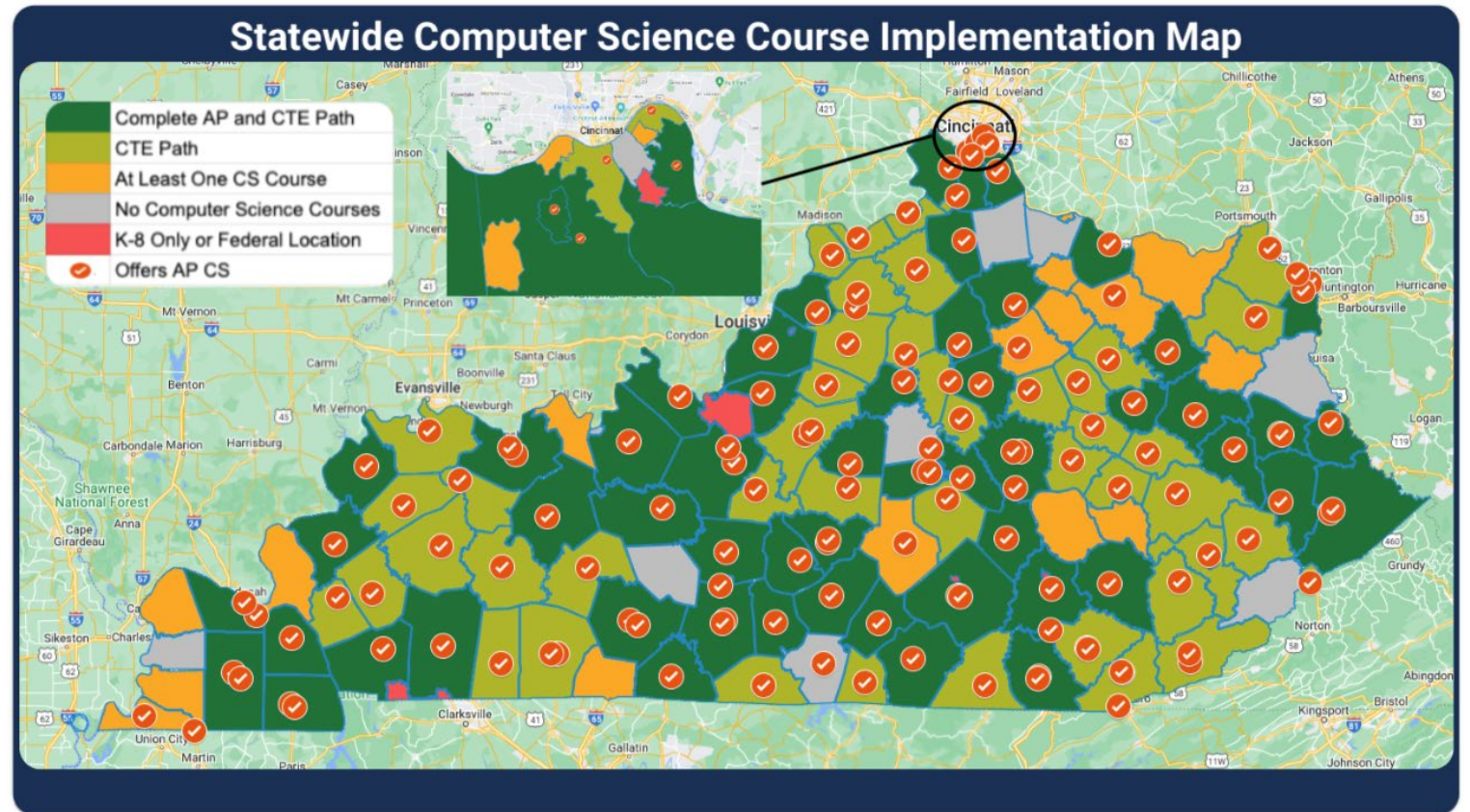
- “...an academic discipline that encompasses the study of computers and algorithmic processes, including their principles, hardware and software designs, applications, networks, as well as their impact on society,” (pg. 5).
- Outlines the standards for an elective or integrated course and establish what students should know and be able to do at the conclusion of a course.



Engage and Empower



- Approval for Computer Science (ACS) Certification
- Computer Science (CS)/Information Technology (IT) Academy funding for all CS AP Exams and targeted industry certifications
- Embedded programming into all pathway courses
- Prioritized K-8 opportunities and resources for CS learning
- Allocated Funding from OET for CS/IT Academy Certifications and Exams



Data Sources: Report represents data from the 2022-2023 school year from multiple data sources: Code.org, College Board, AdvanceKentucky, KY Student Information System, and EPSB.

**K-8 Independent districts or Department of Defense schools have been removed from total calculation. Participation includes students attending regional Area Technology Centers (ATCs) for instruction or through online/virtual instruction.

Policies to Make Computer Science Foundational



Kentucky Department of
E D U C A T I O N

Create a **statewide plan** for K-12 computer science



Define computer science and establish standards for K-12 computer science



Establish **dedicated computer science** positions in a state education agency



Allocate funding for rigorous computer science teacher professional learning



Implement **clear certification pathways** for computer science teachers at elementary and secondary levels



Allow computer science to count toward a core graduation requirement

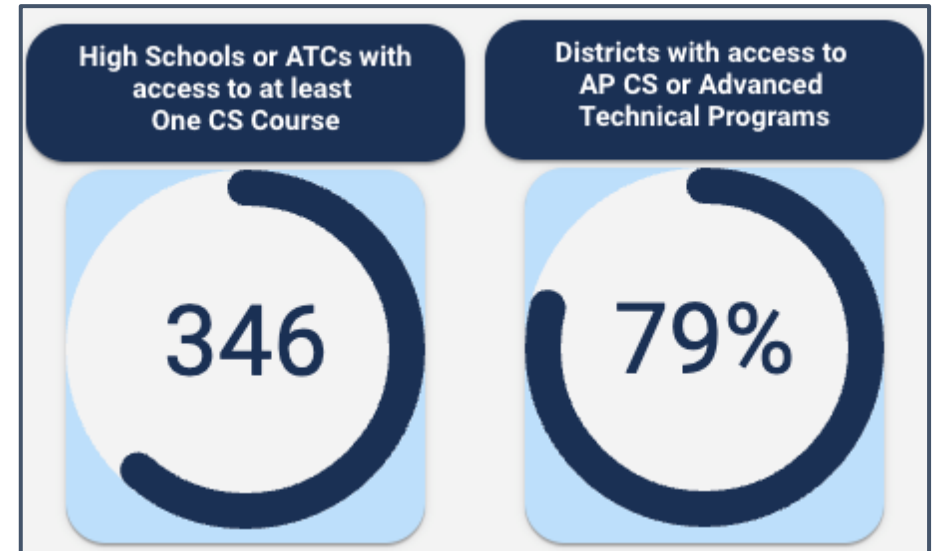
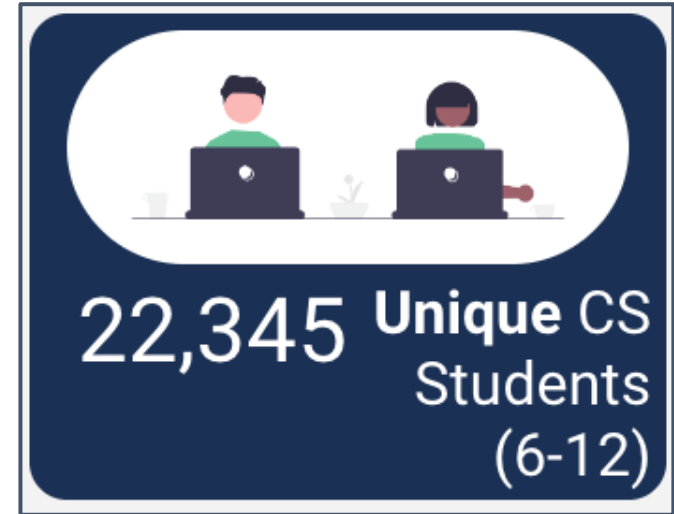


Allow **computer science to satisfy an admission requirement** at higher education institutions



Reflect

- KRS 158.849 requires the KDE to submit an annual computer science landscape report
 - Where?
 - Who?
 - How Many?
- Identification of emerging trends, persistent barriers, future-ready programs



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Reiterate and Empathize

- Comprehensive K-12 State CS Plan
 - Change the expectation
 - K-12 CS learning pipeline
 - Modernization of pathways
- Prepare for Industry 4.0 skill demand
 - Cybersecurity
 - Data science, machine learning, artificial intelligence
 - Automation, generative design, infrastructure



<Think CS>

Stakeholders come together and define a community-specific strategy to embed CS work in schools



<Learn CS>

Train and equip teachers with relevant and rigorous PD to be able to provide meaningful CS learning opportunities for students aligned with the state CS strategies



<Do CS>

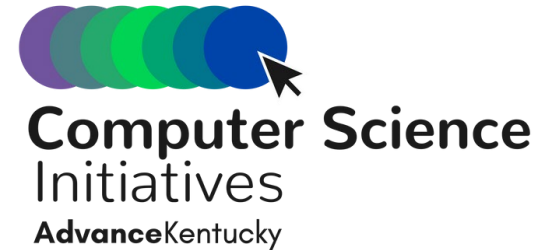
Provide ALL students the opportunity to apply learning in authentic application of their CS knowledge.

AdvanceKentucky Computer Science Initiatives Program Update

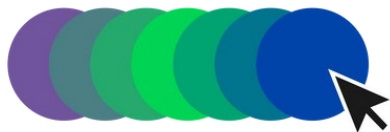
Kentucky Board of Education

December 2023

Monique M. Rice, Program Director



AdvanceKentucky Computer Science Initiatives



Computer Science
Initiatives
AdvanceKentucky

- Professional learning for teachers in grades K-12
- Pathways for teachers to receive the Approval for Computer Science (ACS)
 - Approval for any certified teacher to teach any computer science or IT course
- Assist Districts in developing a comprehensive K-12 CS plan

Major Partners



Other Partners



By the Numbers

161

Since August 2020, 161 teachers across 121 schools have been trained in an introductory Additive Manufacturing course.



133

The number of teachers who have earned the Approval for Computer Science (ACS) which allows high school teachers to teach any CS/IT course, regardless of their initial certification.

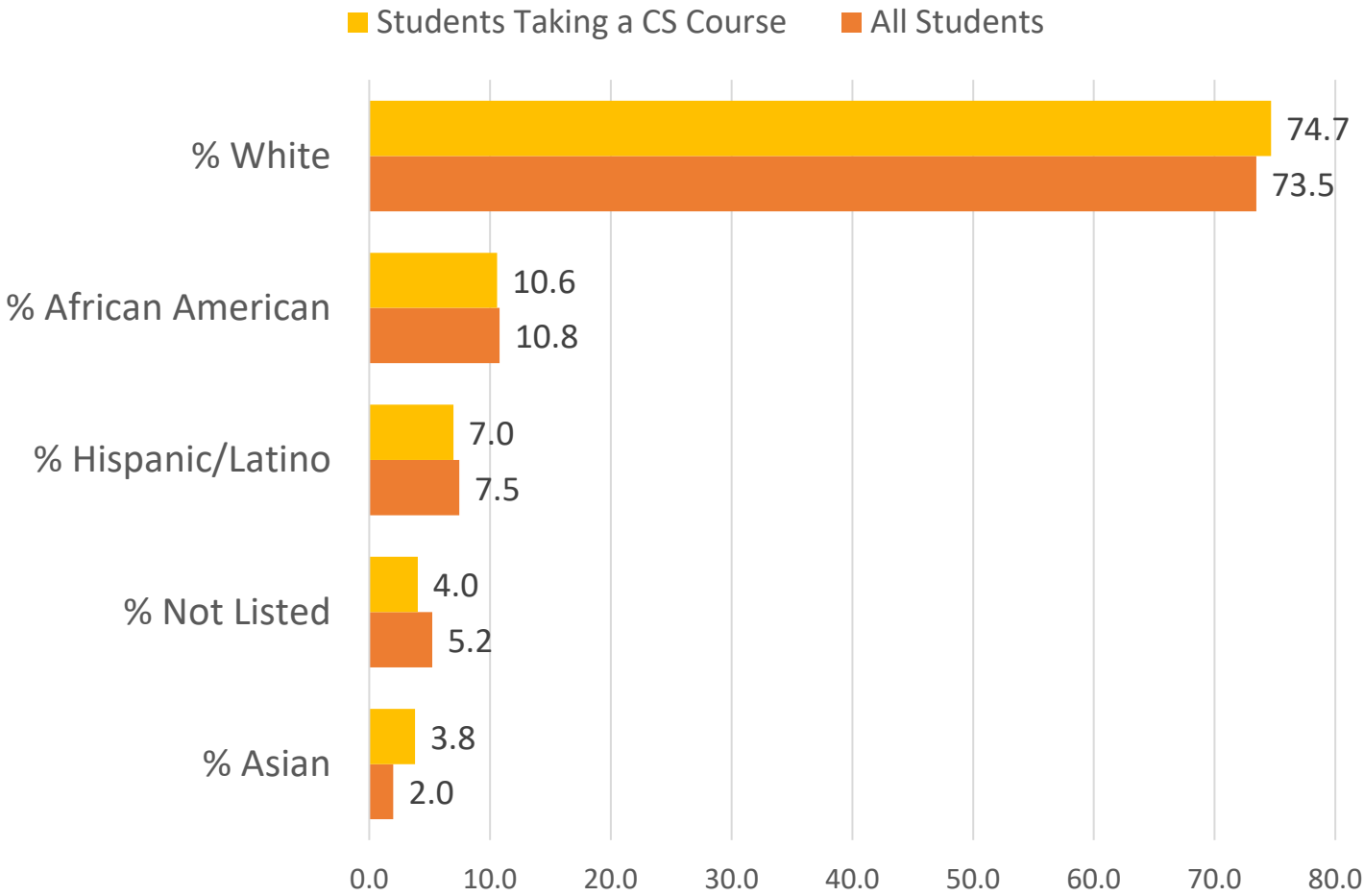


85

The number of active members of CSTA-Kentucky, the state affiliate of the Computer Science Teachers Association (CSTA)



Demographics of Students Taking a CS Course vs Statewide Representation



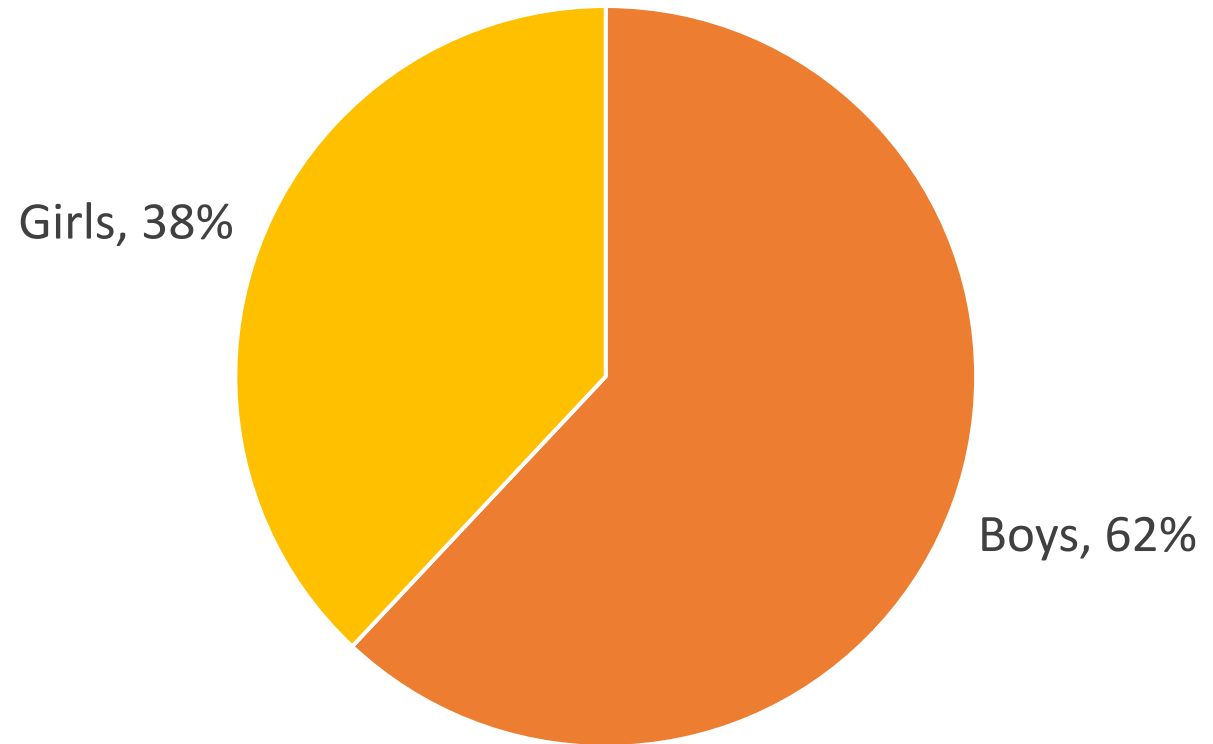
Data from [Kentucky K-12 Annual CS Report 2022](#)

Close the Gender Gap in Computer Science

Raise expectations for all students to take Computer Science.

Support and participate in programs aimed at increasing female participation in STEM fields.

Gender Distribution of Students Taking CS



Data from [Kentucky K-12 Annual CS Report 2022](#) and [Kentucky's School Report Card](#).

Make Computer Science Foundational

Expand access to CS in Grades K-8.

Assist school districts in developing a K-12 CS plan that aligns with the state CS plan.

Computer Science Beyond the Computer Science Classroom

Agriculture

- Precision Farming
- Crop Analysis
- Resource Management
- Automation
- Climate Studies
- Remote Sensing and GIS

Healthcare

- Data Analysis
- Genetic Research
- Medical Devices
- Digital Records
- Diagnostics
- Imaging

Law

- Artificial Intelligence
- Intellectual Property
- Digital Equity
- Cybersecurity
- Data Privacy
- Digital Forensics

21st Century Skills / Portrait of a Learner

- Problem Solving
- Creativity
- Critical Thinking
- Collaboration
- Cybersecurity
- Communication
- Privacy
- Logic

Art and Design

- Game Design
- Website Design
- Digital Marketing
- Architecture
- Interactive Media
- Urban Planning

Education

- Online Learning
- Virtual Platforms
- Flipped Classrooms
- Data Analysis
- Creating Digital Resources

Manufacturing

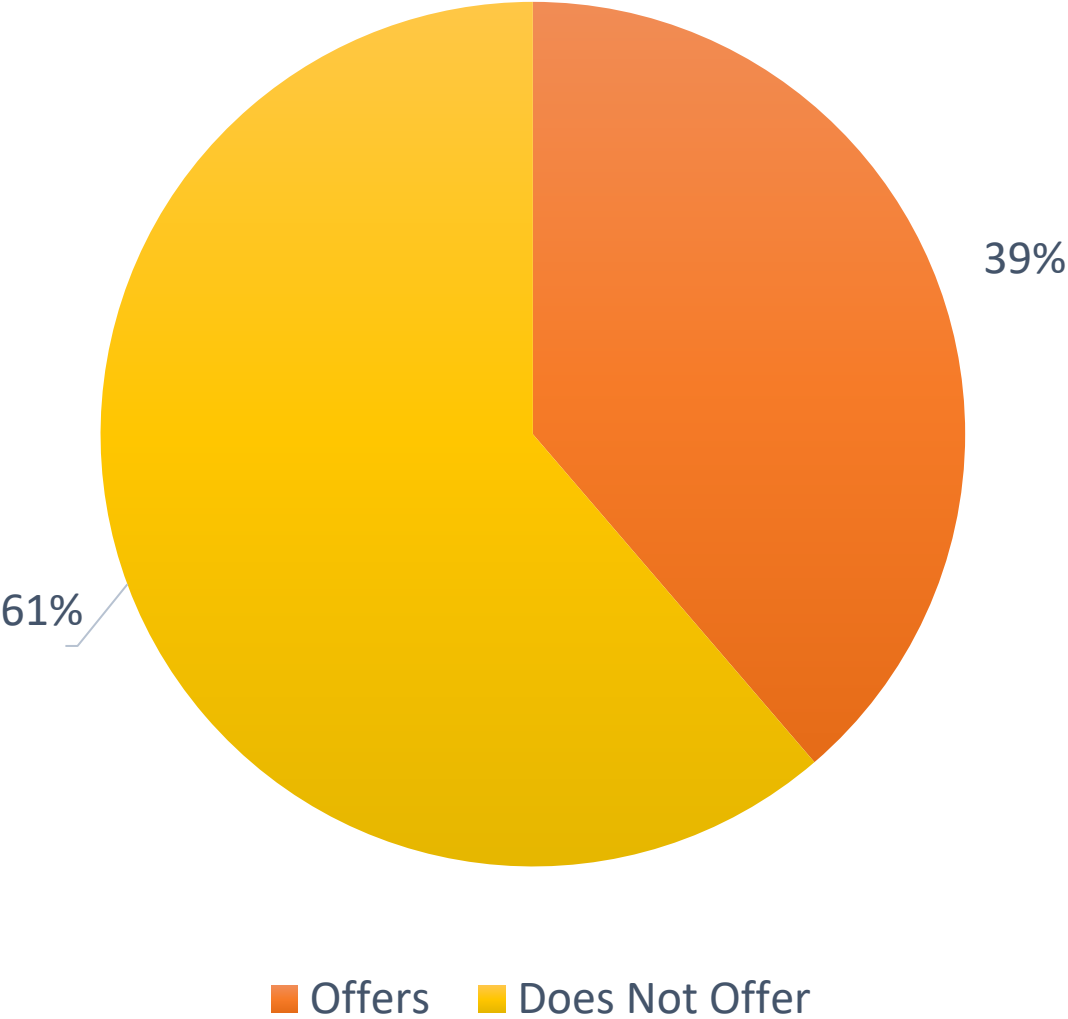
- Robotics
- Automation
- Additive Manufacturing
- Quality Control
- Modeling
- Supply Chains

Modernize Computer Science Pathways

Revitalize current pathways and create new pathways that address the ever-changing technological landscape.

Recognize ATCs that offer Computer Science pathways and provide incentives to those ATCs that do not.

ATCs and RCAs offering CS Pathways



Data from [Kentucky K-12 Annual CS Report 2022](#) and [Kentucky's School Report Card](#).

Coding At The Capitol – September 19, 2023



Our Vision

We envision a future where computer science education is an integral part of the K-12 curriculum, providing all students with essential knowledge and skills for success in the modern world.



Thank You

