



**Mohammed Choudhury**  
State Superintendent of Schools

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**TO:** Members of the State Board of Education  
**FROM:** Mohammed Choudhury, State Superintendent of Schools  
**DATE:** September 26, 2023  
**SUBJECT:** Blueprint Deep Dive: College and Career Readiness Study Final Report

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**Purpose**

The purpose of this item is to provide an overview of the Blueprint College and Career Readiness Study conducted by the American Institutes for Research (AIR). The results and recommendations from the final report will be presented.

**Background**

The Blueprint for Maryland’s Future requires MSDE to commission an empirical study of the interim College and Career Readiness (CCR) standard adopted by the Maryland State Board of Education in February 2022. To meet the interim CCR standard, students must achieve a qualifying score on both the state grade 10 English Language Arts test and a high school math test.

In spring 2022, MSDE partnered with the Maryland Assessment Research Center (MARC) at the University of Maryland to complete a short-term quantitative study to explore the relationship between students’ outcomes in high school measures and success in postsecondary coursework. In November 2022, MSDE contracted with the American Institutes of Research (AIR) to conduct a multi-part study of the CCR standard that included 1) a predictive validity analysis of the interim standard to confirm and expand on MARC’s study; and 2) a content and standards alignment analysis to determine the skills and knowledge necessary to succeed in the first year at a community college or 4-year college or university. Results from the predictive validity study were presented to the State Board of Education at the May 2023 meeting and findings from the content and standards alignment analysis were presented at the July 2023 meeting. Following the release of each interim report, MSDE and AIR engaged with a variety of stakeholders from local education agencies and higher education to communicate the findings, answer questions, and gather feedback.

**Executive Summary**

AIR’s final report, which is a combination and update of both interim reports, includes the following key takeaways, within each of the study’s four objectives:

Objective 1. Identify Knowledge and Skills Required to Be College and Career Ready

- Content knowledge considered important for college readiness is covered in the Maryland K–12 content standards.

- Skills for success, including collaboration and healthy work habits, are critical for CCR.
- Top-performing education systems provide formal CCR counseling early in students' journeys and clear options for college and career pathways.

**Objective 2. Assess the Alignment Between Maryland's College and Career Ready Academic Content Standards and Postsecondary Expectations**

- In general, the high school English language arts (ELA), math, and science content standards align to the content expectations of college course content in developmental and first-year credit-bearing courses.
- Maryland's high school ELA and math standards align to content knowledge expectations for certificate-granting programs using two national frameworks that articulate workforce skills.

**Objective 3. Assess How Well the Interim CCR Standard and Alternative Specifications of the Standard Predict Postsecondary Progress**

- The interim CCR standard, utilizing state assessments, correctly classified about half to two-thirds of students as college ready or not college ready at the end of Grade 10.
- Adding an alternative way to meet the CCR standard with high school grade point average (HSGPA) increased the percentage of students who meet the CCR standard and improved accuracy rates for predicting first-year college credits earned.

**Objective 4. Identify Potential Areas of Bias Within Assessments Used to Determine CCR**

- Standardized assessments are frequently subject to cultural bias.
- Inequities exist in students' opportunities to prepare for assessments.

**Action**

No action is required; this information is for discussion only.

**Attachments**

CCR\_FinalReport.pdf

CCR\_FinalReport.ppt



# College and Career Readiness Study Background

MARYLAND STATE BOARD OF EDUCATION | September 26, 2023

Presented By | Matthew Duque, Office of Research, Planning, and Program Evaluation



# Blueprint for Maryland's Future: Requirements

The Blueprint calls for a clear definition of a college and career readiness standard (CCR) and a system of assessments that ensure students are reaching their goals and receiving the support needed. The MSDE has commissioned two separate research studies to define and verify the CCR standard:

- **Exploratory Study**

- MSDE partnered with the Maryland Assessment Research Center (MARC) at the University of Maryland to complete a short-term quantitative study to explore the relationship between students' outcomes in high school measures and success in postsecondary coursework and/or workforce outcomes.

- **Long-Term Study**

- MSDE contracted with the American Institutes for Research (AIR) to 1) confirm and expand upon MARC's **predictive validity study** of the current interim CCR standard and 2) perform a deep **content and standards alignment analysis** to determine the skills and knowledge necessary to succeed in the first year at a community college or 4-year college or university in Maryland.

# Current CCR Interim Standard

The Blueprint requires a new **college and career readiness standard** that allows graduates to succeed in entry-level credit-bearing college courses. The goal is for all students to meet the standard by the end of their 10<sup>th</sup> grade year.

## Current Blueprint Interim Standard Effective Now

A student meets the CCR Standard if they meet or exceed the standards in both English **and** Math:

### English

#### English 10

- **Score 3 or 4** on Fall or Spring MCAP
- Score 4 or 5 on the PARCC
- Score 2 or 3 on early Fall 2021 MCAP

**AND**

### Math

#### Algebra I, Algebra II, or Geometry

- **Score 3 or 4** on Fall or Spring MCAP
- Score 4 or 5 on the PARCC
- Score 2 or 3 on early Fall 2021 MCAP

Or a score of **520 on the Math SAT**

The Maryland State Board of Education adopted the interim standard on February 22, 2022

# CCR Standards: Statutory Context

Before the State Board can set an updated **long-term CCR Standard**, the long-term research study **must first be completed**.

- While the long-term study is being conducted, the **interim CCR standard** is used for **funding calculations**.
- The **current agreements between LEAs and community colleges** may still be used for **community college course placement** during this period.

**After the long-term research study is complete**, the State Board will adopt a CCR standard that “enables the **student to be successful in entry level credit bearing courses** or postsecondary education training at a State community college.”

- **At that point**, “Each **community college** and other open-enrollment public institution of higher education shall **accept for enrollment in credit-bearing courses** any individual who has **achieved college and career readiness** according to the standard adopted by the State Board.”

# Blueprint Requirements and Scope of Research Study

Fulfilling Blueprint requirements, MSDE contracted with AIR to conduct an **empirical study of the skills, knowledge, and abilities needed to succeed in the first year** of Maryland community college coursework. The research is comprised of **two parts:**

- **A quantitative study that:**
  - Measures the **relationship between the interim CCR standard and student readiness to succeed** in entry-level credit-bearing coursework or postsecondary education training.
  - **Explores additional possible measures of student readiness** beyond the interim CCR standard (e.g., **GPA**, course credit attainment, career and technical education (CTE) course credit).
- **A content and standards alignment study that:**
  - Completes a **deep content analysis to determine the levels and types of literacy in reading, writing, and mathematics** that are needed to succeed in entry-level courses and postsecondary training offered at colleges in the state.
  - Explores the **alignment of Maryland College and Career Ready Standards** to the content of entry-level credit-bearing **postsecondary courses and postsecondary training** and to the content of **remedial postsecondary courses**.
  - **Examines top-performing educational systems throughout the world** and consider **potential sources of bias** in assessments used to determine college and career readiness.
  - Gathers perspectives through **focus groups** from a wide range of stakeholders in higher education, K-12, and workforce

Source: Annotated Code of Maryland, Education Article § 7-205.1

# Timeline and Process (1 of 2)

To complete the critical research that will inform the adoption of the CCR standard, MSDE sought out the most qualified researchers in the industry, through a **Competitive Sealed Proposals process**. MSDE released a **Request for Proposals (RFP)** on **May 16, 2022**.

Firms had until July 14, 2022 to submit their proposals.

- **5 proposals were received from researchers across the country.**

An **evaluation committee of MSDE and LEA** staff members evaluated each proposal on its **technical merits**. The committee met with each offeror to discuss their proposal.

- **The technical evaluations were then combined** with the evaluation of the financial offers.

**On November 16, 2022, the Board of Public Works approved** the recommended contract with the **American Institutes for Research (AIR)**, a nonpartisan, not-for-profit research organization.



# Timeline and Process (2 of 2)

**MSDE facilitated the official study kickoff meeting with AIR on December 1, 2022 and serves as a partner during the research study.**

**The interim report on the predictive validity study was released on May 23, 2023 and presented to the State Board of Education.<sup>1</sup>**

**The interim report on the content and standards alignment study was released on July 25, 2023 and presented to the State Board of Education.**

**As specified in the Blueprint, AIR submitted their final research report to the Governor, the Maryland General Assembly, the AIB, and MSDE by the September 1, 2023 deadline.**

<sup>1</sup><https://marylandpublicschools.org/stateboard/Documents/2023/0523/BlueprintDeepDive-CollegeCareerReadinessStandard.pdf>

# Stakeholder Engagement (1 of 2)

Stakeholder engagement for the CCR study consists of four phases:

1. Prior to the start of the study, **MSDE and AIR engaged various stakeholders in the design of the study**, including the Maryland Higher Education Commission, the Maryland Association of Community Colleges, and the University System of Maryland. MSDE and AIR provided office hour sessions for stakeholders to provide input for and ask questions about the study.
2. As part of the study, AIR conducted **focus groups of stakeholders in Maryland from K-12, higher education, and workforce** on their perceptions of college and career readiness and surveyed stakeholders who were unable to attend the focus groups.

# Stakeholder Engagement (2 of 2)

3. Following the release of each interim report, **MSDE and AIR held listening sessions** with stakeholders to gather feedback on the findings of each study. Across 10 sessions, **over 220 people** total attended, including:

- Higher education leaders, including Community College Presidents
- Maryland Association of Community Colleges staff and members
- Maryland Higher Education Commission leadership and staff
- Governor's office staff
- LEA Superintendents
- LEA Assistant Superintendents of Instruction/Chief Academic Officers
- LEA Accountability Coordinators

4. Following the release of the final report, MSDE and AIR will continue to engage with stakeholders to share the study's findings and recommendations and gather feedback.

**RFP# R00B2600072**

# College and Career Readiness Empirical Study

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**Final Report on the Predictive Validity and Content and Standards Alignment Analysis**

Presented to the Maryland State Board of Education

Jordan Rickles, Lauren Ramsay, Jessica Mason, Tori Cirks, Nada Rayyes, Roman Ruiz, Kyle Neering, Mark Lachowicz, Asta Mackeviciene, Katherine Allen, Lillianna Franco Carrera, and Ji Hyun Yang

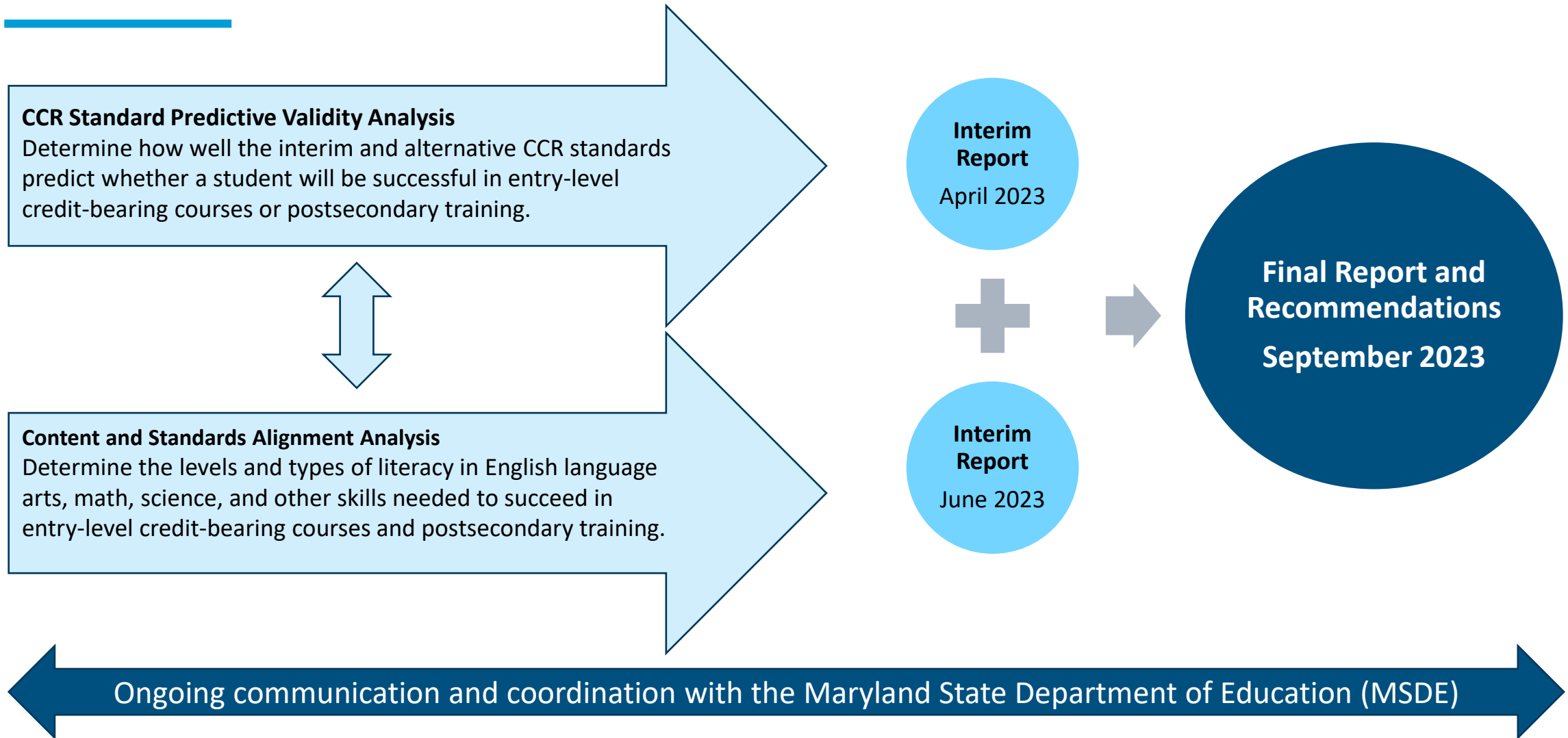
September 26, 2023

# Agenda

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1. High-Level Study Overview
2. Preview of Key Takeaways by Study Objective
3. Approach and Findings by Study Objective:
  - a. Knowledge and Skills Required to be College and Career Ready
  - b. Alignment Between Maryland's Content Standards and Postsecondary Expectations
  - c. Potential Areas of Bias Within Assessments Used to Determine College and Career Readiness (CCR)
  - d. Predictive Validity of the Interim CCR Standard and Alternative Specifications
4. Policy Recommendations and Suggestions for Future Research
5. Potential Implications for a CCR Standard

# Study Overview



# Study Objectives

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**Objective 1.** Identify knowledge and skills required to be college and career ready.



**Objective 2.** Assess the alignment between Maryland's College and Career Ready Academic Content Standards and postsecondary expectations.

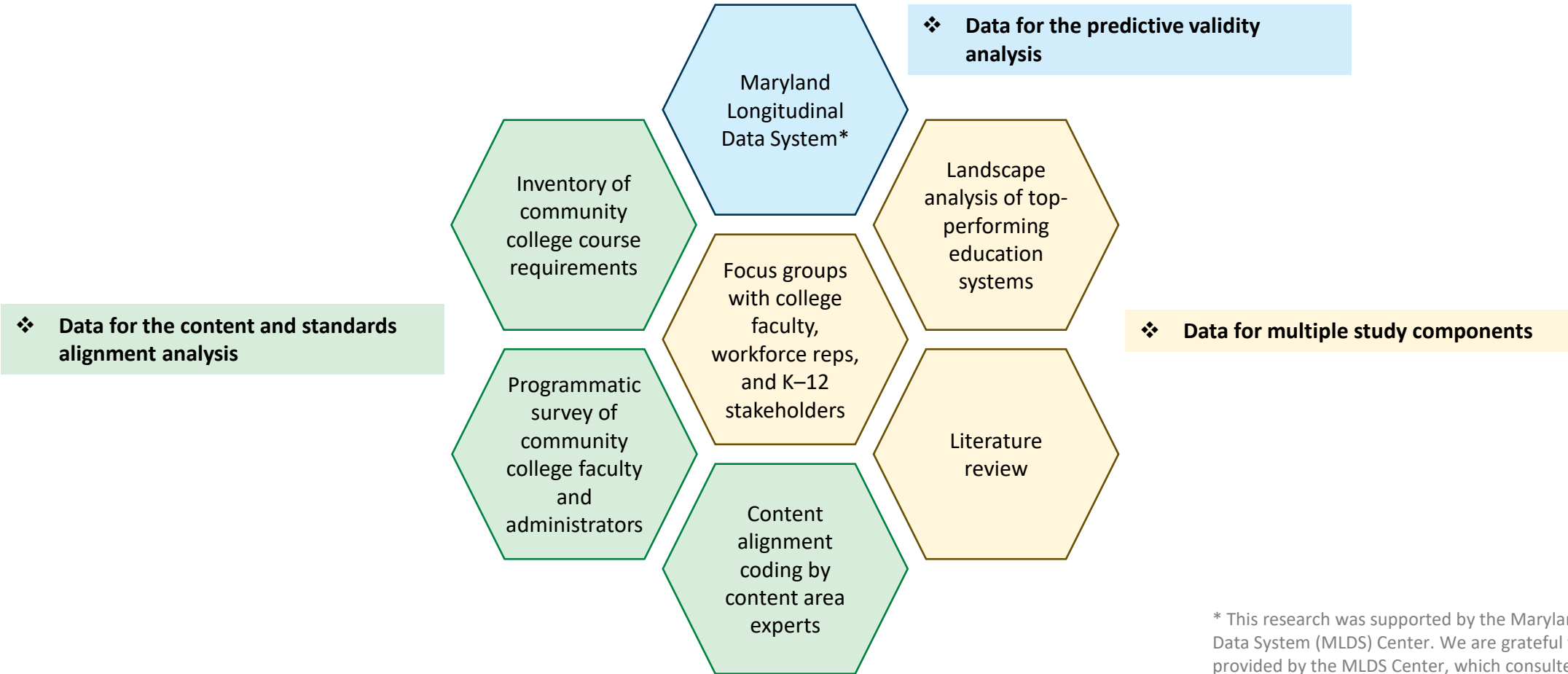


**Objective 3.** Assess how well the interim CCR standard and alternative specifications of the standard predict postsecondary progress.



**Objective 4.** Identify potential areas of bias within assessments used to determine CCR.

# Primary Data Sources



\* This research was supported by the Maryland Longitudinal Data System (MLDS) Center. We are grateful for the assistance provided by the MLDS Center, which consulted with us on the study. All opinions belong to the authors and do not represent the opinion of the MLDS Center or its partner agencies.



# Stakeholder Engagement

2023

January	February	March	April	May	June	July	August	September
<ul style="list-style-type: none"> <li>• MLDS Center Research and Policy Board</li> <li>• MLDS Center Governing Board members and staff</li> <li>• MACC Council of Presidents</li> <li>• MHEC Segmental Group</li> <li>• USM provosts</li> <li>❖ Faculty at Maryland IHEs: 5 focus group sessions + follow-up survey</li> </ul>			<ul style="list-style-type: none"> <li>❖ Workforce representatives: 2 focus group sessions + follow-up survey</li> <li>❖ Maryland community college faculty and administrators: Programmatic survey</li> <li>❖ K-12 instructional leaders: 1 focus group session + follow-up survey</li> <li>• MHEC representatives</li> <li>• LEA chief academic officers</li> </ul>			<ul style="list-style-type: none"> <li>• MHEC representatives</li> <li>• MACC presidents</li> <li>• MHEC secretary</li> <li>• Governor’s Office</li> <li>• LEA superintendents</li> <li>• Prince George’s Community College president</li> <li>• LAC representatives</li> </ul>		

- ❖ **Formal engagement**
- Informal engagement

IHE = Institution of Higher Education  
 LAC = Local accountability coordinators  
 LEA = Local education agency  
 MACC = Maryland Association of Community Colleges

MHEC = Maryland Higher Education Commission  
 MLDS = Maryland Longitudinal Data System  
 USM = University System of Maryland

# Preview of Key Takeaways by Study Objective

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# Key Takeaways

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## **Objective 1. Identify knowledge and skills required to be college and career ready.**

- Content knowledge considered important for college readiness is covered in the Maryland K–12 content standards.
- Skills for success, including collaboration and healthy work habits, are critical for college and career readiness.
- Top-performing education systems provide formal CCR counseling early in students' journeys and clear options for college and career pathways.

# Key Takeaways

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## **Objective 2. Assess the alignment between Maryland’s College and Career Ready Academic Content Standards and postsecondary expectations.**

- In general, Maryland’s high school English language arts (ELA), math, and science content standards align to the content expectations of college course content in developmental and first-year credit-bearing courses.
- Maryland’s high school ELA and math standards align to content knowledge expectations for certificate-granting programs using two national frameworks that articulate workforce skills.

# Key Takeaways

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- **Objective 3. Assess how well the interim CCR standard and alternative specifications of the standard predict postsecondary progress.**
  - The interim CCR standard, utilizing state assessments, correctly classified about half to two-thirds of students as either college ready or not college ready at the end of Grade 10.
  - Adding an alternative way to meet the CCR standard with the interim criteria or high school grade point average (HSGPA) increased the percentage of students who meet the CCR standard and improved accuracy rates for predicting first-year college credits earned.

# Key Takeaways

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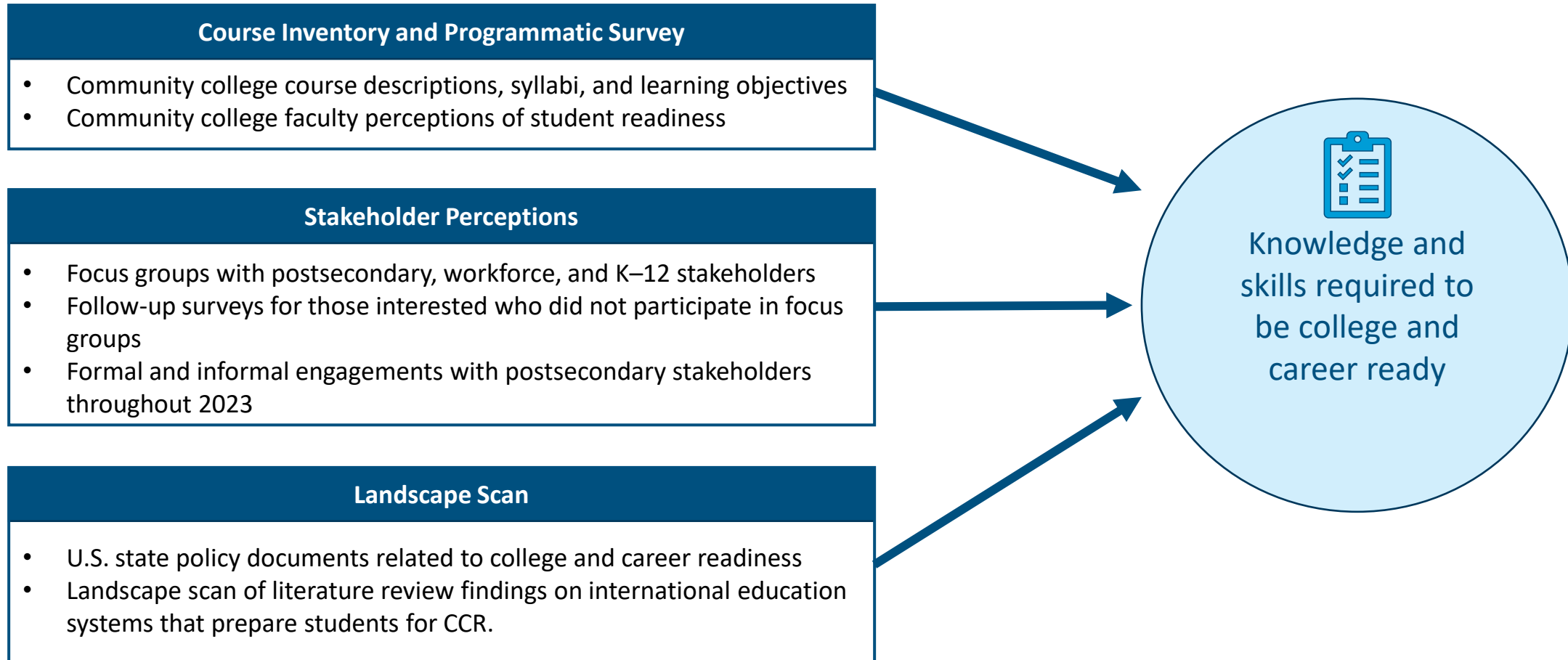
## **Objective 4. Identify potential areas of bias within assessments used to determine CCR.**

- Standardized assessments are frequently subject to cultural bias.
- Inequities exist in students' opportunities to prepare for assessments.

# Identify Knowledge and Skills Required to Be College and Career Ready

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# Identifying CCR Knowledge and Skills: Data Sources

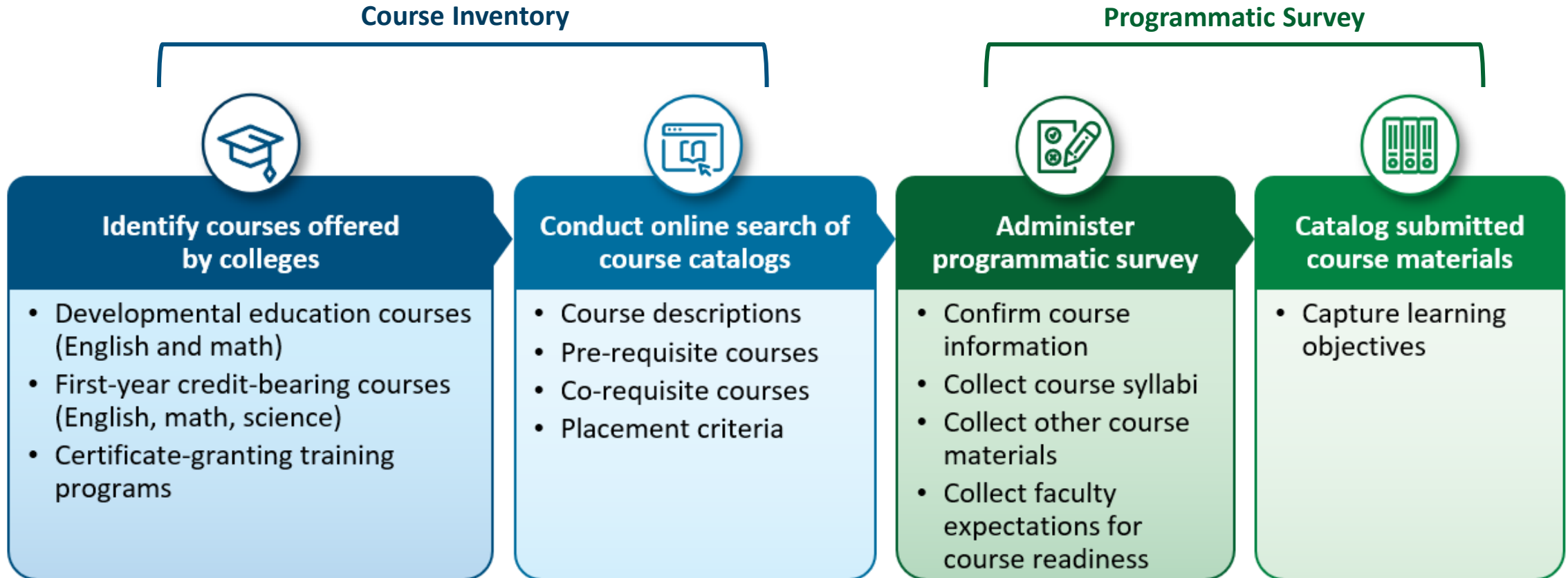




# Course Inventory and Programmatic Survey

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# Course Inventory and Programmatic Survey Approach



# Course Inventory and Programmatic Survey Approach

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## Course inventory

- It covered publicly available information, including **course descriptions, ACCUPLACER score requirements, and pre- and co-requisites** from all 16 Maryland community colleges.

## Programmatic survey participation

- We worked with MHEC to share the survey invitation to the presidents of all 16 community colleges, who then distributed the survey link to those at their colleges involved with designing and teaching the identified entry-level and developmental courses.
- Community college responses were provided most often by **faculty (43%)**, followed by **administrators (32%)**, and **department chairs (24%)**.












# Course Inventory and Programmatic Survey Findings

Course type	Courses identified in course inventory	Syllabi received from programmatic survey	Content emphasis
Developmental ELA	73	25	Producing clear, coherent, organized writing
First-year credit-bearing ELA	60	18	Producing clear, coherent, organized writing; gathering source information and integrating that information appropriately
Developmental math	43	41	Algebra, followed by functions
First-year credit-bearing math	34	42	Algebra, functions, number and quantity, geometry, and statistics
First-year credit-bearing science	31	18	Obtaining, evaluating, and communicating information; planning and carrying out investigations

# Conceptual Frameworks

Conceptual frameworks synthesize key information about what is expected of students and what they will need to know to succeed in postsecondary education. Data sources used to develop these frameworks include:

- Community college course descriptions
- Community college course syllabi and other course materials
- Stakeholder input via programmatic survey, focus groups, and follow up surveys

Academic and technical content		Employability skills	
	<ul style="list-style-type: none"> <li>• Writing conventions include content related to grammar, punctuation, spelling, sentence structure, paragraphing, and other mechanics of writing.</li> </ul>		<ul style="list-style-type: none"> <li>• Technology use includes content related to applying information technology appropriately and effectively.</li> </ul>
	<ul style="list-style-type: none"> <li>• Idea/thesis generation includes content related to developing an argument or organizing principle in which to ground writing products.</li> </ul>		<ul style="list-style-type: none"> <li>• Information use includes content related to understanding, evaluating, and using a variety of information.</li> </ul>
	<ul style="list-style-type: none"> <li>• Research includes content related to conducting and documenting research used to inform writing.</li> </ul>		<ul style="list-style-type: none"> <li>• Critical thinking includes content related to analyzing, reasoning, solving problems, planning, organizing, and making sound decisions.</li> </ul>
	<ul style="list-style-type: none"> <li>• Text analysis includes content related to reading and analyzing texts that are used to inform writing.</li> </ul>		<ul style="list-style-type: none"> <li>• Communication includes content related to communicating effectively with others in multiple formats.</li> </ul>
	<ul style="list-style-type: none"> <li>• The writing process includes content related to the key steps in writing, as well as collecting and incorporating feedback.</li> </ul>		
	<ul style="list-style-type: none"> <li>• Rhetorical knowledge includes content related to audience and purpose and applying that knowledge to produce the appropriate type of writing.</li> </ul>		
	<ul style="list-style-type: none"> <li>• Text summarization includes content related to annotating and summarizing college-level texts.</li> </ul>		

# Conceptual Frameworks: Developmental English

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**Developmental English college courses focus on the following:**

- Using the conventions of standard written American English to establish a clear purpose in writing
- Using information from texts and research to support ideas
- Adapting writing to suit a range of audiences
- Gaining an understanding of the writing process by incorporating feedback

# Conceptual Frameworks: Developmental Math

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**Developmental math college courses focus on strengthening fundamental concepts in arithmetic, algebra, geometry, and statistics:**

- Basic operations
- Understanding numerical relationships
- Solving equations and inequalities
- Working with geometric concepts
- Analyzing and interpreting data

# Programmatic Survey Findings

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- **Postsecondary stakeholders reported that students' ELA readiness is stronger for the "English language" component of the ELA standards than it is for other components**
  - More than half of respondents said that 81% or more of their students were college ready in "English language."
  - Only 30% of the respondents reported that 81% or more of their students were college ready in "speaking and listening."
- **Overall, postsecondary stakeholders' perceptions indicate that their students are not adequately prepared in math and scientific thought.**
  - Less than a quarter of survey respondents said that 81% or more of their students were college ready in algebra.
  - Just 8% of respondents reported that 81% or more of their students were college ready in precalculus and scientific thought.



# Postsecondary Stakeholder Engagement and Perspectives

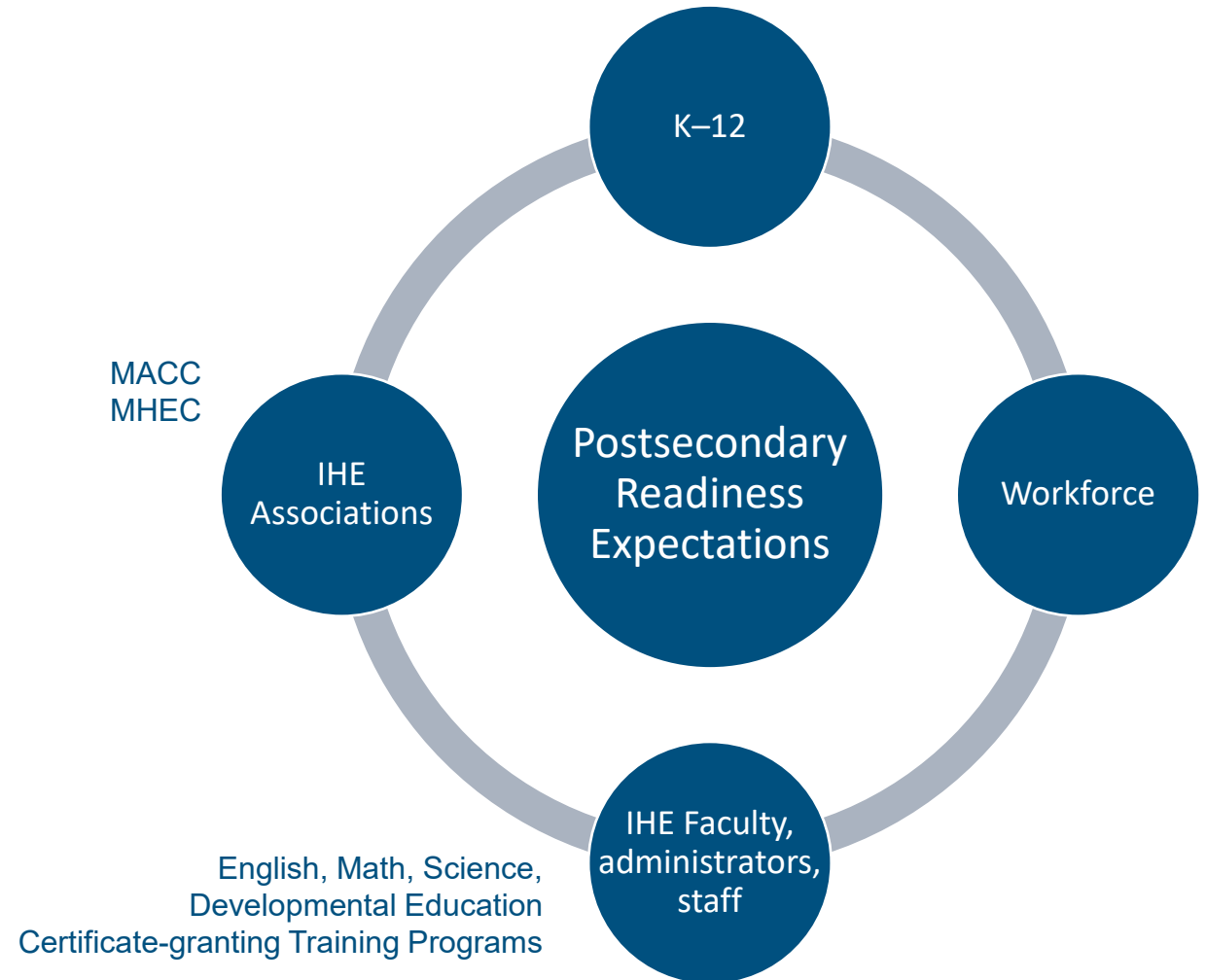
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# CCR Knowledge and Skills: Stakeholder Engagement

Goals of focus groups with key postsecondary, K–12, and workforce stakeholders:

- Add nuance to the expectations articulated in course descriptions, syllabi, and other written materials
- Identify areas of alignment and misalignment between postsecondary stakeholders
- Capture insights on bias in readiness assessments that are currently used

Findings from the focus groups were triangulated across stakeholder groups to inform conceptual frameworks.



# Focus Group Participation and Collaborators



## Postsecondary Faculty

- First-year English courses
- First-year math courses
- First-year science courses
- Developmental courses
- Career and technical education (CTE)

→ MHEC facilitated introductions with Maryland postsecondary sectoral representatives; those representatives received the focus group invitations and distributed to their institutions.

→ **30 total participants**

- 16 faculty from a Maryland community college
- 12 faculty from a Maryland public 4-year institution
- 2 faculty from a Maryland state-aided independent institution



## Workforce Representatives

- Trade sector
- Non-trade sector

→ MSDE's Office of College and Career Pathways distributed the focus group invitation to employers.

→ **4 total participants**



## K-12 Instructional Leaders

- ELA, math, science, and CTE coursework

→ Maryland's K-12 Content Collaboratives distributed the focus group invitation to K-12 teachers, instructional leaders, and administrators.

→ **7 total participants**

*To give more people an opportunity to inform the findings, we sent a short open-ended survey to those who expressed interest in participating in a focus group but were not selected.*

# Focus Group Findings

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**Many incoming students struggle with college-level reading, writing, precalculus, and scientific thought.**

- ELA stakeholders reported that critical reading and writing are areas where students are not performing at college level.
- Math and science stakeholders reported that students struggle with scientific thinking and algebra.

**Student supports and scaffolding play an important role in ensuring incoming students are college ready.**

*“Some of our students are being held back by their ability to read and write.”*

# Focus Group Findings

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Postsecondary stakeholders view skills for success as an important component of determining college and career readiness.

- Skills like self-direction, time management, critical thinking, and social-emotional factors, should be considered alongside academic skills in determining college and career readiness.
- The extent to which students have developed these skills can be a source of inequity for students despite placement in courses based on academic measures.

*“I feel like the biggest barrier when students are successful or not has to do with their noncognitive skills, their ability to manage time to meet deadlines, to be able to transition from a really more structured environment of high school to having the free time.”*

# Focus Group Findings

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Postsecondary stakeholders point to the need for multiple measures for determining college and career readiness.

- High school GPA, ACCUPLACER, ALEKS, and student self-assessments are common placement mechanisms.
- Stakeholders cautioned against using only these measures, especially given their perspectives on the importance of skills for success.

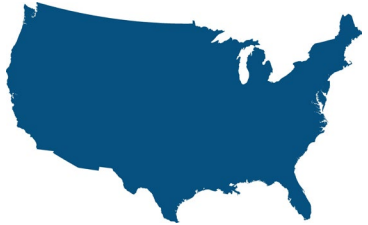
*“We’ve been doing a lot of research with our ALEKS and placement scores. . . . What we see is that there is very little correlation between placement score and success in a class.”*

# Landscape Scan of Top Performing Education Systems

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# Landscape Scan Approach

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## **Analysis of top-performing states: Colorado, Connecticut, Massachusetts**

- Initial selection informed by the following:
  - ACT and SAT college and career readiness benchmarks
  - National Assessment of Educational Progress performance in reading and math
  - Postsecondary degree attainment
- Final selections determined in consultation with MSDE

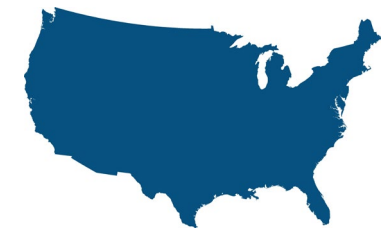


## **Analysis of top-performing countries: Estonia, Germany, Japan, and Singapore**

- Initial selection informed by the following:
  - Trends in International Mathematics and Science Study and Programme for International Student Assessment performance
  - Ethnic diversity
  - Equity in educational outcomes
- Final selections determined in consultation with MSDE



# Landscape Scan Findings: U.S. States

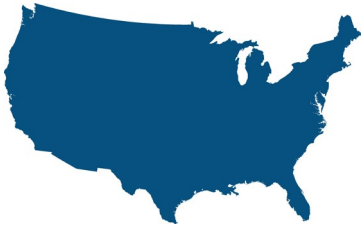


## Definitions of CCR vary across top-performing states.

- Multiple options for demonstrating CCR:
  - Colorado and Connecticut have multiple ways in which students can demonstrate CCR
  - Colorado allows LEAs to select at least one assessment from a menu of options
  - Colorado and Massachusetts have individualized options (e.g., capstone project, appeals process) in lieu of passing a standardized test for high school graduation
- None of the three states use HSGPA as an indicator of students' CCR

State	College and career readiness assessments
Colorado	<ul style="list-style-type: none"> <li>• Students must demonstrate readiness according to at least one of a set of available measures in reading, writing, and communicating and in math. LEAs can select from a menu of assessment options (e.g., SAT/ACT, AP, ACCUPLACER, concurrent enrollment, capstones, industry certificates, standards-based grading)</li> </ul>
Connecticut	<ul style="list-style-type: none"> <li>• SAT: 480 on evidence-based reading and writing; 530 on math</li> <li>• ACT, on at least 3 of 4 exams: English score of 18, reading score of 22, math score of 22, and/or science score of 23</li> <li>• AP Exam: score of 3 or higher</li> <li>• International Baccalaureate Exam: score of 4 or higher</li> <li>• College course credits: 3 or more college credits with a C or better grade</li> </ul>
Maryland (Interim CCR Standard)	<ul style="list-style-type: none"> <li>• MCAP or PARCC: Score at or above the proficient (or met expectations) performance level in English and math</li> <li>• SAT: 530 on math</li> </ul>
Massachusetts	<ul style="list-style-type: none"> <li>• No required assessment for students to demonstrate college and career readiness but passing scores on the state's Grade 10 ELA and math assessments, as well as one science test, are part of the state's high school graduation requirements</li> <li>• State-recommended program of study (MassCore) intended to align high school coursework with college and workforce expectations</li> <li>• ACT WorkKeys National Career Readiness Certificate</li> </ul>

# Landscape Scan Findings: U.S. States



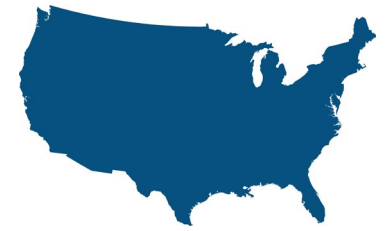
**None of the focal states use CCR measures for high-stakes decisions regarding student educational opportunities.**

- CCR measures are primarily used for district and school accountability
- For Colorado and Massachusetts, assessments are part of the high school graduation requirements
- None of the three states use CCR assessments to determine which students can access certain courses or postsecondary pathways in high school

State	How assessments are used
Colorado	<ul style="list-style-type: none"> <li>• District and school accountability</li> <li>• Part of high school graduation requirement</li> </ul>
Connecticut	<ul style="list-style-type: none"> <li>• District and school accountability</li> </ul>
Maryland (Interim CCR Standard)	<ul style="list-style-type: none"> <li>• District and school accountability</li> <li>• Additional uses under development</li> </ul>
Massachusetts	<ul style="list-style-type: none"> <li>• District and school accountability</li> <li>• Part of high school graduation requirement</li> </ul>

# Landscape Scan Findings: U.S. States

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**Top-performing states provide formal college and career readiness counseling to students before Grade 10 and an easily accessible college and career readiness plan.**

- **Colorado**
  - **Individual Career and Academic Plan:** Multiyear process that guides students and families in the exploration of career, academic, and postsecondary opportunities
  - **MyColoradoJourney:** Online tool that helps job seekers and students get connected to jobs, education planning, and support resources
- **Massachusetts**
  - **MyCAP:** Multiyear process through which students, school staff/teachers, and parents design an “authentic post-secondary plan” and that documents students’ learning and can serve as an electronic portfolio
- **Connecticut**
  - **Student Success Plan:** Individualized student-driven plan beginning in Grade 6

# Landscape Scan Findings: Countries

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- **Top-performing countries offer multiple rigorous tracks.**
  - Vocational or technical tracks are among several options for upper secondary school leading to a postsecondary career, with specific sets of requirements for completing each secondary track so that it feeds directly into the corresponding career pathway.
- **Technical secondary programs are high quality and regulated centrally.**
  - Technical or vocational programs in the focal countries are rigorous and effective for preparing students for the workforce. Graduates from such programs are generally able to find success in their fields and earn high incomes.
- **Postsecondary readiness consists of academic and nonacademic skills.**
  - Although the term *college and career readiness* is not explicitly used in the four focal countries, their educational systems effectively prepare most students for academic or technical career pathways.
  - To successfully complete secondary school, students in these countries must master academic and life skills.

# Key Takeaways From Knowledge and Skills Analysis

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## Identify knowledge and skills required to be college and career ready.

- Content knowledge considered important for college readiness is covered in the Maryland K–12 content standards.
- Skills for success, including collaboration and healthy work habits, are critical for college and career readiness.
- Top-performing education systems provide formal CCR counseling early in students' journeys and clear options for college and career pathways.

# Main Limitations of Knowledge and Skills Analysis

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- Course inventory was based on information about courses that was publicly available via community college websites and course information provided via the programmatic survey, which may not capture all aspects of course content expectations.
- The focus groups were designed to focus on expectations for college and career readiness, primarily gathering perspectives from postsecondary stakeholders, especially community colleges. Future studies may consider deeper engagement with all postsecondary institution types as well as with workforce and K–12 stakeholders.
- Drawing comparisons with international education systems is challenging due to fundamental differences between these countries and the United States and the state of Maryland.

# Assess the Alignment Between Maryland's College and Career Ready Academic Content Standards and Postsecondary Expectations

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# Approach for the Alignment Analysis

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# Assessing Alignment

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**Conduct an alignment and gap analysis** to identify areas of alignment and misalignment between Maryland College and Career Readiness Standards (MCCRS) and postsecondary content and expectations.

**Objective:** Assess the extent to which MCCRS for academic content aligns with postsecondary expectations in (1) entry-level credit-bearing ELA, math, and science courses; (2) developmental ELA and math courses; and (3) certificate-granting workforce training programs.

- **Step 1. Compile review materials (conceptual frameworks, MCCRS).**
- **Step 2. Develop qualitative alignment index.**
- **Step 3. Code alignment of standards.**
- **Step 4. Analyze alignment ratings and justifications.**

# Postsecondary Courses Included in the Analysis

## English

- **Developmental English:** Developmental courses focused on both reading and writing
- **First-Year Credit-Bearing English:** 100-level English composition courses without prerequisites

## Math

- **Developmental Math:** Courses focused on foundations and fundamentals and pre-algebra
- **First-Year Credit-Bearing Math:** 100-level math courses focused on foundations, algebra, statistics, and precalculus without prerequisites

## Science

- **First-Year Credit-Bearing Science:** 100-level science courses focused on biological and physical science without prerequisites

## Certificate-Granting Training Programs

- **Top certificate-granting programs** based on Maryland Association of Community Colleges Workforce Training Dashboard
- O\*NET Content Model and Employability Skills Framework

**Note:** Course expectations for these courses vary across colleges.

# High School Content Standards Included in the Analysis

## ELA

- Grades 9–10 ELA/Literacy Standards
- Grades 9–10 Disciplinary Literacy Standards

## Math

- Algebra I
- Algebra II
- Geometry
- Statistics

## Science

- Disciplinary Core Ideas for Life Science: High School Grade Band Progressions
- Disciplinary Core Ideas for Physical Science: High School Grade Band Progressions

## Career and Technical Education

- Maryland’s Standards for Mathematical Practice
- Maryland’s Standards for Science and Engineering Practices

# General Process Used to Determine Alignment

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## Content Reviewers

Reviewed conceptual frameworks and associated materials, along with MCCRS.



Determined an alignment rating for both content and rigor.



Wrote brief rationale for the rating.

## AIR Research Team

Reviewed and aggregated ratings.



Wrote analysis of findings.

# Dimensions of Alignment

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## Content

The extent to which the postsecondary course content includes clear and sufficient language to suggest that the college courses cover the same content described in the high school standard

## Rigor

The extent to which the postsecondary course content describes a lower, similar, or higher level of cognitive expectation than the high school standard

# Content Alignment Ratings

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## Standards aligned

Course content includes clear and sufficient language to suggest that the college courses cover the same or similar content described in the high school standard.

## Standards partially aligned

Course content includes clear and sufficient language to suggest that the college courses cover some or a little of the same content described in the high school standard.

## Not addressed in college course

Course content does not include any language suggesting the college courses cover the same content described in the high school standard.

# Rigor Alignment Ratings

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## Higher in College Course

The language in the college course content describes a higher level of cognitive demand than the high school standard.

## Similar to College Course

The language in the college course content describes a similar level of cognitive demand than the high school standard.

## Lower in College Course

The language in the college course content describes a lower level of cognitive demand than the high school standard.

## Not addressed in college course

Course content does not include any language suggesting the college courses cover the same content described in the high school standard.

# Expected Nonalignment

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High School  
Standards Not  
Covered in  
Postsecondary  
Course Content

**Expected**

**Unexpected**

Maryland's General Education Requirements for Public Institutions specifies English composition as meeting the postsecondary English requirement. Given the focus on writing, it might be expected that high school standards focused on literature would not be covered in course content.

**Nonalignment should not be automatically interpreted as a negative finding.**



# Example Alignment Ratings

## High School ELA Standard W.9–10.5.

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standards  
aligned

**Content Alignment Rating:** Aligned with college course content expectations.

- *Rationale:* Reviewers noted that college course content had an explicit emphasis on rhetorical knowledge and the writing and revision process.

Similar to  
College  
Course

**Rigor Alignment Rating:** Similar to college course content expectations.

- *Rationale:* Reviewers viewed the level of the high school writing content as comparable to developmental college course content.

# Example Alignment Ratings

## High School ELA Standard W.9–10.6.

Use technology, including the internet, to produce, publish, and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.

Standards  
partially  
aligned

**Content Alignment Rating:** Partially aligned with college course content expectations.

- *Rationale:* Reviewers found minimal mentions of technology in college course content; and most often when mentioned, it was in the context of technology use for the course rather than for writing. Use of technology for writing was implied but not explicit.

Not  
addressed

**Rigor Alignment Rating:** Not addressed in college course.

- *Rationale:* Content regarding use of technology for writing was limited in college courses, so rigor could not be assessed.

# Findings From the Alignment Analysis

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# Findings From ELA Analysis



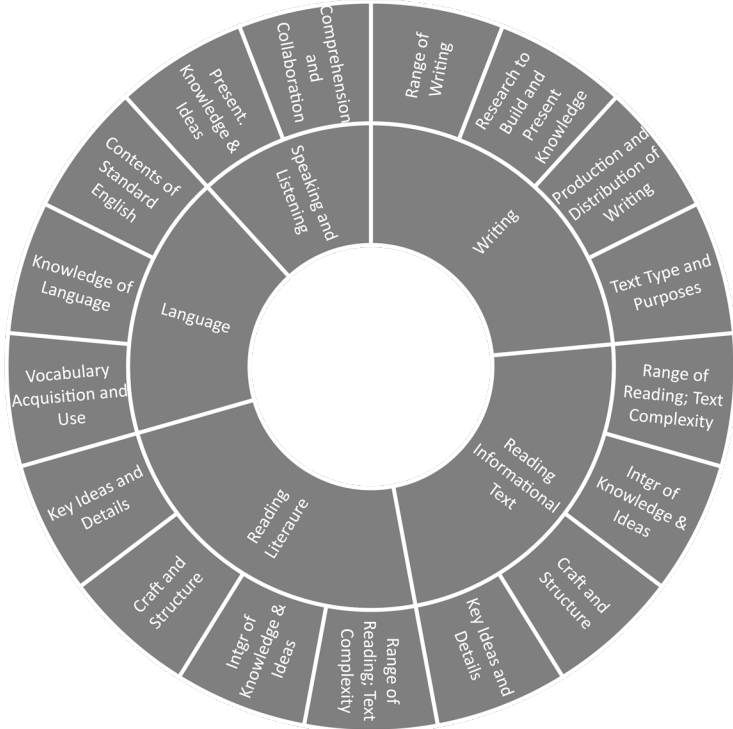
- 42 college and career readiness ELA standards across 5 strands
- 7 content expert raters

In general, the **ELA high school content standards that students must meet at the end of Grade 10 align to the content expectations of postsecondary developmental English and first-year credit-bearing English courses.**

- For both developmental and first-year credit-bearing ELA courses, the **Writing and Language** strands of the MCCRS for ELA had the highest level of alignment to postsecondary course content, followed by **Reading Informational Text**.
- The rigor of developmental courses is most often at similar or lower expectations than those found within the Grades 9–10 ELA standards; rigor in first-year credit-bearing ELA was most often at similar or higher expectations than the high school standards.

# Developmental English: Content Alignment

## Maryland ELA high school content standards



We started with the content standards in the MCCRS intended for high school courses.

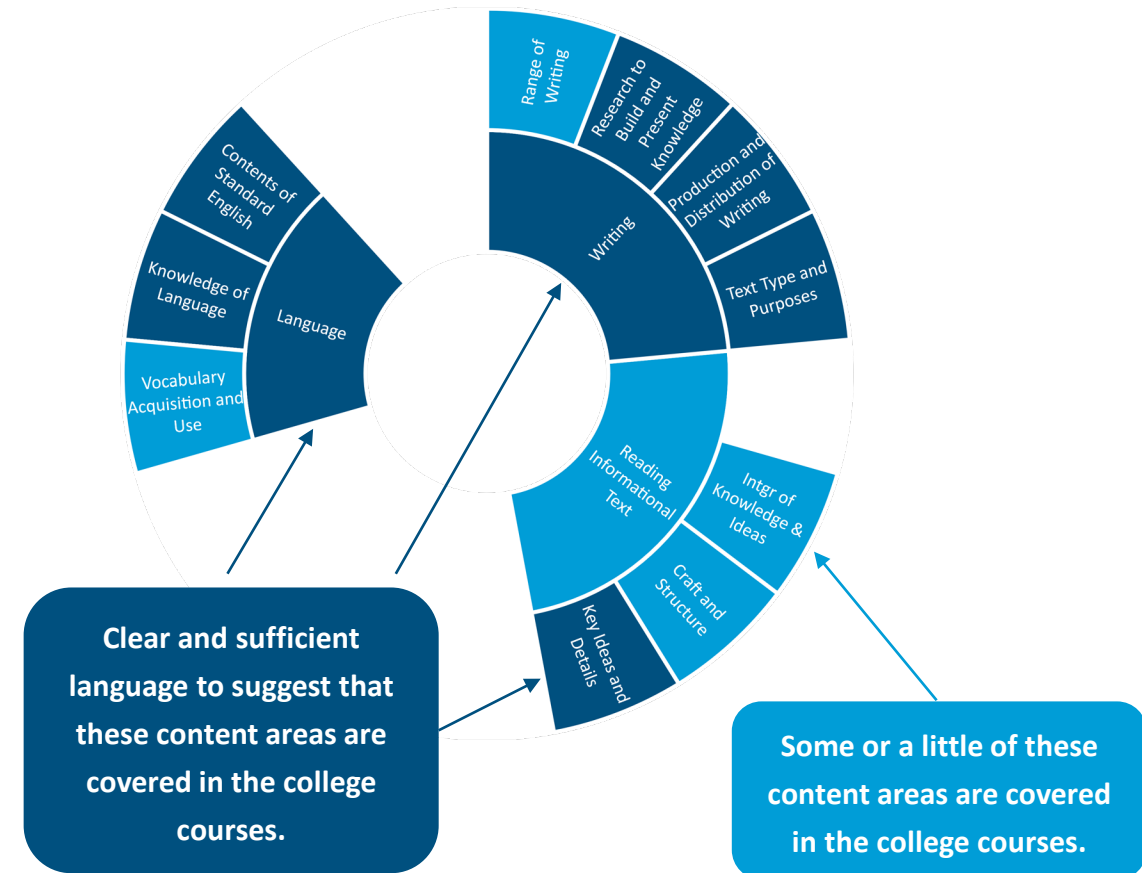
- The inner circle of the graphic shows the Maryland high school content standards strands (or domains)
- The outer circle shows the high school content standards clusters.

# Developmental English: Content Alignment

Then we examined the content expectations for entry-level college courses (developmental English in this example).

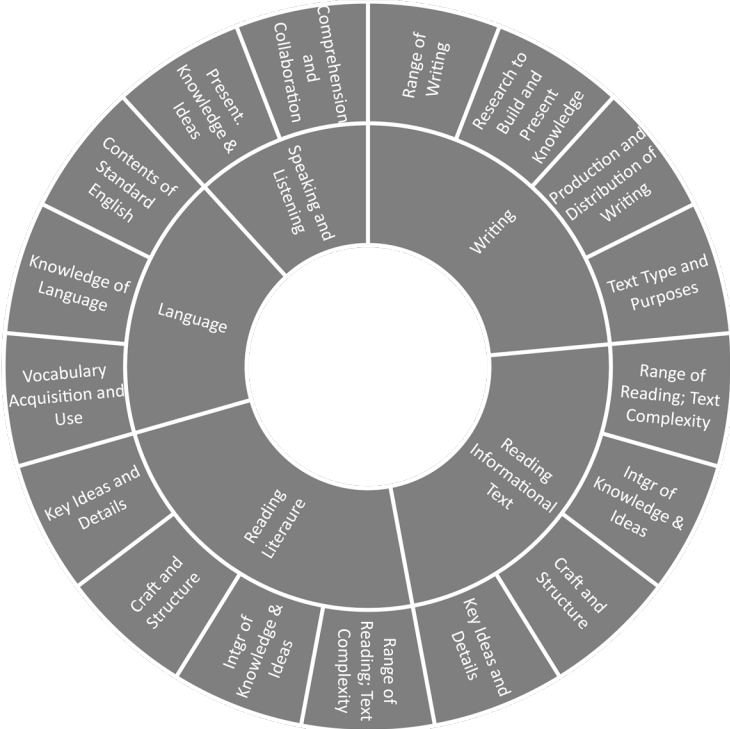
- We categorized the content expectations based on the MCCRS strands and content clusters.
- Some high school content standards are not covered in the postsecondary courses.

## Postsecondary Developmental English content expectations



# Developmental English: Content Alignment

Maryland ELA high school content standards

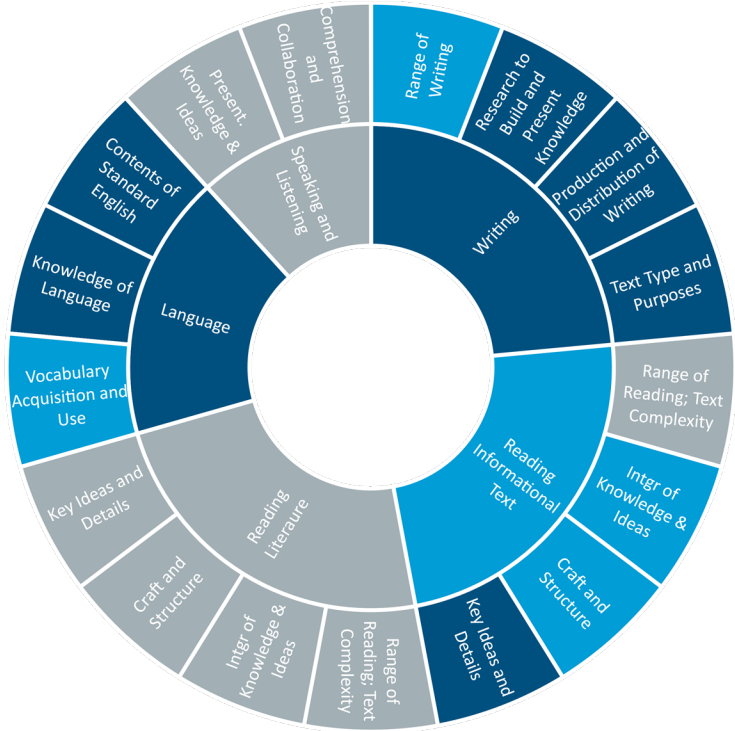


Postsecondary Developmental English content expectations



# Developmental English: Content Alignment

## Maryland ELA high school content standards



**Standards aligned**

Course content includes clear and sufficient language to suggest that the college courses cover the same or similar content described in the high school standard.

**Standards partially aligned**

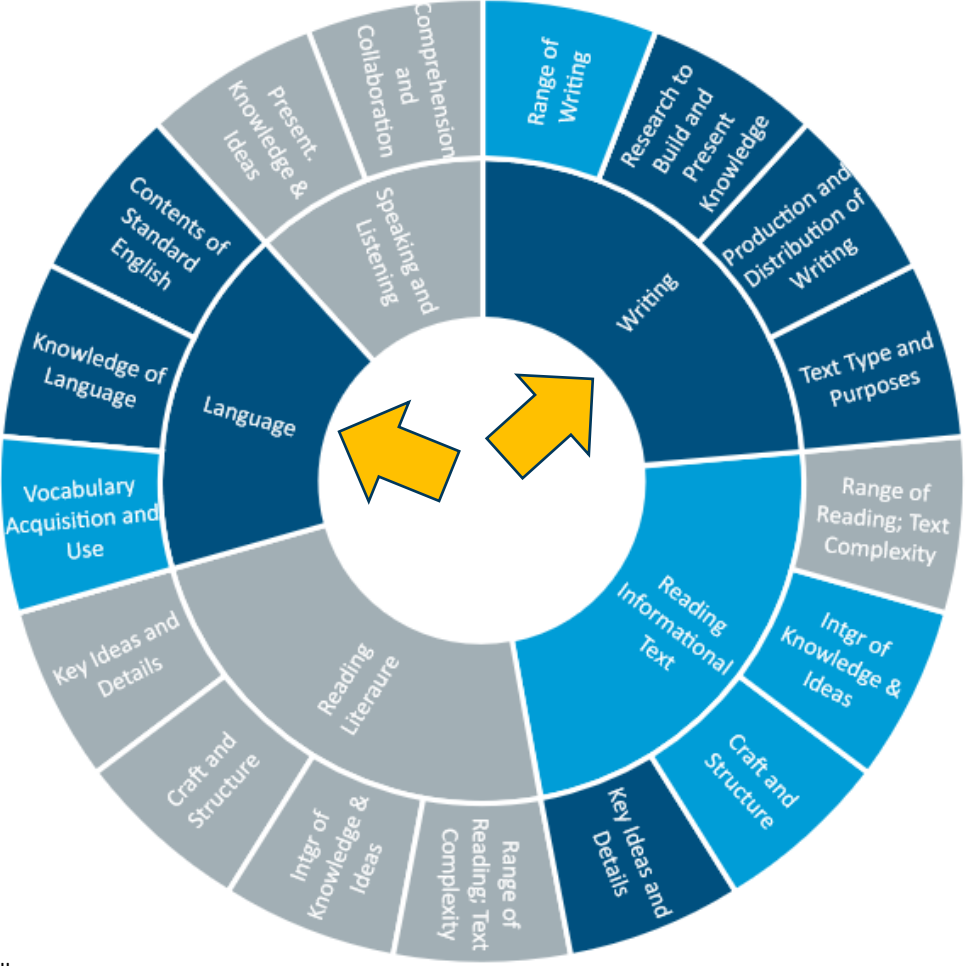
Course content includes clear and sufficient language to suggest that the college courses cover some or little of the same content described in the high school standard.

**Not addressed in college course**

Course content does not include any language suggesting the college courses cover the same content described in the high school standard.



# Developmental English: Content Alignment



**Alignment with College Course Content**

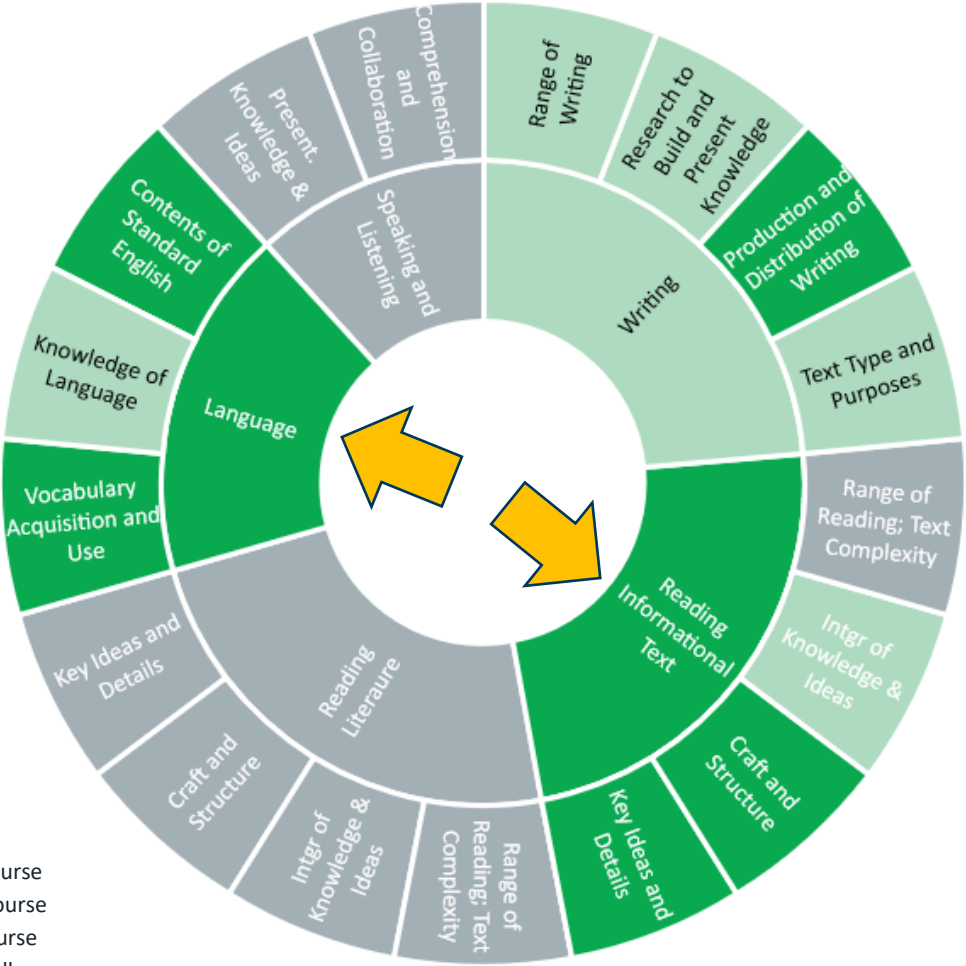
- Aligned
- Partially aligned
- Not addressed in college course



High school content standards align with developmental English course expectations, especially for writing and language content.

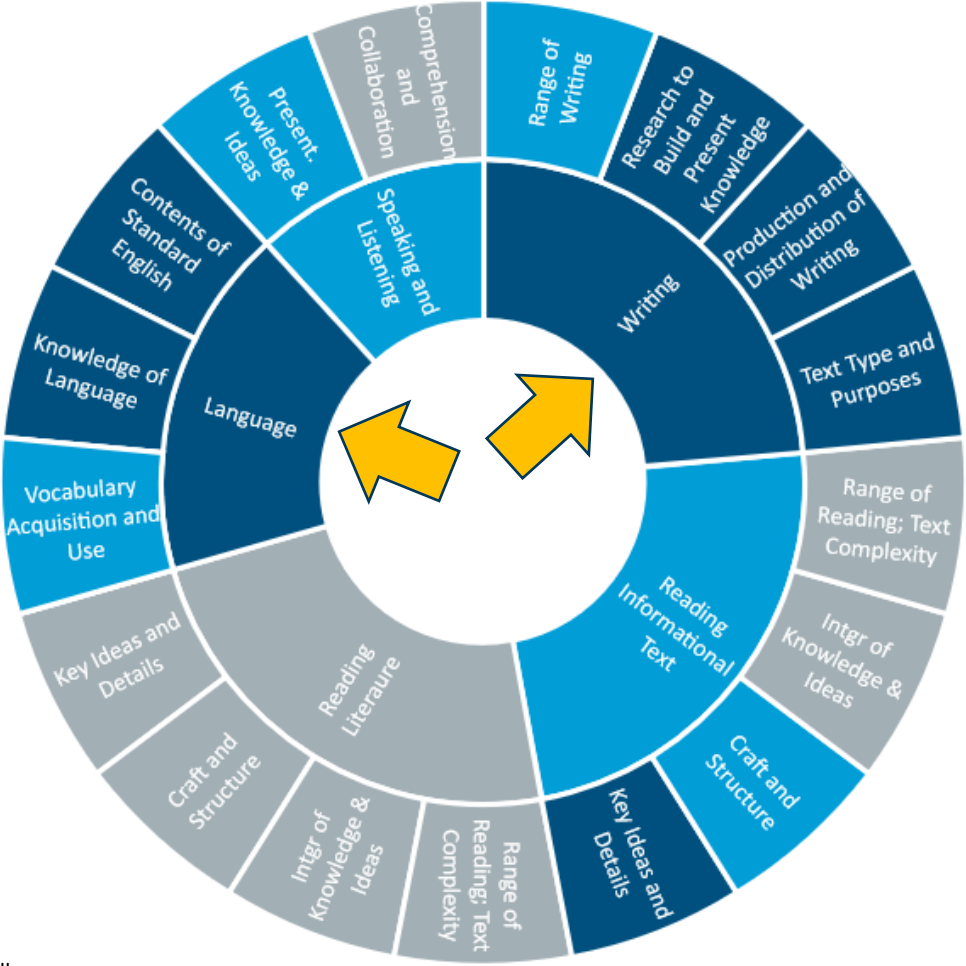
Standards not addressed in developmental English courses are expected, given the focus of English Composition courses on expository and academic writing.

# Developmental English: Rigor Alignment



Rigor in developmental English courses reflects similar or lower cognitive demand than high school content standards, which is consistent with the goal of developmental courses: to build on or refresh basic skills.

# First-Year Credit-Bearing English: Content Alignment



Alignment with College Course Content

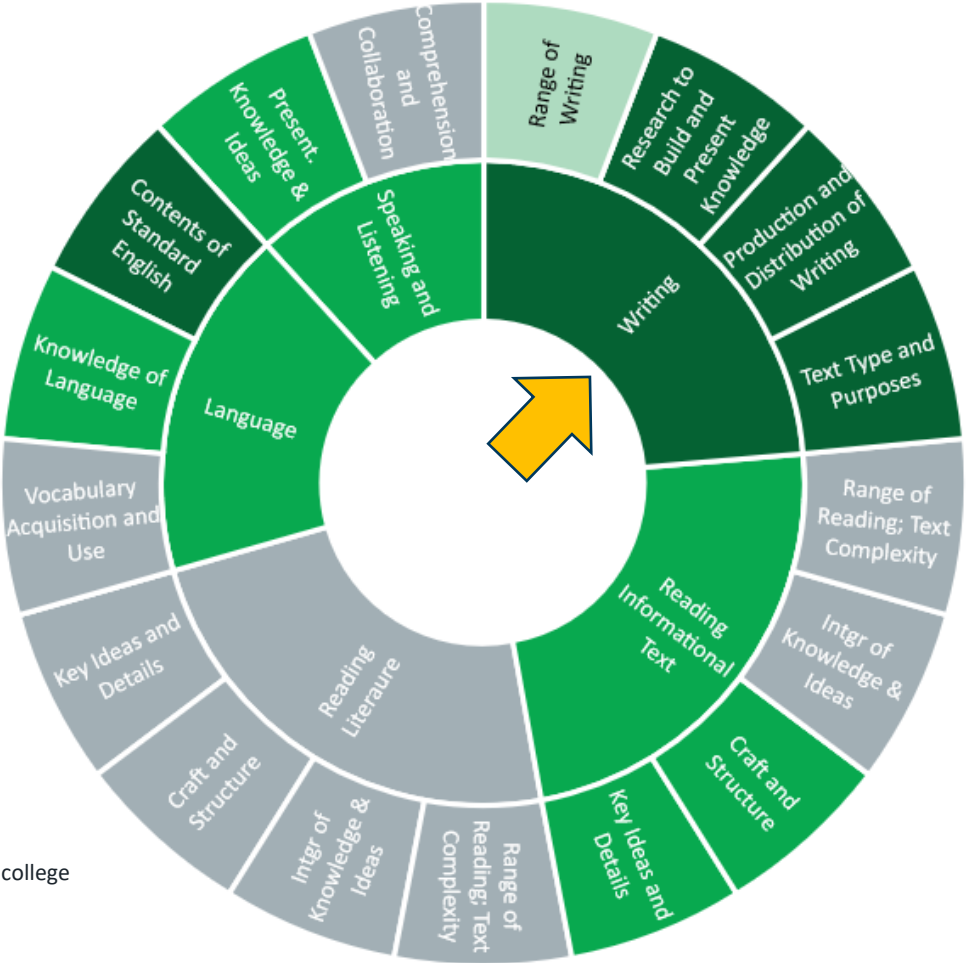
- Aligned
- Partially aligned
- Not addressed in college course



High school content standards align with first-year credit-bearing English course expectations, especially for writing and language content.

Standards not addressed in first-year credit-bearing English courses are expected given the focus of English Composition courses on expository and academic writing.

# First-Year Credit-Bearing English: Rigor Alignment



Rigor in first-year credit-bearing English courses reflects similar or higher cognitive demand than high school content standards.

# Findings From Math Analysis

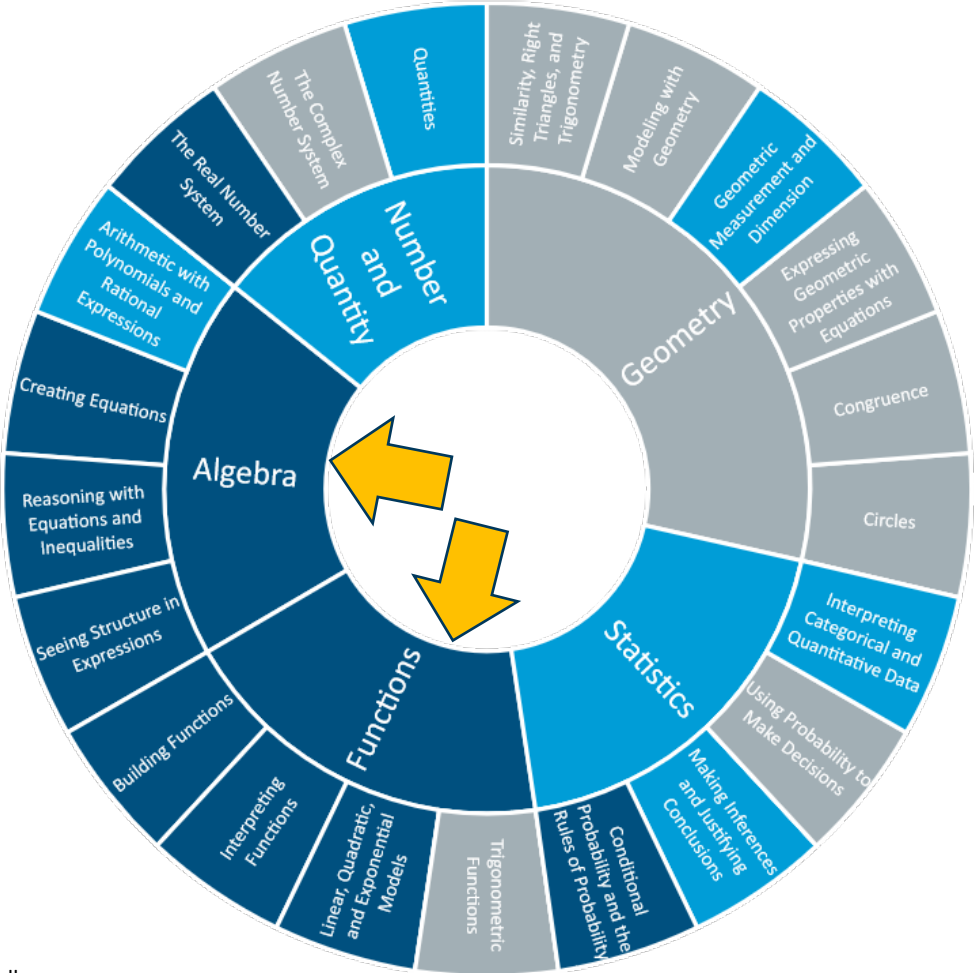


- 122 college and career readiness high school math standards across Algebra I, Algebra II, Geometry, and Statistics
- 7 content expert raters

In general, **high school math content standards align with expectations of postsecondary developmental and first-year credit-bearing math courses.**

- Generally, high school standards classified within **algebra** and **functions** demonstrated the most alignment with college-level expectations.
- Few introductory or developmental college courses include expectations for geometry. This was expected given that geometry at the collegiate level is more likely covered in courses for math majors and for specific areas of study, such as engineering.

# Developmental Math: Content Alignment



**Alignment with College Course Content**

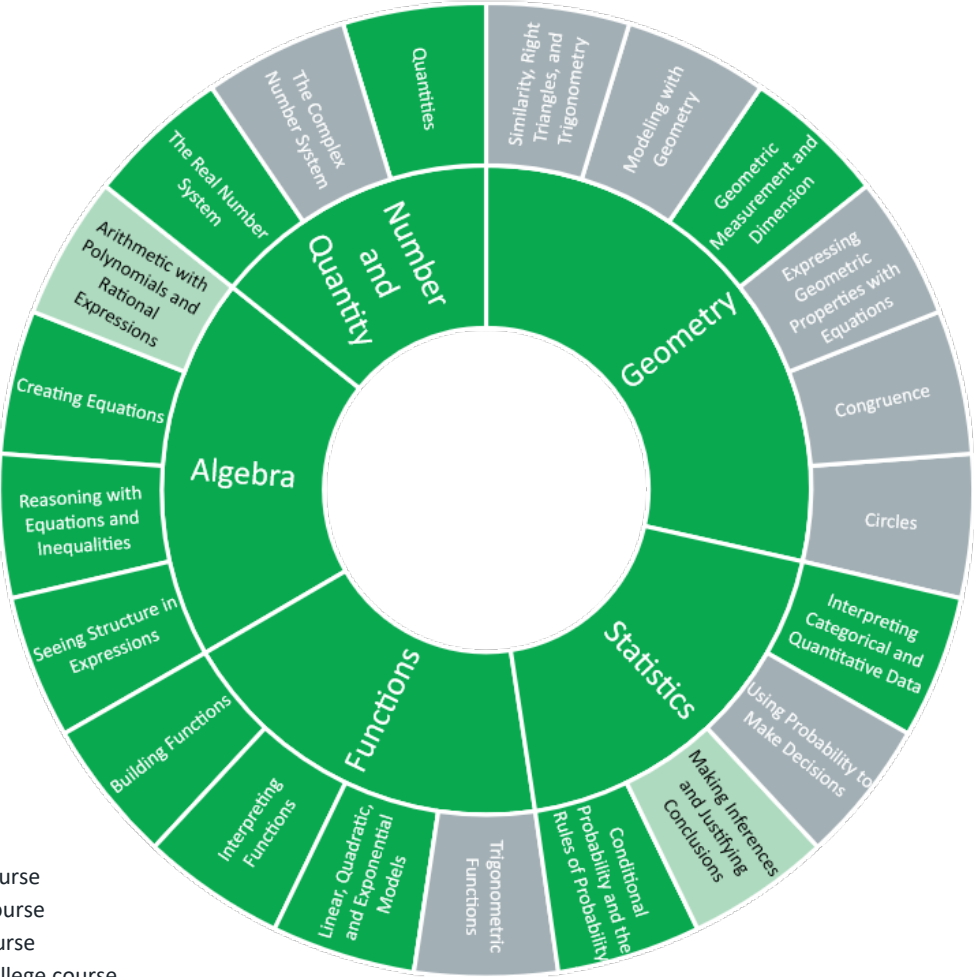
- Aligned
- Partially aligned
- Not addressed in college course



High school content standards align with developmental math course expectations, especially for algebra and functions.

Standards not addressed in developmental math courses are expected given that geometry is typically for those in math-focused majors or pathways.

# Developmental Math: Rigor Alignment



**Alignment with College Course Rigor**

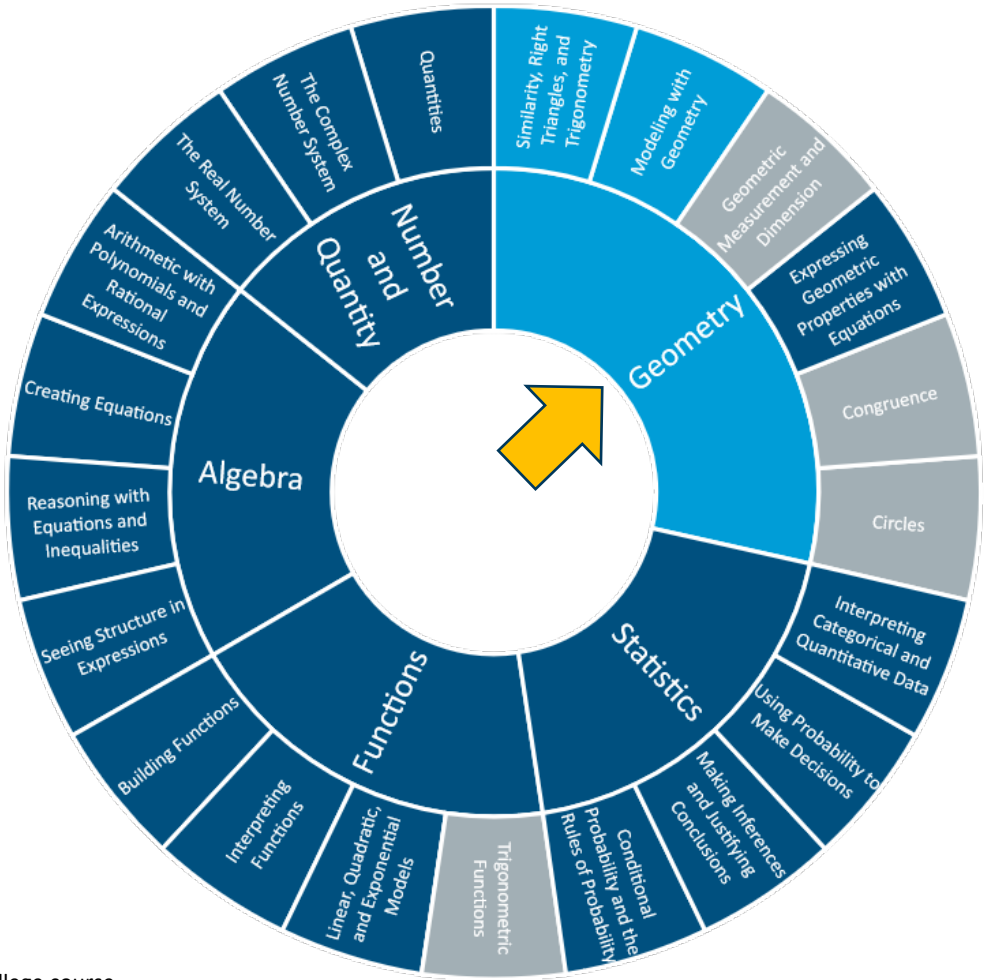
- Higher in college course
- Similar to college course
- Lower in college course
- Not addressed in college course



Rigor in developmental math courses reflects similar or lower cognitive demand than high school content standards, which is consistent with the goal of developmental courses: to build on or refresh basic skills.



# First-Year Credit-Bearing Math: Content Alignment



High school content standards align with first-year credit-bearing math course expectations across most content domains.

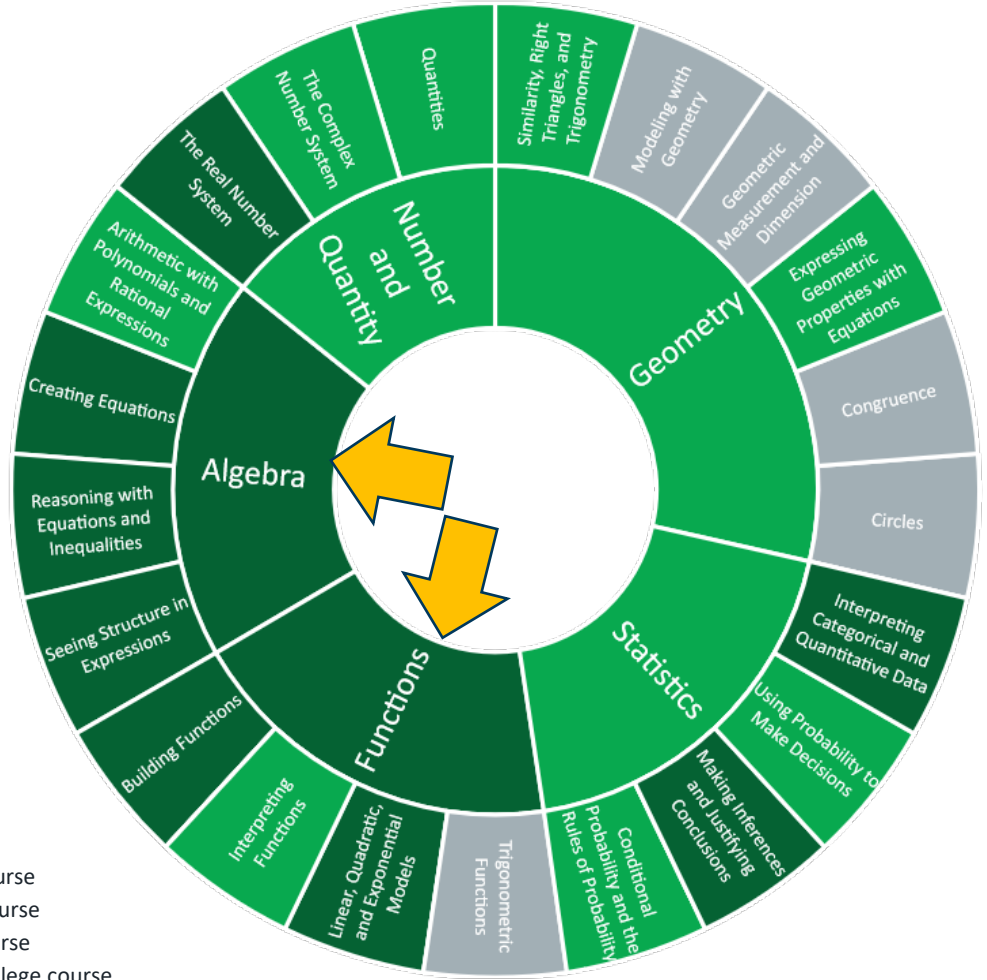
Standards with less alignment are expected given that geometry is typically for those in math-focused majors or pathways.

**Alignment with College Course Content**

- Aligned
- Partially aligned
- Not addressed in college course



# First-Year Credit-Bearing Math: Rigor Alignment



Rigor in first-year credit-bearing math courses reflects similar or higher cognitive demand than high school content standards.

# Findings From Science Analysis

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In general, **high school science standards align with expectations of postsecondary first-year credit-bearing science courses.**

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- 29 Life Sciences standards across 4 NGSS strands
- 34 Physical Science standards across 4 NGSS strands
- 20 standards for literacy in science and technology subjects across 8 reading and writing strands
- 4 content expert raters

- High school **life and physical science standards cover the content in first-year credit-bearing science courses** with a specific focus on biological and physical science.
- High school **standards for literacy in science and technology subjects generally show strong alignment with first-year credit-bearing college science course content expectations.**

*Note.* NGSS = Next Generation Science Standards

# First-Year Credit-Bearing Life Science: Content Alignment



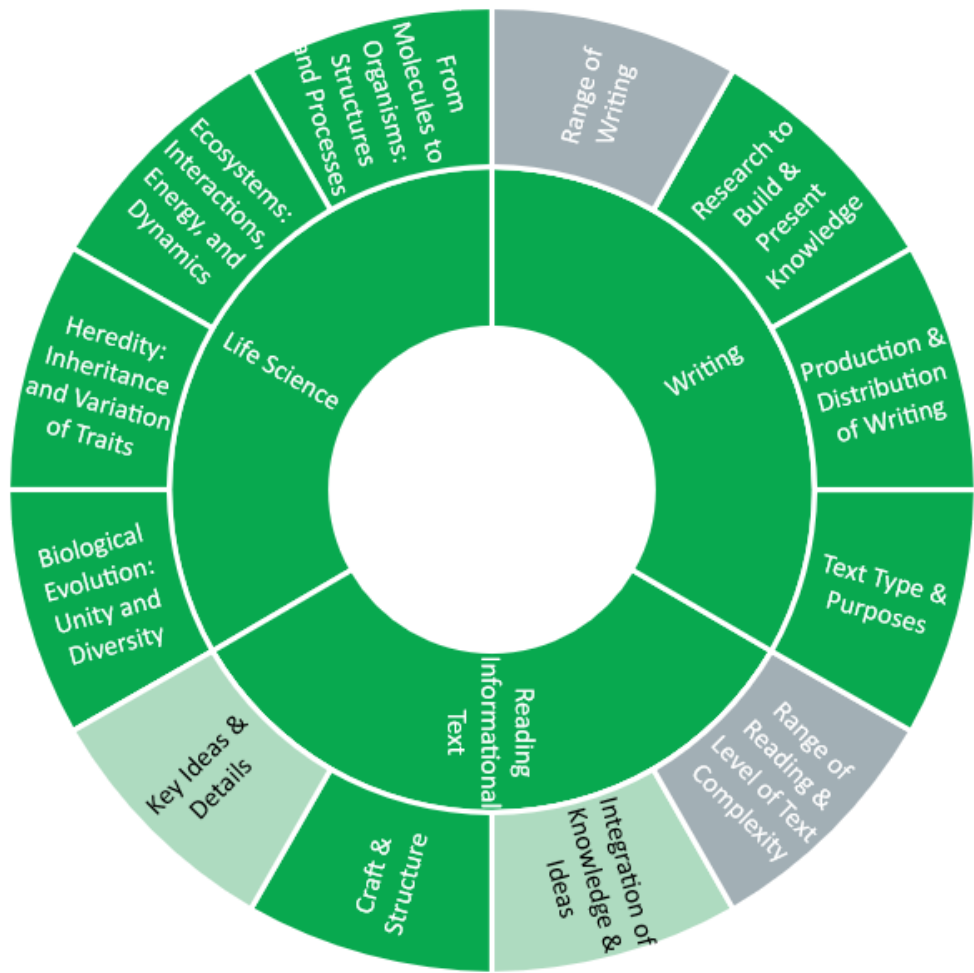
Alignment with College Course Content

- Aligned
- Partially aligned
- Not addressed in college course



High school content standards showed a high level of alignment with the first-year credit-bearing postsecondary life science course content. All subtopics within each Disciplinary Core Idea were reflected in college course content and learning objectives.

# First-Year Credit-Bearing Life Science: Rigor Alignment



Alignment with College Course Rigor

- Higher in college course
- Similar to college course
- Lower in college course
- Not addressed in college course



Rigor in first-year credit-bearing life science courses reflects comparable cognitive demand as high school content standards.

# First-Year Credit-Bearing Physical Science: Content Alignment



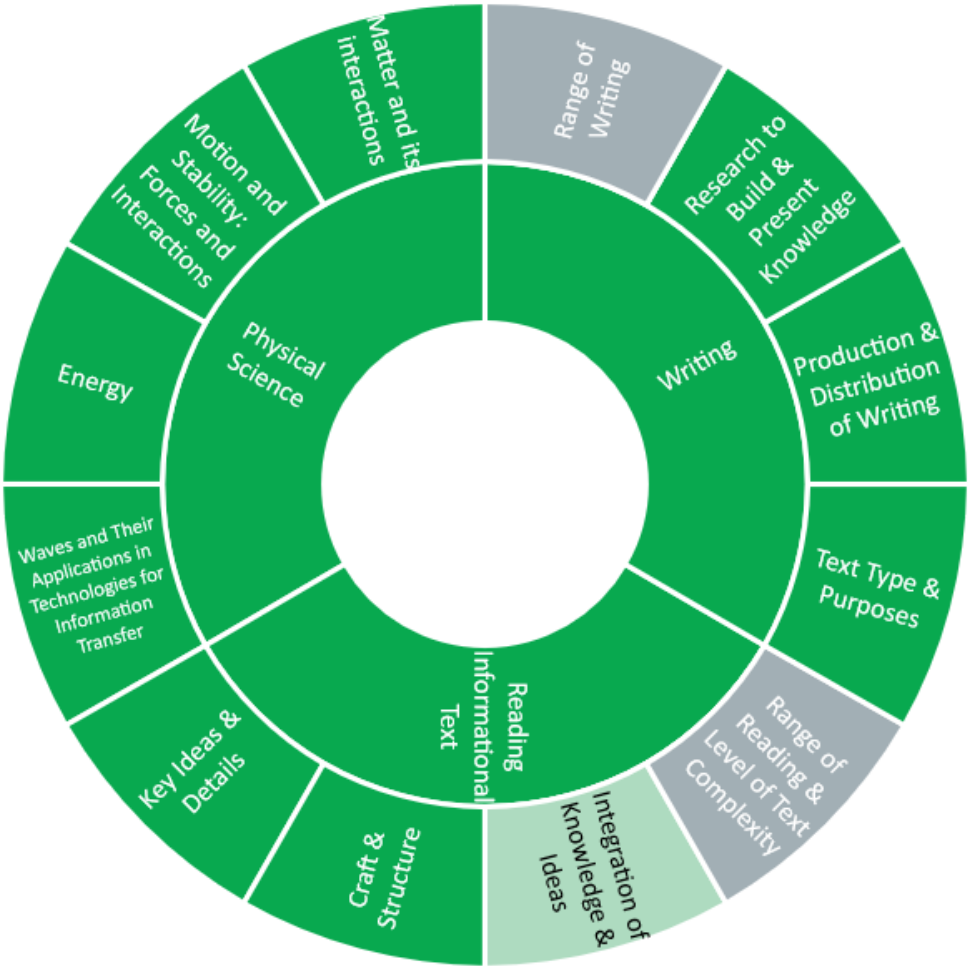
## Alignment with College Course Content

- Aligned
- Partially aligned
- Not addressed in college course



High school standards showed a high level of alignment for the first-year credit-bearing college physical science course content.

# First-Year Credit-Bearing Physical Science: Rigor Alignment



**Alignment with College Course Rigor**

- Higher in college course
- Similar to college course
- Lower in college course
- Not addressed in college course



Rigor in first-year credit-bearing physical science courses reflects comparable cognitive demand as high school content standards.

# Findings From Career and Technical Education Analysis

In general, **high school standards covering disciplinary literacy, mathematical practices, science practices, and engineering practices align with employability skills.**

- 20 standards for literacy in science and technology subjects across 8 reading and writing strands
- 8 standards for mathematical practices
- 8 standards for science and engineering practices
- 4 content expert raters

- High school **standards for literacy in science and technology subjects** cover reading comprehension, writing, speaking, and listening skills considered important for workforce success.
- High school **standards for mathematical practices, along with science and engineering practices**, cover math content and cross-functional skills considered important for workforce success.



# Key Takeaways From the Alignment Analysis



Alignment of Maryland’s high school content standards with college course content: Summary of content alignment ratings for the ELA content strands and math content domains

High school ELA content standards alignment with college English course content		High school math content standards alignment with college math course content	
Language	Dev: ● FY: ●	Algebra	Dev: ● FY: ●
Reading Informational Text	Dev: ● FY: ●	Functions	Dev: ● FY: ●
Reading Literature	Dev: ○ FY: ○	Geometry	Dev: ○ FY: ●
Speaking and Listening	Dev: ○ FY: ●	Number and Quantity	Dev: ● FY: ●
Writing	Dev: ● FY: ●	Statistics	Dev: ● FY: ●

- High school content is aligned with college course content expectations
- High school content is partially aligned with college course content expectations
- High school content is not addressed in college course content expectations



High school content is aligned with college course content expectations. Nonalignment is due to high school content standards covering greater breadth than college courses.

*Note.* ELA = English language arts; Dev = developmental college course; FY = first-year credit-bearing college course



# Key Takeaways From the Alignment Analysis

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**Assess the alignment between Maryland’s College and Career Ready Academic Content Standards and postsecondary expectations.**

- In general, Maryland’s high school ELA, math, and science content standards align with the content expectations of college course content in developmental and first-year credit-bearing courses.
- Maryland’s high school ELA and math standards align with content knowledge expectations for certificate-granting programs using two national frameworks that articulate workforce skills.

# Main Limitations of the Alignment Analysis

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- The contents, structure, and level of detail in available college course information varied across courses and institutions.
- The analysis was based on content as identified in available course information, which may not reflect all the content covered in a course.
- The alignment analysis does not include an analysis of the quality of instruction (at the high school or postsecondary level) or the availability and quality of student supports and resources, all of which affect the degree to which students are able to meet content expectations.

# Identify Potential Areas of Bias In Assessments Used to Determine CCR

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# Assessment of Bias

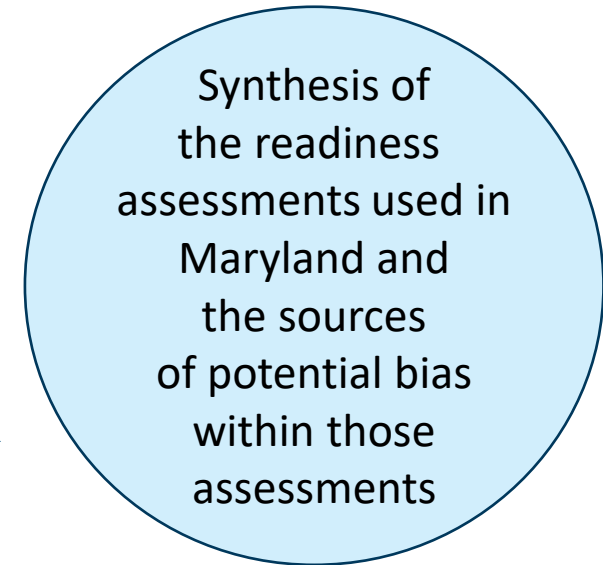
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## Literature Review

- Identify and synthesize relevant research that focuses on potential areas of bias in readiness assessments.

## Focus Groups

- Explore in more detail perspectives on potential bias in readiness assessments and build from existing conversations colleges are having around equity.



# Sources of Bias in Assessments

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- **Standardized assessments are frequently subject to cultural bias.**
  - Cultural bias in standardized tests is well documented and mostly attributed to language used in the tests, which is normed to background knowledge often held by White middle-class students.
  - Some studies raise equity concerns about the reliance on college admissions tests to determine college and career readiness.
- **Inequities exist in opportunities to prepare for assessments.**
  - Postsecondary stakeholders noted the opportunity gap for students in less resourced districts, recognizing that those students may not receive advice about college preparation and pathways that is consistent with advice students in more resourced districts receive.
  - These stakeholder reflections are consistent with existing research that points to inequities in preparation for such assessments.

# Key Takeaways From Review of Bias

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**Identify potential areas of bias in assessments used to determine CCR.**

- Standardized assessments are frequently subject to cultural bias.
- Inequities exist in students' opportunities to prepare for assessments.

# Assess How Well the Interim CCR Standard and Alternative Specifications of the Standard Predict Postsecondary Progress

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# Approach for the Predictive Validity Analysis

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# Students Included in the Analysis

## 5 student cohorts

School year	Expected on-time high school graduation class year				
	2017	2018	2019	2020	2021
2013–14	HSY1				
2014–15	HSY2	HSY1			
2015–16	HSY3	HSY2	HSY1		
2016–17	HSY4	HSY3	HSY2	HSY1	
2017–18	PSY1	HSY4	HSY3	HSY2	HSY1
2018–19	PSY2	PSY1	HSY4	HSY3	HSY2
2019–20	PSY3	PSY2	PSY1	HSY4	HSY3
2020–21	PSY4	PSY3	PSY2	PSY1	HSY4
2021–22		PSY4	PSY3	PSY2	PSY1

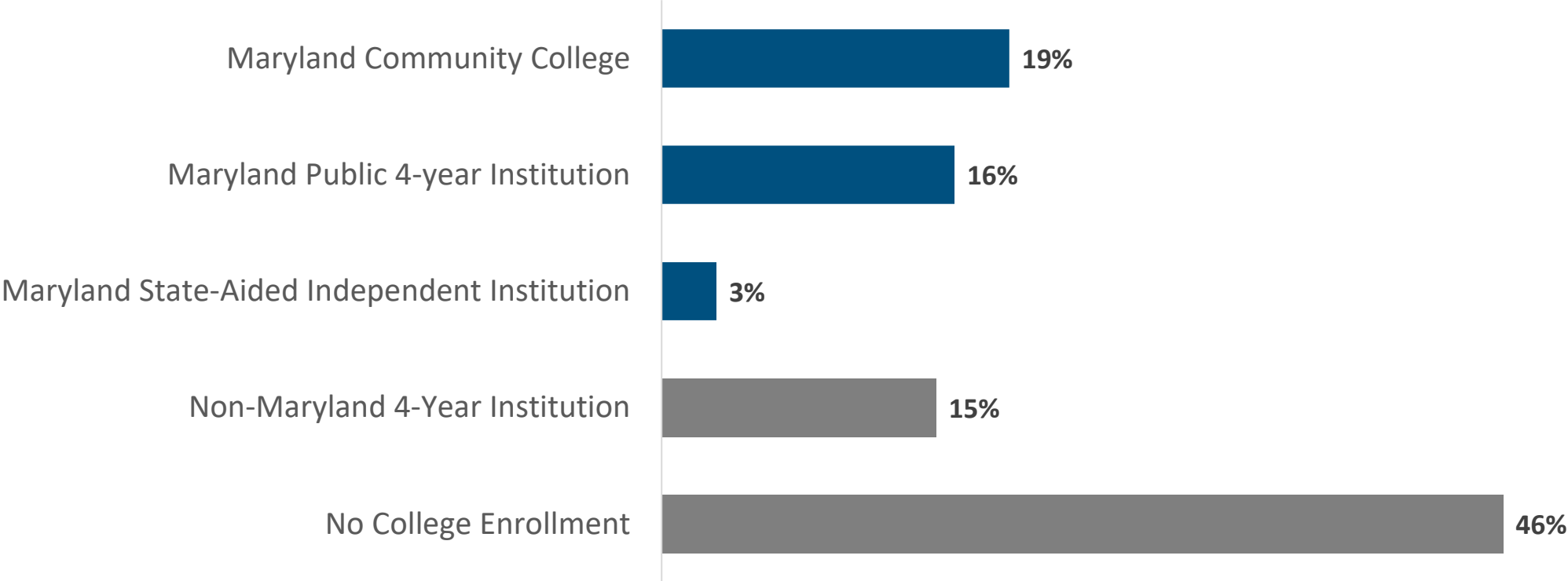
Note. HSY# = high school year; PSY# = postsecondary year (number of years a student has been in a postsecondary pathway if they graduated on time from high school).

- Started with students enrolled in a Maryland public high school at the end of their second year of high school (HSY2)
  - 318,967 students across the five cohorts
  - 85% of the students graduated high school by the end of their fourth year of high school (HSY4)
- Followed students into their first postsecondary year (PSY1)

# Initial Postsecondary Pathways

## Where were students in the fall after HSY4?

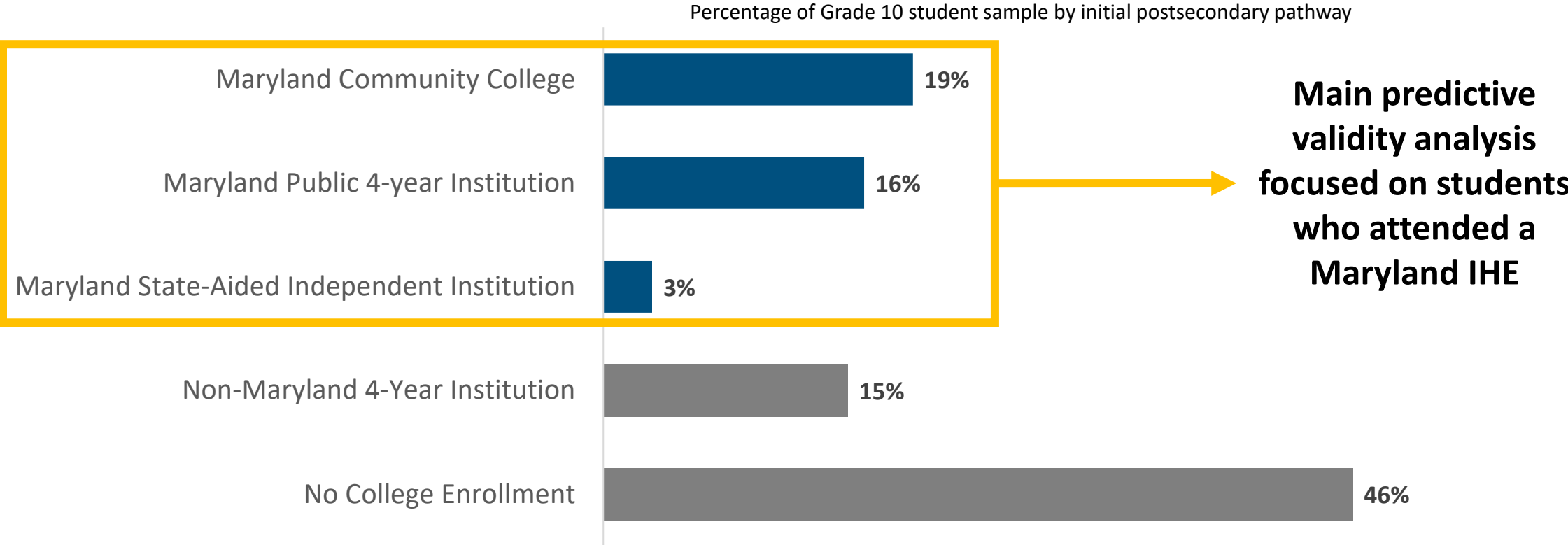
Percentage of Grade 10 student sample by initial postsecondary pathway



*Note.* 318,967 students are in the Grade 10 sample (HSY2). Students who attended a non-Maryland 2-year institution the fall after HSY4 are not shown in the figure. Less than 2% of students attended a non-Maryland 2-year institution. HSY = high school year.

# Initial Postsecondary Pathways

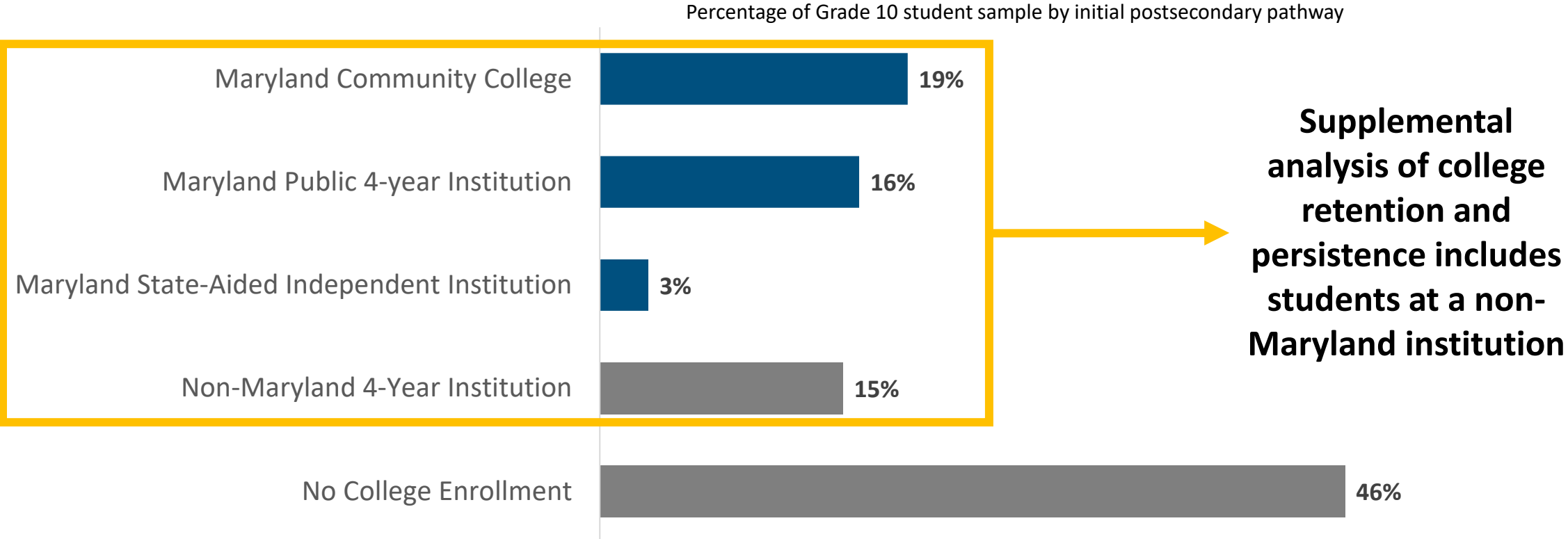
## Where were students in the fall after HSY4?



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# Initial Postsecondary Pathways

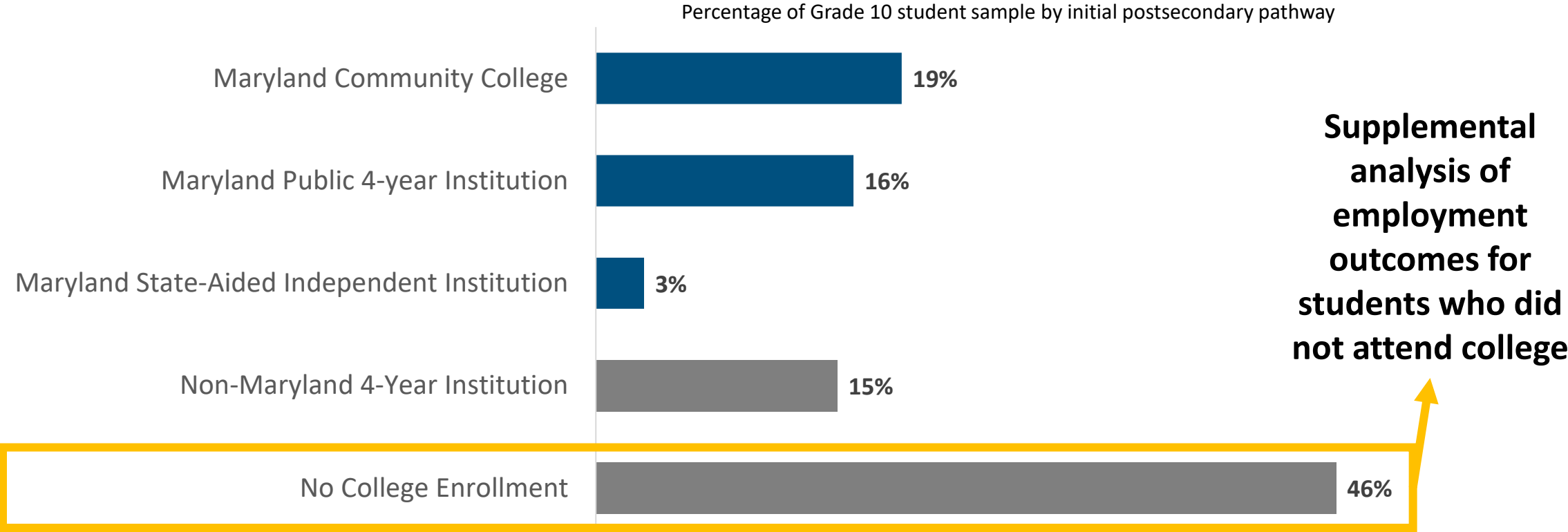
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# Initial Postsecondary Pathways

## Where were students in the fall after HSY4?



*Note.* 318,967 students are in the Grade 10 sample (HSY2). Students who attended a non-Maryland 2-year institution the fall after HSY4 are not shown in the figure. Less than 2% of students attended a non-Maryland 2-year institution. HSY = high school year.

# High School Measures of College and Career Readiness

- Considered potential measures of college and career readiness:
  - Measures defined at the end of HSY2 (Grade 10).
  - Measures defined at the end of HSY4 (Grade 12).
- Considered the feasibility and utility of each measure:
  - Is the measure valid and reliable?
  - Is the measure systematically collected across the state?
  - When in a student’s academic trajectory would the measure be available?
  - Does the measure raise concerns about equity?
- Data limitations were a concern for many of the potential measures

## Test-Based Measures

- PARCC – English, Math
- MCAP – English, Math
- SAT – Reading, Math, Composite
- PSAT – Reading, Math, Composite
- ACT – Reading, Math, Composite

## Course-Based Measures

- High school grade point average (HSGPA)
- AP/IB course success
- CTE course success
- Dual enrollment

# The Interim CCR Standard

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In February 2022, the Maryland State Board of Education set an interim CCR standard. The standard states that students are considered college and career ready when they meet or exceed a metric in both English and math:

- **English:** Score at or above the proficient (or met expectations) performance level on the English 10 state assessment (a score of at least 750 on the PARCC English 10 test)
- **Math:** Score at or above the proficient (or met expectations) performance level on the Algebra 1, Algebra 2, or Geometry state assessment (a score of at least 750 on the PARCC test) or score at least 520 on the SAT math test

# Tested the Interim CCR Standard and 13 Alternatives

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Three principles guided selection of alternative specifications:

- Use high school measures that are intended to reflect student learning or mastery of skills expected to relate to CCR
- Use high school measures that are readily available for most Maryland public high school students, particularly by the end of Grade 10
- Define the CCR standard in a way that is transparent for students, parents, and school administrators



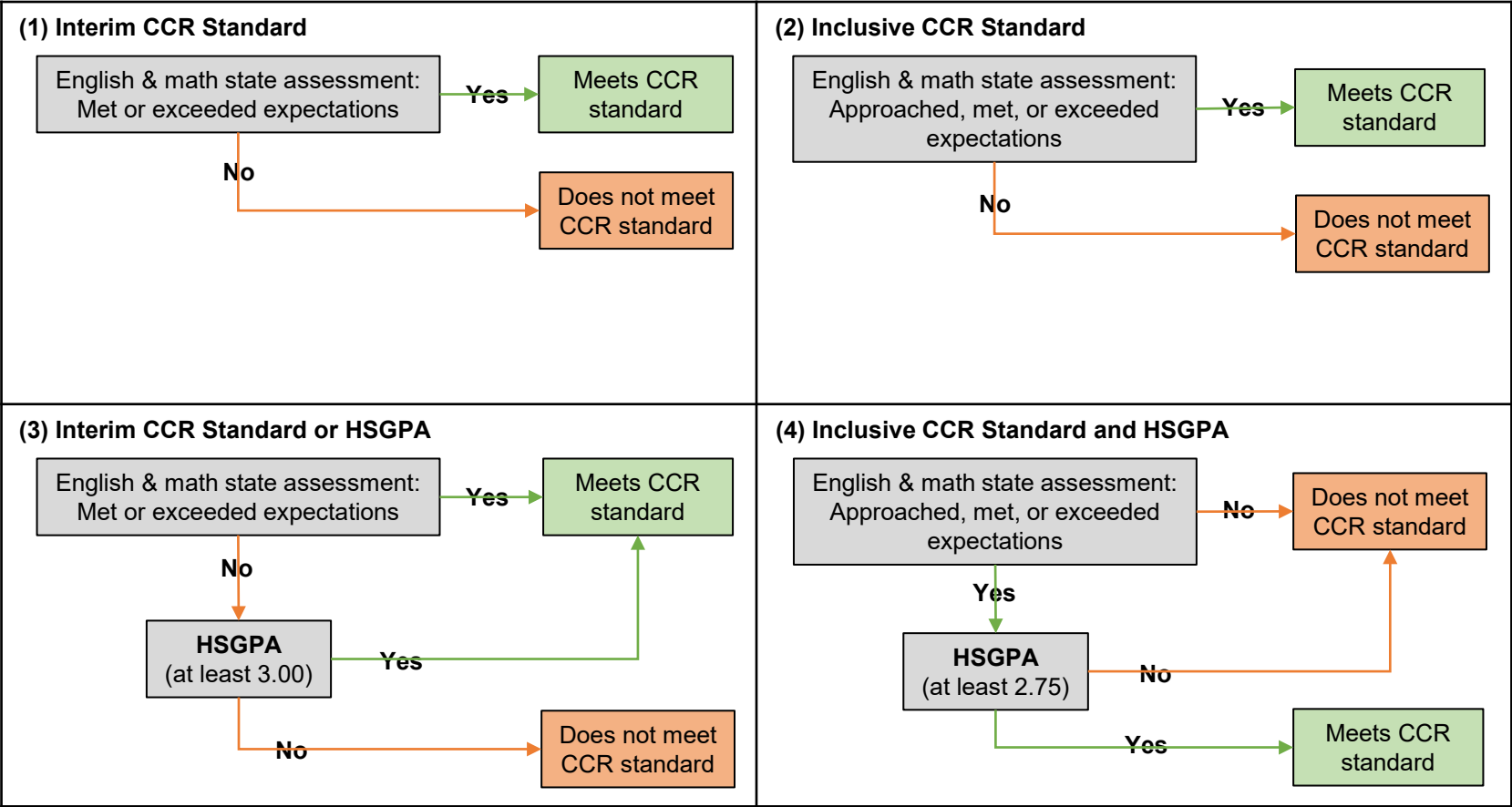
# Three Focal Alternative Specifications of the CCR Standard

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Focus on three alternative specifications to highlight the key trends:

- **Inclusive CCR standard:** Students can meet the CCR standard based on the same measures as the interim CCR standard but based on a lower threshold for readiness (score of 725 instead of 750)
- **Interim or HSGPA standard:** Students can meet the CCR standard based on the interim CCR standard criteria or with an overall HSGPA of at least 3.0
- **Inclusive and HSGPA standard:** Students can meet the CCR standard if they meet the inclusive CCR standard and have an overall HSGPA of at least 2.75

# Interim CCR Standard and Three Focal Alternatives



# Measures of Postsecondary Progress

Examined different measures of postsecondary progress to account for different concepts of progress

**Primary Analysis:  
College Credits Earned During PSY1**

- Total credits accumulated
- Earned English college credits
- Earned math college credits
- Earned science college credits



- Most relevant for determining success in first-year credit-bearing coursework
- Only available for students who attend a Maryland IHE

**Supplemental Analysis:  
Measures of College Progress**

- College GPA during PSY1
- College retention (continuous enrollment at the same institution)
- College persistence (continuous enrollment at any institution)



- Alternative measures commonly used to measure college progress
- Retention and persistence available for students who attend a non-Maryland institution

**Supplemental Analysis:  
Measures of Career Progress During PSY1**

- Consistent employment with any earnings
- Consistent employment equivalent to at least full-time minimum wage
- Consistent employment equivalent to at least full-time living wage



- Useful for understanding career readiness for students who do not go to college
- Data limitations exclude some types of employment

*Note.* PSY1 = Postsecondary Year 1.

# Focal Postsecondary Progress Benchmarks

Percentage of students who met the focal postsecondary progress benchmarks, by Initial Postsecondary Pathway

	Earned Credits ≥ 12 (PSY1F)	Earned English Credits (PSY1)	Earned Math Credits (PSY1)	Earned Science Credits (PSY1)
Any MD institution of higher ed	64%	80%	66%	87%
MD community college	43%	73%	52%	80%
MD Public 4-year institution	85%	90%	83%	93%
MD state-aided independent	87%	n/a	n/a	n/a



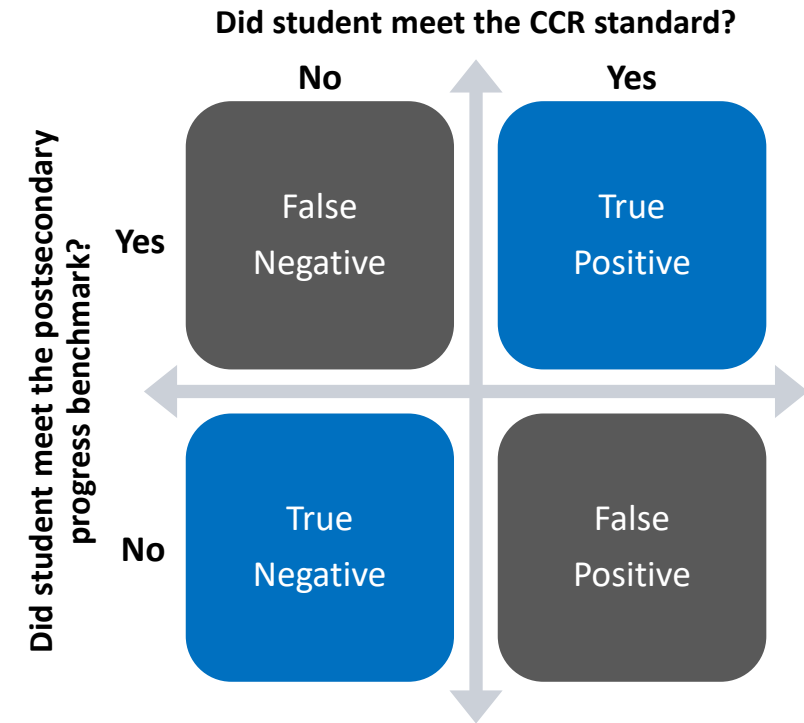
For example, 52% of students who took a math class at a Maryland community college earned math credit in their first year of college.

*Note.* The analysis of overall college credits earned is based on 117,819 students. Because subject-specific course passing can be measured only for students who attempted a course, our analytic sample sizes differ for each subject-specific course credit benchmark: 80,739 for English, 80,017 for math, and 48,035 for science.

MD = Maryland; PSY1 = postsecondary year 1; PSY1F = postsecondary year 1 fall semester; n/a = not available.

# Data Analysis

- **Classification analysis** to compare predictive validity indicators across alternative readiness definitions and indicators of postsecondary progress:
  - Accuracy rate = What percentage of all students are correctly classified as ready or not ready to make postsecondary progress?
  - Sensitivity rate = What percentage of students who are truly ready are correctly classified as ready?
  - Specificity = What percentage of students who are truly not ready are correctly classified as not ready?
- Conducted supplemental analysis using advanced analytic techniques (machine learning) to see if our alternative specifications missed important combinations or thresholds for determining CCR.



# Findings From the Predictive Validity Analysis

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# How Many Students Met the CCR Standard?

Percentage of students who met the CCR standard at the end of Grade 10, by Initial Postsecondary Pathway

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
All students	30%	52%	49%	39%
Any MD institution of higher ed	40%	68%	64%	55%
MD community college	27%	57%	49%	39%
MD public 4-year institution	56%	80%	80%	71%
MD state-aided independent	46%	77%	78%	67%
Non-MD 4-year institution	58%	80%	82%	72%
No college enrollment	12%	30%	25%	16%



For example, 27% of students who enrolled in a Maryland community college the fall after high school met the interim CCR standard at the end of Grade 10.

# How Many Students Met the CCR Standard?

Percentage of students who met the CCR standard at the end of Grade 10, by Initial Postsecondary Pathway

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
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Any MD institution of higher ed	40%	68%	64%	55%
MD community college	27%	57%	49%	39%
MD public 4-year institution	56%	80%	80%	71%
MD state-aided independent	46%	77%	78%	67%
Non-MD 4-year institution	58%	80%	82%	72%
No college enrollment	12%	30%	25%	16%



More students can meet the standard using a more inclusive threshold or including an HSGPA option



# How Many Students Met the CCR Standard?

Percentage of students who met the CCR standard at the end of Grade 10, by student characteristics

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
All students	30%	52%	49%	39%
Female students	33%	57%	56%	46%
Male students	27%	47%	42%	33%
Asian students	57%	76%	82%	69%
Black students	13%	34%	29%	22%
Hispanic students	15%	34%	36%	24%
White students	46%	70%	64%	55%
English learners (current)	1%	3%	30%	3%
English learners (recent exit)	27%	57%	56%	47%
Students with disabilities	4%	12%	19%	7%
FARMS-eligible students	12%	32%	28%	19%



Some student groups are less likely to meet the CCR standard than others

Note. FARMS = Free and reduced-price meal services.

# How Many Students Met the CCR Standard?

Percentage of students who met the CCR standard at the end of Grade 10, by geographic region

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Anne Arundel County	34%	58%	52%	45%
Baltimore City	9%	23%	17%	11%
Baltimore County	22%	44%	39%	31%
Frederick County	48%	71%	68%	60%
Lower Shore Region	31%	57%	48%	43%
Mid Maryland Region	50%	72%	67%	61%
Montgomery County	35%	56%	64%	50%
Prince George's County	13%	32%	32%	23%
Southern Maryland Region	34%	60%	52%	44%
Susquehanna Region	39%	66%	54%	48%
Upper Shore Region	33%	61%	50%	42%
Western Maryland Region	31%	58%	41%	16%



Students in some regions are less likely to meet the CCR standard than students in other regions

# How Accurate Is the CCR Standard?

Accuracy rates for each CCR standard predicting first-year college credits earned

Students in Any MD Institution of Higher Ed	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Earned Credits ≥ 12 (PSY1F)	65%	71%	75%	72%
Earned English Credits (PSY1)	47%	66%	67%	60%
Earned Math Credits (PSY1)	63%	71%	75%	71%
Earned Science Credits (PSY1)	57%	75%	77%	69%

Note. PSY1 = postsecondary year 1; PSY1F = postsecondary year 1 fall semester.



For example, the interim CCR standard correctly classifies 63% of students as college ready or not college ready if earning math credits in the first year of college is the benchmark for postsecondary progress

# How Accurate Is the CCR Standard?

Accuracy rates for each CCR standard predicting first-year college credits earned

Students in Any MD Institution of Higher Ed	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Earned Credits ≥ 12 (PSY1F)	65%	71%	75%	72%
Earned English Credits (PSY1)	47%	66%	67%	60%
Earned Math Credits (PSY1)	63%	71%	75%	71%
Earned Science Credits (PSY1)	57%	75%	77%	69%

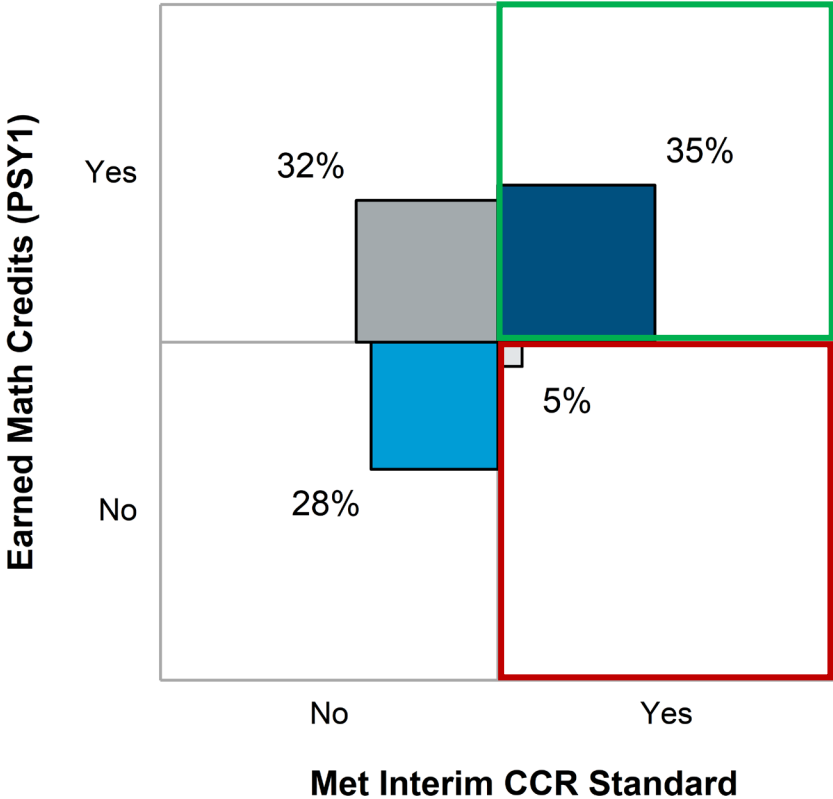


Alternative specifications of the CCR standard are more accurate

Note. PSY1 = postsecondary year 1; PSY1F = postsecondary year 1 fall semester.

# Unpacking the Accuracy Rate

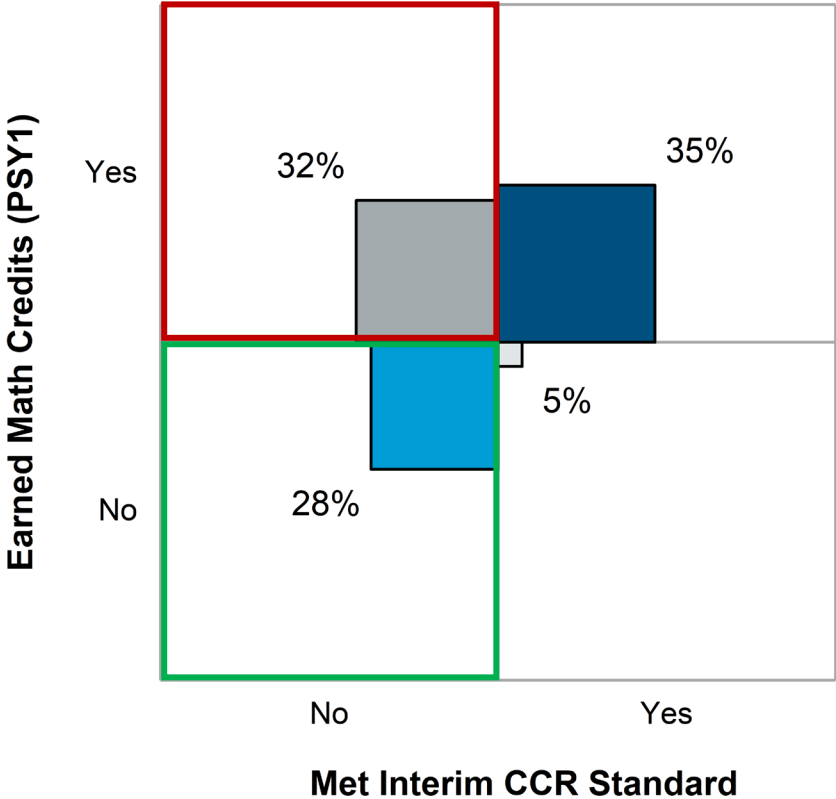
Classification groups for the interim CCR standard predicting math credits in the first year of college



Students who met the interim CCR standard:  
35% correctly classified  
+ 5% misclassified

# Unpacking the Accuracy Rate

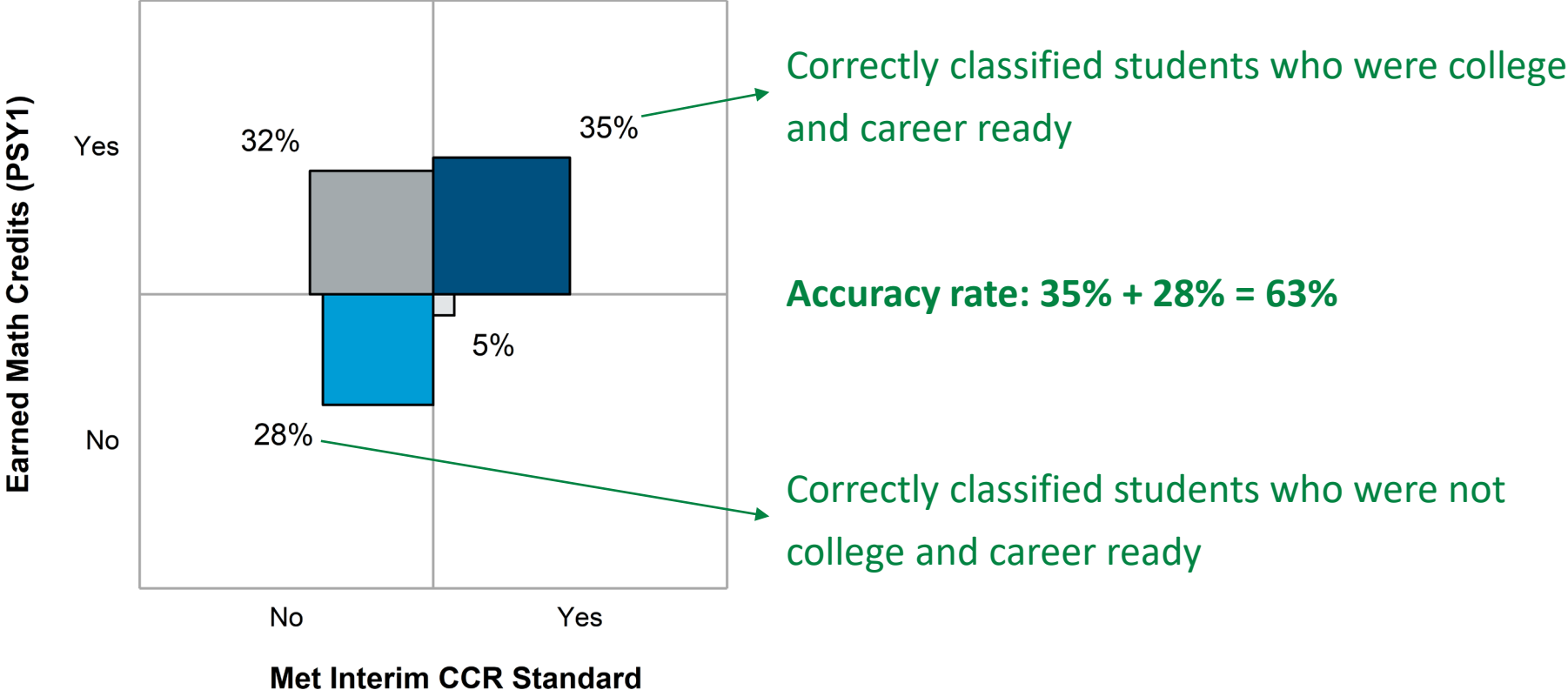
Classification groups for the interim CCR standard predicting math credits in the first year of college



Students who did not meet the interim CCR standard:  
28% correctly classified  
+32% misclassified

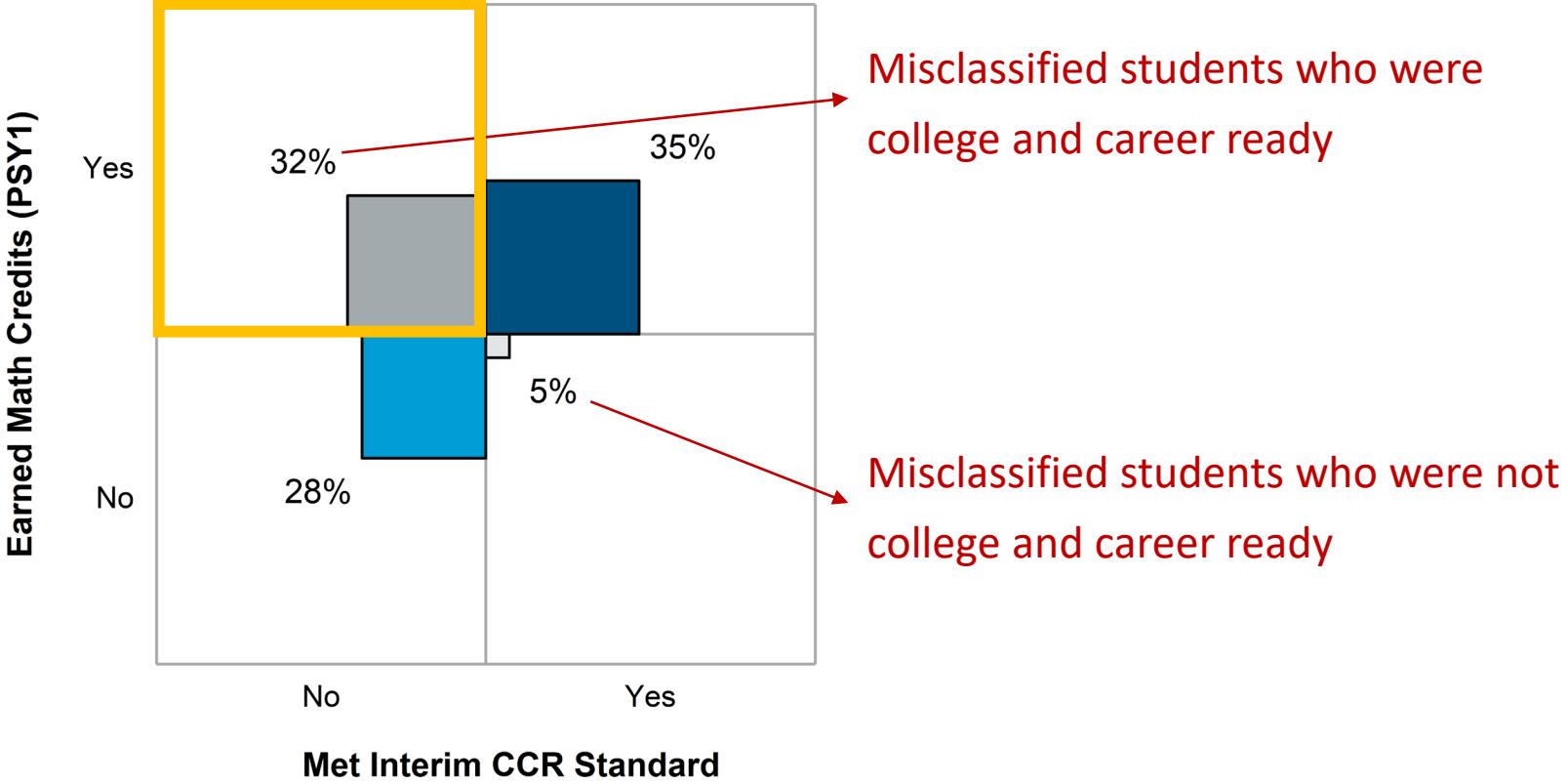
# Unpacking the Accuracy Rate

Classification groups for the interim CCR standard predicting math credits in the first year of college



# Unpacking the Accuracy Rate

Classification groups for the interim CCR standard predicting math credits in the first year of college

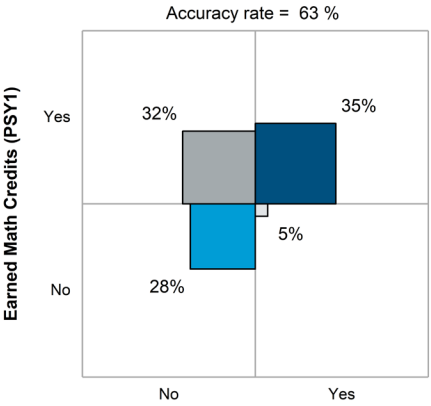


The interim CCR standard misclassifies many students as not college and career ready when they truly are ready to make postsecondary progress

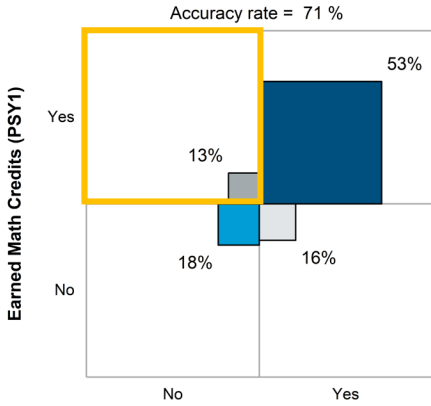


# Unpacking the Accuracy Rate

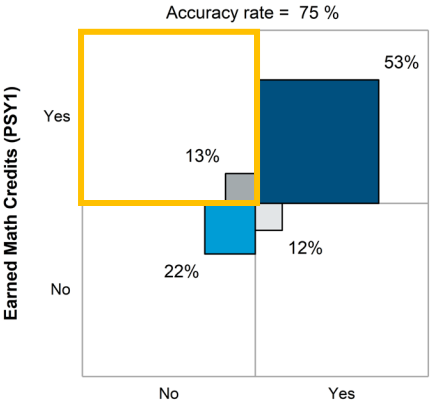
Classification groups for the interim CCR standard and alternative standards predicting math credits in the first year of college



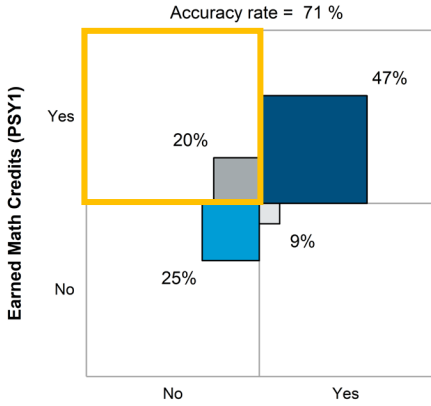
(1) Met Interim CCR Standard



(2) Met Inclusive Standard



(3) Met Interim or HSGPA Option



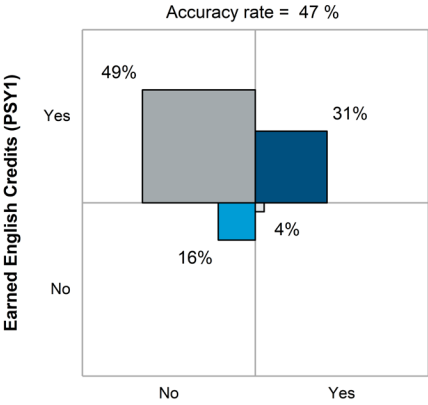
(4) Met Inclusive & HSGPA



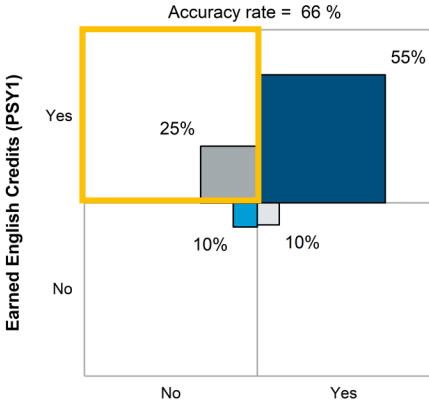
Alternative specifications of the CCR standard reduce the percentage of students who are misclassified as not ready when they truly are ready

# Unpacking the Accuracy Rate

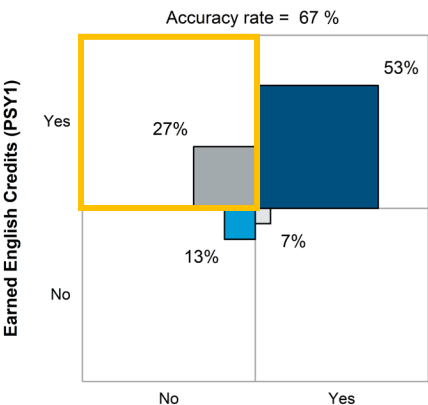
Classification groups for the interim CCR standard and alternative standards predicting English credits in the first year of college



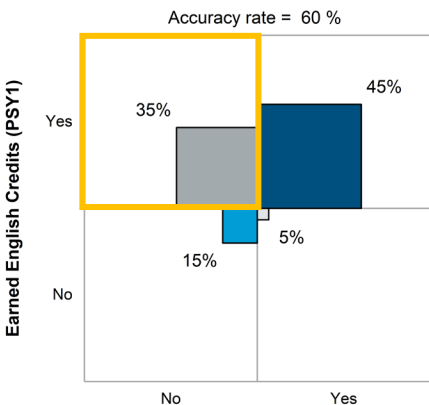
(1) Met Interim CCR Standard



(2) Met Inclusive Standard



(3) Met Interim or HSGPA Option



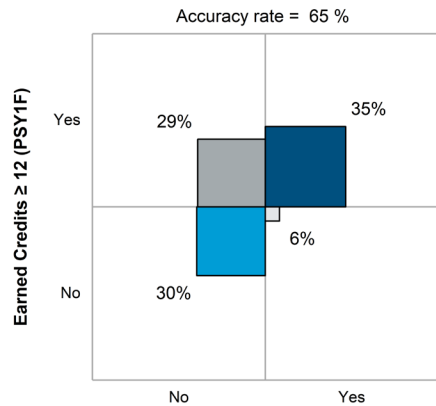
(4) Met Inclusive & HSGPA



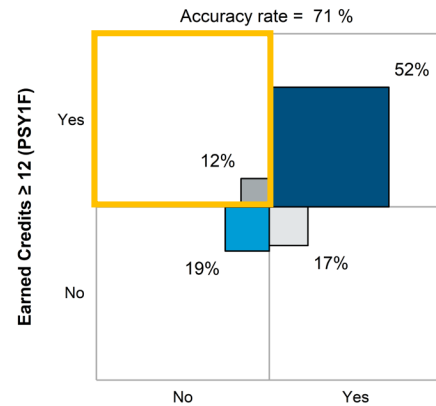
Alternative specifications of the CCR standard reduce the percentage of students who are misclassified as not ready when they truly are ready

# Unpacking the Accuracy Rate

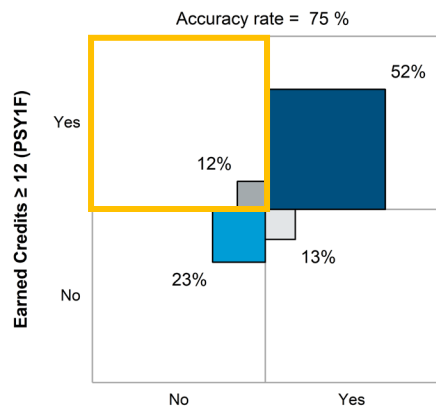
Classification groups for the interim CCR standard and alternative standards predicting at least 12 college credits in the first semester of college



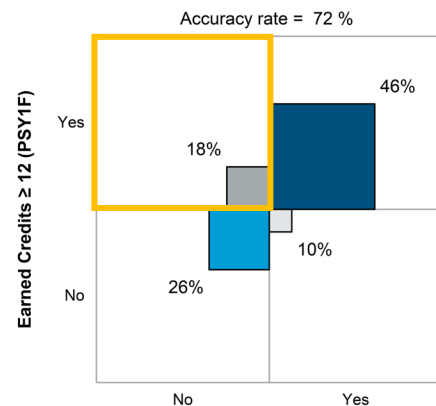
(1) Met Interim CCR Standard



(2) Met Inclusive Standard



(3) Met Interim or HSGPA Option



(4) Met Inclusive & HSGPA



Alternative specifications of the CCR standard reduce the percentage of students who are misclassified as not ready when they truly are ready

# How Accurate Is the CCR Standard?

Accuracy rates for each CCR standard predicting first-year college credits earned

Students in Any MD Institution of Higher Ed	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Earned Credits ≥ 12 (PSY1F)	65%	71%	75%	72%
Earned English Credits (PSY1)	47%	66%	67%	60%
Earned Math Credits (PSY1)	63%	71%	75%	71%
Earned Science Credits (PSY1)	57%	75%	77%	69%



Across all focal postsecondary progress benchmarks, accuracy rates are highest using the specification that allows students to meet the CCR standard with the interim criteria or an overall HSGPA of at least 3.0

# How Accurate Is the CCR Standard?

Accuracy rates for each CCR standard predicting first-year college credits earned

Students in MD Community College	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Earned Credits ≥ 12 (PSY1F)	67%	64%	69%	69%
Earned English Credits (PSY1)	44%	60%	61%	55%
Earned Math Credits (PSY1)	62%	65%	71%	68%
Earned Science Credits (PSY1)	49%	69%	70%	62%



Overall, accuracy rates tend to be lower for students who attend a community college



But the interim or HSGPA option improves accuracy compared to only the interim CCR standard

# How Accurate Is the CCR Standard?

Accuracy rates for each CCR standard predicting first-year college credits earned

Students in MD Public 4-Year Institution	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Earned Credits ≥ 12 (PSY1F)	64%	78%	81%	75%
Earned English Credits (PSY1)	52%	74%	75%	68%
Earned Math Credits (PSY1)	64%	77%	81%	75%
Earned Science Credits (PSY1)	62%	80%	82%	75%



For MD public 4-year institutions, the interim or HSGPA option greatly improves accuracy compared to only the interim CCR standard

# How Accurate Is the CCR Standard?

Average accuracy rate for each CCR standard across focal postsecondary benchmarks for first-year college credits earned, by student characteristics

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
All students	58%	71%	73%	68%
Female students	56%	71%	74%	68%
Male students	60%	70%	73%	68%
Asian students	65%	79%	84%	77%
Black students	50%	63%	65%	61%
Hispanic students	53%	66%	69%	64%
White students	63%	75%	77%	72%
English learners (current)	39%	45%	68%	45%
English learners (recent exit)	53%	69%	75%	68%
Students with disabilities	55%	61%	66%	61%
FARMS-eligible students	52%	64%	67%	62%



Overall, accuracy rates tend to be lower for some student groups than others

Note. FARMS = Free and reduced-price meal services.

# How Accurate Is the CCR Standard?

Average accuracy rate for each CCR standard across focal postsecondary benchmarks for first-year college credits earned, by student characteristics

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
All students	58%	71%	73%	68%
Female students	56%	71%	74%	68%
Male students	60%	70%	73%	68%
Asian students	65%	79%	84%	77%
Black students	50%	63%	65%	61%
Hispanic students	53%	66%	69%	64%
White students	63%	75%	77%	72%
English learners (current)	39%	45%	68%	45%
English learners (recent exit)	53%	69%	75%	68%
Students with disabilities	55%	61%	66%	61%
FARMS-eligible students	52%	64%	67%	62%



Overall, accuracy rates tend to be lower for some student groups than others



But for all groups, accuracy rates are highest using the specification that allows students to meet the CCR standard with the interim criteria or an overall HSGPA of at least 3.0



# How Accurate Is the CCR Standard?

Average accuracy rate for each CCR standard across focal postsecondary benchmarks for first-year college credits earned, by geographic region

	(1) Interim Standard	(2) Inclusive Standard	(3) Interim or HSGPA	(4) Inclusive & HSGPA
Anne Arundel County	60%	71%	73%	70%
Baltimore City	53%	64%	59%	57%
Baltimore County	55%	68%	71%	66%
Frederick County	67%	77%	80%	77%
Lower Shore Region	62%	69%	74%	71%
Mid Maryland Region	64%	77%	79%	75%
Montgomery County	55%	70%	77%	69%
Prince George's County	50%	64%	69%	62%
Southern Maryland Region	59%	71%	74%	71%
Susquehanna Region	65%	76%	77%	76%
Upper Shore Region	59%	71%	72%	66%
Western Maryland Region	60%	72%	67%	45%



Overall, accuracy rates tend to be lower for some regions than others



But for most regions, accuracy rates are highest using the specification that allows students to meet the CCR standard with the interim criteria or an overall HSGPA of at least 3.0

# Findings From Supplemental Analyses

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- The advanced analytics (machine learning) approach indicated that HSGPA is the most important predictor of postsecondary progress out of 11 different high school measures of CCR included in the analysis.
  - Across the four focal postsecondary progress benchmarks, the suggested threshold for HSGPA was between 2.83 and 2.98.
  - Using all 11 measures and the model-selected thresholds, accuracy rates for predicting the focal postsecondary progress benchmarks ranged from 77% (at least 12 college credits) to 87% (earned science credit).
- Further correlational analysis of HSGPA indicates that HSGPA is positively associated with postsecondary progress, even after controlling for student characteristics.
  - The strength of the relationship was relatively stable across student cohorts.
  - The strength of the relationship did vary across geographic regions and schools.

# Findings From Supplemental Analyses

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- Accuracy rates for the focal postsecondary progress benchmarks are about the same if the analysis is restricted to high school graduates and the CCR standard is defined at the end of Grade 12 instead of Grade 10.
- Analysis of additional postsecondary progress benchmarks for college reinforce the finding that including an HSGPA option in the CCR standard improves accuracy rates compared to the interim CCR standard.

# Findings From Supplemental Analyses

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- Analysis of employment benchmarks for students who did not go to college indicates that the interim CCR standard has better accuracy rates than alternative specifications of the standard.
  - Relatively few people who did not go to college experienced career progress the year after expected high school graduation: 37% were consistently employed but only 6% had consistent earnings equivalent to at least a full-time minimum wage job.
  - More stringent definitions of CCR tend to be better predictors of lower frequency postsecondary benchmarks.
- Analysis of total college credits for students who delayed college enrollment by up to a year indicates that the interim CCR standard has better accuracy rates than the alternative with an HSGPA option.
  - Accuracy rate for predicting at least 12 college credits in the first semester is 72% for the interim standard and 70% for the alternative with a HSGPA option.
  - Suggests that the predictive power of HSGPA declines the longer one is out of high school.

# Key Takeaways From Predictive Validity Analysis

Comparison of the interim CCR standard to an alternative CCR standard that allows students to meet the CCR standard based on the interim CCR standard criteria or with an overall or HSGPA of at least 3.0.

*Among students who enrolled in a Maryland college the fall after their fourth year of high school*

**Percentage of students who met the CCR standard at the end of Grade 10**




**Percentage of students correctly classified as college ready or not college ready: with postsecondary progress benchmark of at least 12 college credits in first semester**



# Key Takeaways From Predictive Validity Analysis

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- 
- The interim CCR standard, utilizing state assessments, correctly classified about half to two-thirds of students as college ready or not college ready at the end of Grade 10.
  - Adding an alternative way to meet the CCR standard with the interim criteria or HSGPA increased the percentage of students who meet the CCR standard and improved accuracy rates for predicting first-year college credits earned.

# Main Limitations of the Predictive Validity Analysis

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- Results from the high school graduation classes of 2017 to 2021 may not apply to future student cohorts.
- Results reflect averages for Maryland college-going students and may not directly apply to specific students or other postsecondary situations.
- The analysis is restricted to measures available for Maryland public high school students.

# Policy Recommendations and Suggestions for Future Research

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*Recommendations are intended to guide and foster further discussion among decision makers and stakeholders. The recommendations should be interpreted within the context of the study's scope and limitations.*



# Recommendations

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## **Revise the Maryland CCR standard to assess CCR more accurately and equitably.**

- Provide at least two options for students to meet the CCR standard: one option based on the state assessments in the interim CCR standard, and another option based on having an HSGPA of at least 3.0.
- If an HSGPA option is included in the CCR standard, provide guidance and support to local education agencies and schools to better standardize and align grading practices across the state.
- Incorporate flexibility into the CCR standard to allow students individualized ways to demonstrate mastery of the foundational skills needed for a particular postsecondary pathway.

# Recommendations

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**Strengthen learning opportunities and supports for content mastery, along with CCR counseling, early in students' educational journeys.**

- More guidance and supports may be needed to help local education agencies and schools prioritize the standards most aligned with college readiness and for students to engage in career pathway planning.
- More engaging learning opportunities, individualized learning strategies, and wraparound services in middle and high school could help students develop the content knowledge critical for college and career success.
- Beginning postsecondary planning earlier than high school could help teachers and counselors intervene if students are not on track to gain the skills necessary to be college and career ready.

# Recommendations

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**Consider integrating skills for success into CCR standards alongside the provision of supports that develop these skills.**

- Postsecondary stakeholders consistently emphasized the importance of critical thinking, self-direction, and other skills for success that are not part of formal high school course content standards or expectations.
- Establishing more explicit standards and measures of skills for success may result in more accurate and equitable application of a CCR standard.
- Maryland institutions of higher education may benefit from developing a common framework for their workforce training programs that emphasizes skills for success and can be used by MSDE to better align skills for success opportunities at the K–12 level.

# Recommendations

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**Provide clear guidance on how the CCR standard should and should not be used.**

- Use the CCR standard in a way that will minimize harm to misclassified students (e.g., avoid high-stakes decisions that adversely affect educational outcomes for students).
- Use of the CCR standard should be balanced with individualized guidance for each student and not prevent students from pursuing educational opportunities that support their college and career goals.
- It may be more appropriate to use the CCR standard to monitor system-level progress toward CCR and support school-level decisions related to college and career counseling as well as identify students who need additional CCR supports.

# Future Research

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**Continue to monitor how well the CCR standard accurately predicts student preparation for college and career success.**

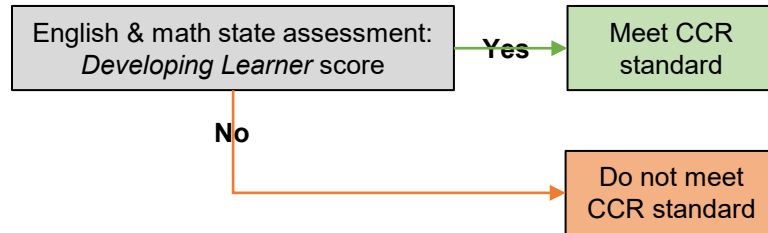
- Revisit how well state assessment performance levels are aligned with CCR expectations. As more data from the MCAP assessments become available, MSDE should examine how well the MCAP performance levels are calibrated with CCR expectations and monitor the relationship over time.
- Provide further insight into predictors of career success as more data become available, particularly information regarding career and technical education program completion and completion of apprenticeship programs and noncredit certifications.
- Include greater student voice and K–12 and workforce representation in future research.

# Potential Implications for a CCR Standard

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# Implications: Example Ways to Revise the CCR Standard

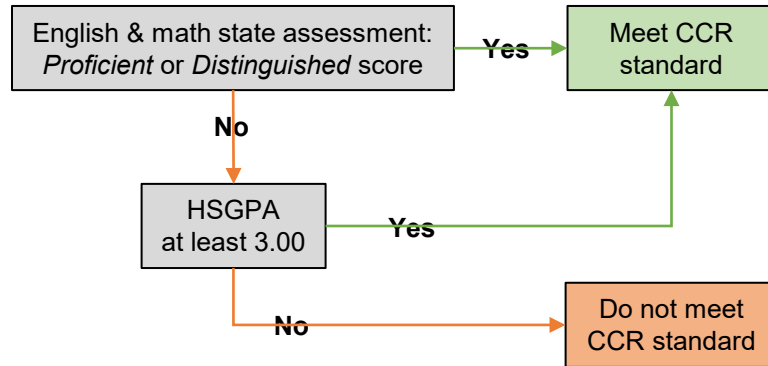
## Example 1. Students can demonstrate CCR based on state test scores but with a more inclusive threshold



- Why use a more inclusive threshold?
  - Predictive validity analysis indicates that a more inclusive threshold can improve accuracy of the CCR standard.
  - Provides more students with access to educational opportunities without significant investment in additional measures.

# Implications: Example Ways to Revise the CCR Standard

## Example 2. Students can demonstrate CCR based on state test scores or HSGPA of at least 3.0

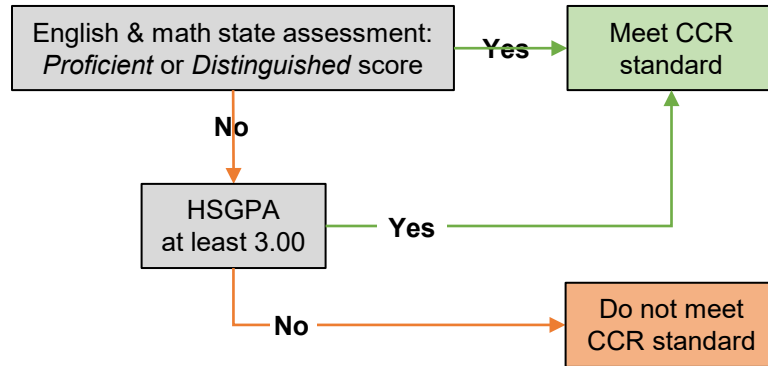


- Why an HSGPA threshold of 3.0?
  - Predictive validity analysis supports an HSGPA between about 2.8 and 3.0.
  - Existing precedence of using an HSGPA of 3.0 for course placement at Maryland community colleges.
  - Massachusetts Department of Higher Education recommends using an HSGPA of 2.7 for college course placement.
  - Connecticut community colleges use an HSGPA of 2.8 to 3.1, depending on the course.
  - 2018 report affiliated with the Community College Research Center recommends using an HSGPA between 2.5 and 3.0.
  - Some research and existing practice sets different thresholds based on the college subject/course (e.g., higher threshold for math than English)



# Implications: Example Ways to Revise the CCR Standard

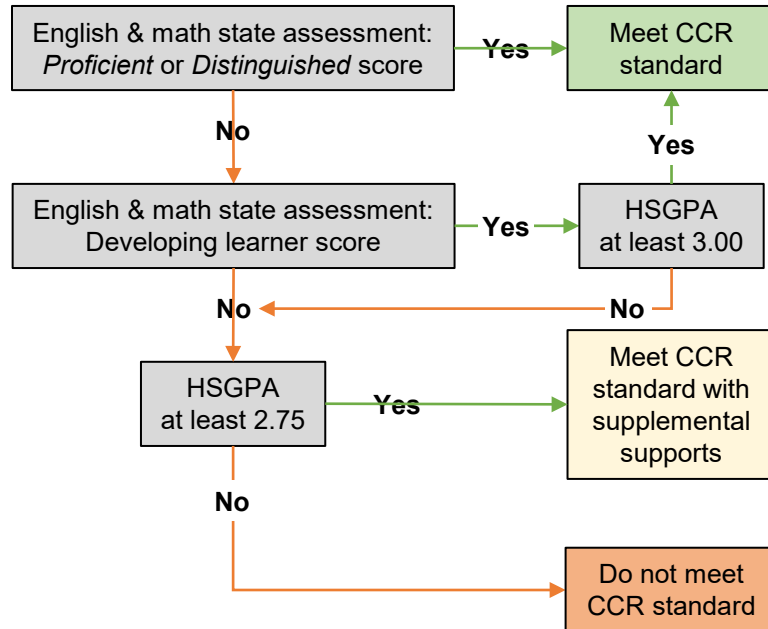
## Example 2. Students can demonstrate CCR based on state test scores or HSGPA of at least 3.0



- How should HSGPA be defined?
  - The predictive validity analysis focused on the unweighted cumulative HSGPA for all high school courses.
  - Could use HSGPA for “core” academic subjects (i.e., English, math, science, and social science).
  - For math, some research and existing practice suggests also setting a high school math course requirement (e.g., at least Algebra 2) for some math course placements.

# Implications: Example Ways to Revise the CCR Standard

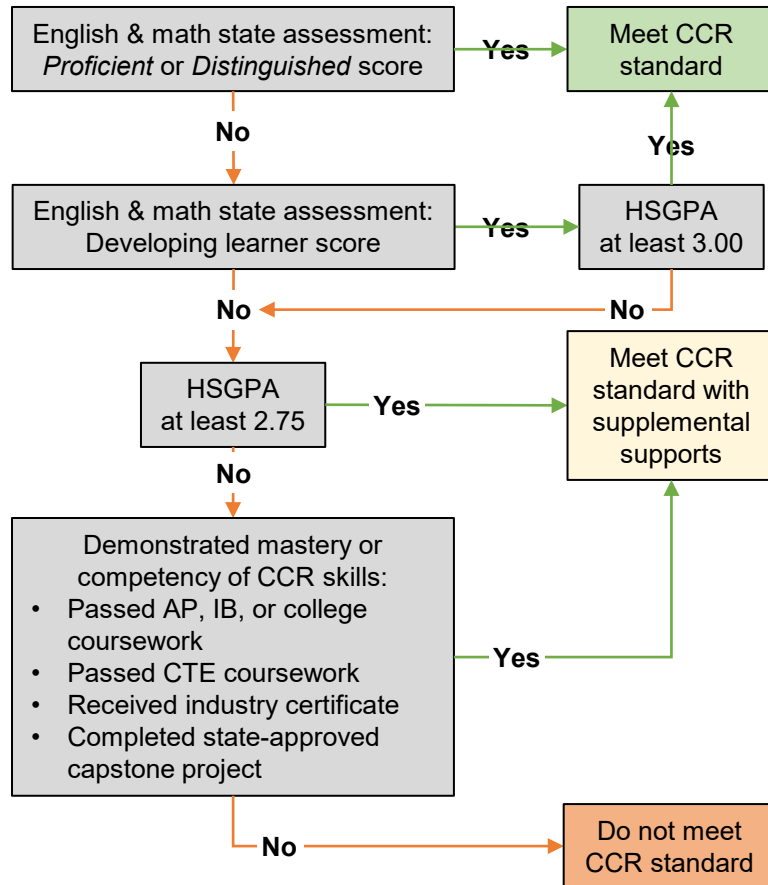
## Example 3. Use state test scores to establish tiers of readiness that guide opportunity and support



- Why establish tiers of readiness?
  - Provides more students with access to educational opportunities and addresses concerns about prerequisite content knowledge.
  - Could better match support services to student needs.
  - Parallels to how Massachusetts provides alternative ways for students “approaching proficiency” to meet high school graduation requirements.

# Implications: Example Ways to Revise the CCR Standard

## Example 4. Include individualized ways to demonstrate mastery of foundational skills



- Why provide individualized ways to demonstrate mastery?
  - Provides more students with access to educational opportunities and addresses concerns about prerequisite content knowledge.
  - Could better match support services to student needs.
  - Could better reflect the diversity of individual student's strengths and postsecondary aspirations.
  - Parallels to Maryland's Bridge Plan for Academic Validation, Colorado's Collaboratively-Developed Standards-Based Performance Assessment, and Massachusetts's Educational Proficiency Plan.

# Implications: Skills for Success in CCR Standards

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## What might it mean to integrate skills for success into CCR standards?

- Some aspects of skills for success are already articulated in the Maryland Career Development Framework for College and Career Readiness, specifically indicators of self-awareness:
  - Acquire and apply self-knowledge to understand one’s abilities, strengths, interests, skills, and talents as seen by self and others.
  - Demonstrate positive interpersonal skills and respect for diversity to facilitate one’s career development.
  - Recognize that growth and change are integral parts of the career development process.
- Could build on Maryland’s service-learning high school graduation requirement.
- Could build on recent efforts across the country to assess social and emotional learning.

# Questions and Discussion

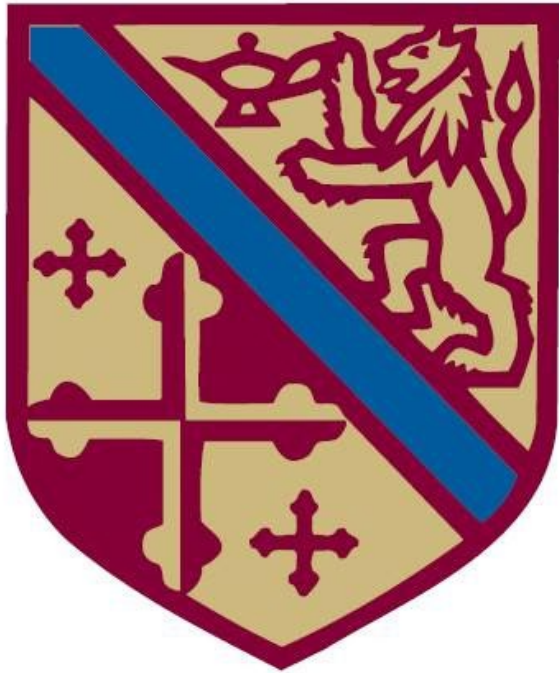
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HOWARD  

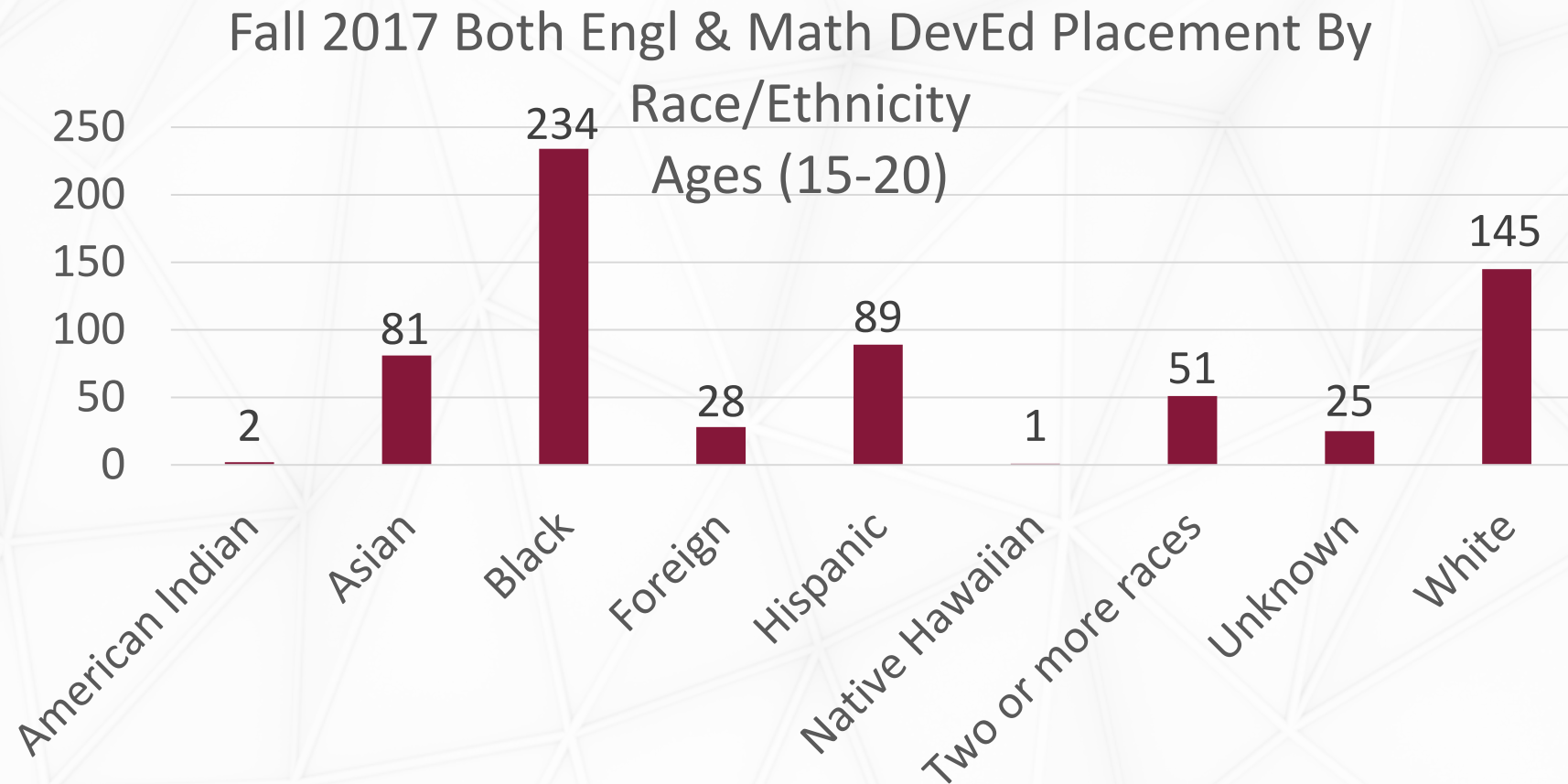
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COMMUNITY COLLEGE

SHIFTING THE COLLEGE READINESS  
PARADIGM:

TRANSFORMING COLLEGE PLACEMENT  
AND DEVELOPMENTAL EDUCATION TO  
IMPROVE STUDENT ACCESS AND SUCCESS

# TRADITIONAL PLACEMENT PRACTICES PROVED TO BE A BARRIER TO ACCESS FOR FIRST-TIME-IN-COLLEGE STUDENTS

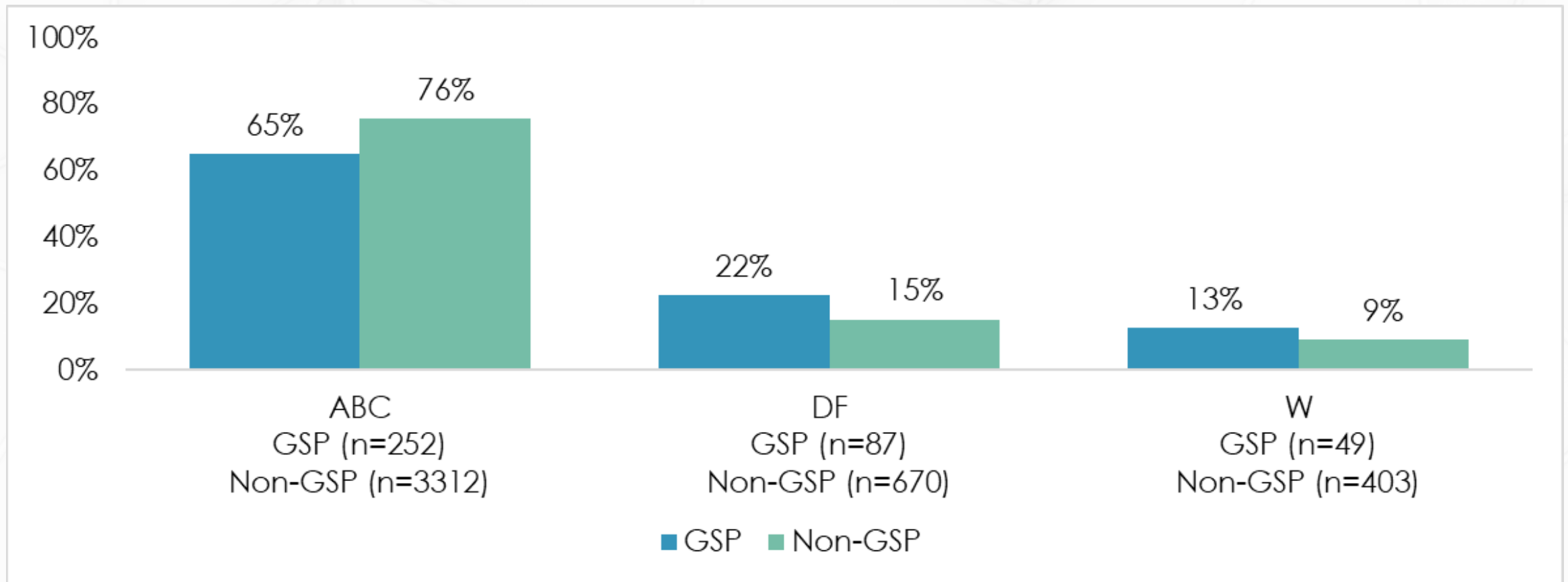


# BEYOND STANDARDIZED TESTING: USING MULTIPLE MEASURES TO INCREASE STUDENT ACCESS & SUCCESS

	Grade						Total	Percentages		
	A	B	C	D	F	Other (I, NA, W)		% A,B,C	%D,F	%Other
<b>Accuplacer</b>	59	31	22	7	31	18	168	66.67%	22.62%	10.71%
<b>GSP</b>	65	57	28	6	45	32	233	64.38%	21.89%	13.73%
<b>GPA</b>	1095	527	180	43	135	112	2092	86.14%	8.51%	5.35%
<b>SAT</b>	118	63	74	19	70	51	395	64.56%	22.53%	12.91%

\*Course success rates for first-time ENGL-121 students in terms FA20, SP21, FA21, SP22





## COMPARATIVE COURSE OUTCOMES OF GSP vs NON-GSP STUDENTS

Overall, non-GSP students were more likely to earn higher grades in ENGL-121 compared to GSP students. There was also a significant association between ENGL-121 placement and course success for students placed into ENGL-121 and ESL, which indicated similarly that non-GSP students were more likely to earn an A, B, or C than GSP students,  $\chi^2(1, N = 3938) = 5.33, p = .02$ . All other individual breakdown of ENGL-121 section types (e.g., EALP, and ALP coreq) resulted in non-significant findings. (GSP - Guided Self Placement Non-GSP- Non Guided Self Placement ( refers to Multiple Measures).

# REFORMING DEVELOPMENTAL EDUCATION USING COREQUISITE COURSES

The English Access and Inclusion Model for Success (AIMS-121 Model) enables students with college-level English proficiency to enroll directly in ENGL-121, while those who require additional support and preparation enroll in a corequisite support course, ENGL-098, alongside ENGL-121.

Foundational Math (MATH 090)

Corequisite Course Options (MATH 138, 141, 132, 127)

The foundational support course will be offered as a 7-week course, allowing students to complete this course and a corequisite gateway course, such as College Algebra, within one full semester. Should a student in this placement range opt to enroll in a college-level corequisite gateway math course, they have the same four options as any other student.

