Measures for a
College and Career Indicator:

Innovative Measures Course-Taking Behaviors

Presented to the
California PSAA Advisory Committee
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Project Context

Senate Bill (SB) 1458 changes accountability requirements from a near total reliance on state test scores to a broader range of measures, one of which is a College and Career Indicator (CCI).

The Department of Education contracted with EPIC to provide a series of analyses that highlight the strengths and limitations of a wide range of potential indicators.

Project Overview

- Series of six white papers and a final summary paper:
  - April: (1) SAT and ACT and (2) Advanced Placement (AP) and International Baccalaureate (IB)
  - June: (3) Innovative Measures and (4) Course-Taking Behaviors
  - August: (5) Career Preparedness and (6) To Be Determined
  - January: Final report presented to State Board of Education
- Each paper analyzes a class or cluster of measures selected by Public Schools Accountability Act (PSAA) Advisory Committee.
- Final report summarizes findings across measures.

Analytical Framework

- 10 evaluative criteria organized into clusters.
- All criteria rated on a 3-point scale: strong, moderate, weak.

A. Technical Quality
   1. Has research base demonstrating relationship to postsecondary success
   2. Allows for fair comparisons
   3. Is stable

B. Stakeholder Relevance
   1. Has value for students
   2. Is understandable to stakeholder groups
   3. Measures content, skills, and competencies that can be taught and learned in school
   4. Emphasizes student performance

C. System Utility
   1. Minimizes burden
   2. Covers wide number of students
   3. Recognizes a variety of postsecondary pathways

INNOVATIVE MEASURES

Metacognitive assessments

Performance assessments

California Seal of Biliteracy

Metacognitive Learning Skills and Dispositions

- Also known as *noncognitive learning skills* or *21st century skills.*
- Learning strategies, attitudes, and behaviors students employ and improve during the learning process.

Examples of Metacognitive Learning Skills

- Adaptability
- Career awareness
- Collaboration
- Communication
- Conscientiousness
- Grit (persistence)
- Initiative
- Intellectual curiosity
- Leadership
- Resource utilization
- Time management
- Self-awareness
- Self-care
- Self-control
- Self-efficacy
- Study skills

Metacognitive Assessments

Existing academic assessments address content knowledge

Knowledge

Mastery of rigorous content and the easy application or transfer of what has been learned to complex and novel situations.

- Common Core State Standards
- Next Generation Science Standards
- CTE Model Curriculum Standards

Skills

The capacities and strategies that enable students to learn and engage in higher-order thinking, have meaningful interaction with the world around them, and plan for the future.

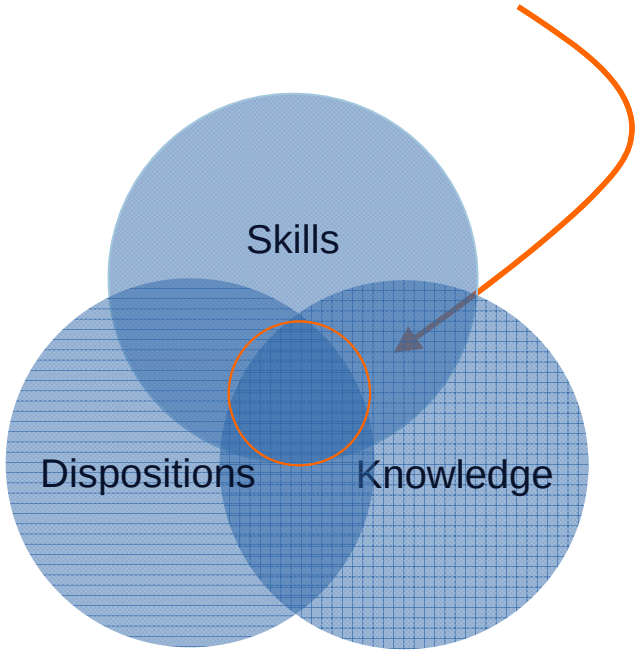
- Critical thinking
- Collaboration
- Study skills and learning how to learn

Dispositions

Socioemotional skills or behaviors that associate with success in college, career, and citizenship.

- Self-efficacy
- Initiative
- Persistence

Preparedness for college, career, citizenship, and lifelong learning requires knowledge, skills, and dispositions



Notable Metacognitive Assessments

Beacon	Beacon
College Adjustment Inventory	CAI
EPIC's CampusReady	CampusReady
College and Work Readiness Assessment	CWRA
ACT's ENGAGE	ENGAGE
Grit Scale	Grit
Inventory of Classroom Style and Skills	INCLASS
Kaleidoscope Project	Kaleidoscope
Learning and Study Strategies Inventory	LASSI
Motivated Strategies for Learning Questionnaire	MSLQ
My Voice Survey	My Voice
National Survey of Student Engagement	NSSE
Noncognitive Questionnaire	NCQ
ETS Personal Potential Index	PPI
Personal Qualities Assessment	PQA
Rational Biodata Inventory	RBI
Situational Judgment Inventory + Biodata	SJI + bio
ETS's Standardized Letters of Recommendation	SLR
Survey of Study Habits and Attitudes	SSHA
Tailored Adaptive Personality Assessment System	TAPAS
EPIC's ThinkReady	ThinkReady
Video-based Situational Judgment Test	Video SJT
Work Preferences Assessment	WPA

Several of these predict college grades and retention

Metacognitive Assessments in Accountability

- The California Office to Reform Education (CORE) districts will be the first accountability system to include metacognitive skills.
  - Currently piloting 4 initial metacognitive assessments across 20 schools
- The four metacognitive assessments will measure:
  - Growth mindset
  - Self-efficacy
  - Self-management
  - Social awareness

Metacognitive Assessments Technical Quality

A1. Relationship to Postsecondary Success

- Conscientiousness, grit or persistence, self-efficacy, and many other metacognitive skills positively predict postsecondary success.
- Several assessments positively predict college grades and retention:
  - ACT's ENGAGE
  - EPIC's CampusReady
  - Learning and Study Strategies Inventory (LASSI)
- Metacognitive skills can provide better insight into success than cognitive measures on their own.

Metacognitive Assessments Technical Quality

A2. Fair Comparisons

- Metacognitive assessments can be administered in a way that ensures fairness across subgroups of students.
  - Results from CORE may provide greater insight

A3. Stability

- A lack of longitudinal data and the potential for faking creates weak stability.
  - New techniques and strategies, large-scale experimentation, and triangulation could improve stability

Metacognitive Assessments Stakeholder Relevance

B1. Value to Students

- Colleges use metacognitive assessments for admission decisions.
- Employers use metacognitive assessments to measure “soft skills.”

B2. Public Understanding

- Metacognition is intuitive to all stakeholders.

B3. Content, Skills, or Competencies

- Provide insight into the learning process.

B4. Emphasis on Student Performance

- The formative information provided can improve student performance.

Metacognitive Assessments System Utility

C1. Minimal Burden

- Most metacognitive assessments do not take much time to complete.
- Computers can score some metacognitive assessments.
- Capturing metacognitive data through large-scale assessments could minimize new costs.

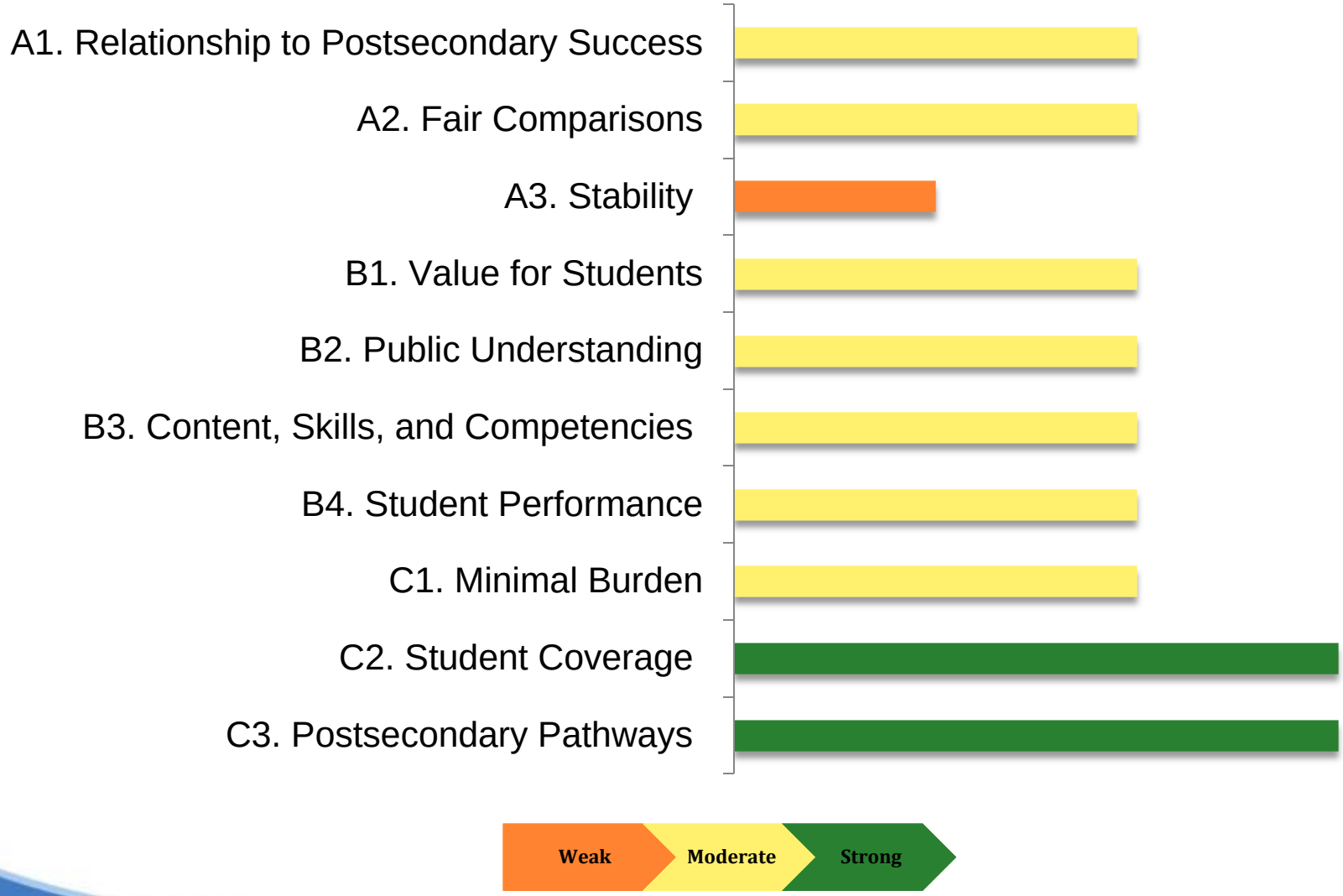
C2. Student Coverage

- Potential for universal coverage.

C3. Postsecondary Pathways

- Valuable for students pursuing both college and career-going postsecondary pathways.

Metacognitive Assessments Summary



Questions or Comments?

Performance Assessment

- Also referred to as *performance-based assessments* or *performance tasks.*
- Students construct original responses to problems that require more sustained cognitive processing.
- Task completion duration ranges from a single class period to a semester.

CONTINUUM OF ASSESSMENT FOR DEEPER LEARNING

Traditional State Assessments	New CCSS Assessments	Common Performance Tasks	Learning Tasks	Student-Designed Projects
Standardized, multiple-choice tests of routine skills	Standardized tests with multiple-choice and open-ended items, & performance tasks lasting 1–2 days	Standard performance tasks lasting 1–3 weeks that demand more integrated skills	Performance tasks that require students to carry out inquiries, analyze findings, and revise	Longer, deeper investigations lasting 2–3 months requiring students to initiate, design, conduct, analyze, revise, and present their work
Examples: WKSE-CRT, OAKS	Examples: SBAC and PARCC	Examples: ThinkReady and SCALE NY	Examples: ThinkReady and SCALE OH	Examples: Envision Schools, NY Performance Standards Consortium, IB

Performance Assessment in Accountability

- The 1990s witnessed the high point of performance assessment use in schools and in state testing and accountability systems:
  - California, Connecticut, Kentucky, Maine, Maryland, Massachusetts, Missouri, New Hampshire, Ohio, Oregon, Rhode Island, and Vermont
- Many countries use complex performance assessment in high-stakes ways:
  - Australia, England, Finland, Hong Kong, Singapore

Performance Assessment Technical Quality

A1. Relationship to Postsecondary Success

- Potential to gain greater insights into deeper learning associated with college preparedness than standardized content tests.
- Present in many college disciplines and most career and technical fields.
- Predicts later academic success in ways that can contribute useful information to an accountability system.

Performance Assessment Technical Quality

A2. Fair Comparisons

- Potential to minimize systematic differences in performance among subgroups of students.
- Need to field-test to ensure that linguistic demand is comparable and fair for all student subgroups.

A3. Stability

- Experience from the 1990s shows that creating a system of stable performance assessments is conceivable and feasible.

Performance Assessment Stakeholder Relevance

B1. Value to Students

- Performance tasks are accepted by some colleges and a few employers.

B2. Public Understanding

- Depends on the construct being measured.
- Nearly everyone has completed a performance assessment of some sort.

B3. Content, Skills, or Competencies

- Depends on the alignment to curriculum.
- Can measure content knowledge and metacognitive skills in tandem.

B4. Emphasis on Student Performance

- Potential to contribute information for both accountability purposes and classroom-level formative feedback.

Performance Assessment System Utility

C1. Minimal Burden

- Generally more costly to develop and score performance tasks.
  - Advances in technology as well as common scoring guides, rubrics, and training could reduce these costs.
- Ability to measure deeper learning and inform teaching helps counterbalance these burdens.

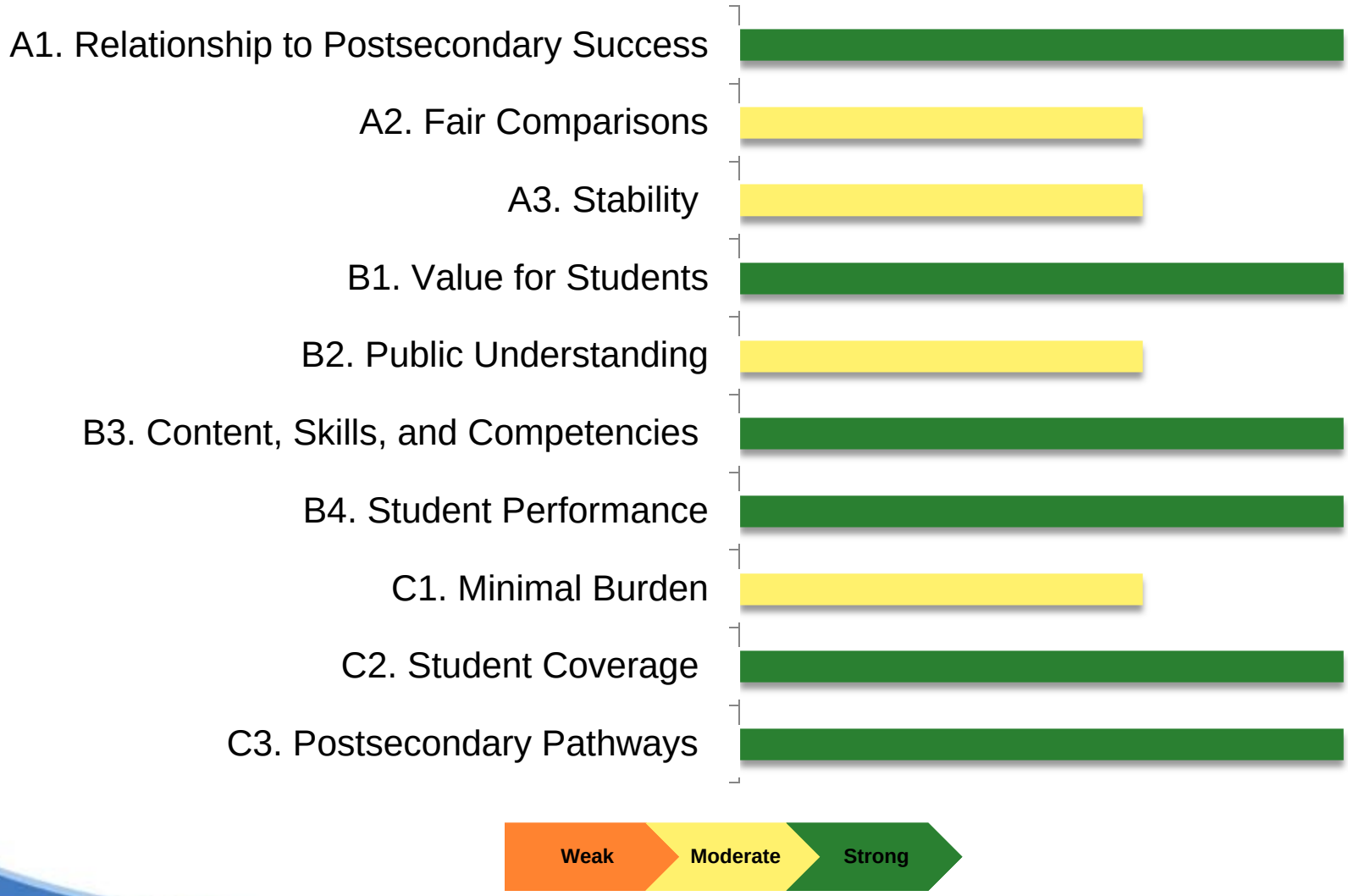
C2. Student Coverage

- Potential for universal coverage, but requires different type of organization and commitment by the state and schools.

C3. Postsecondary Pathways

- Provides a unique insight into college and career preparedness by measuring cognitive and (potentially) metacognitive skills.

Performance Assessment Summary



Questions or Comments?

California State Seal of Biliteracy

- Schools or districts award the California Seal of Biliteracy (CSB), a gold seal that appears on the transcripts or diplomas, to students who have attained proficiency in two or more languages by high school graduation.

Demonstrating Proficiency

Students whose first language is English must do the following:

1. Complete all English-language arts (ELA) requirements for graduation with an overall grade point average (GPA) of 2.0 or above.
2. Pass the Grade 11 California Standards Test (CST) in ELA at or above the “proficient” level.
3. Demonstrate proficiency in one or more languages other than English through one of the following:
   - Score 3 (out of 5) or higher on an AP exam with content in a language other than English
   - Score 4 (out of 7) or higher on an IB exam with content in a language other than English
   - Successfully complete a four-year high school course of study in a language other than English with a GPA of 3.0 or above in those courses
   - Pass an approved school district language examination
   - Score 600 or higher on a SAT II foreign language exam

Students whose first language is not English must achieve the “Early Advanced Proficiency” level on the California English Language Development Test (CELDT) and meet the requirements in steps 1, 2, and 3 above.

Seal of Biliteracy Technical Quality

A1. Relationship to Postsecondary Success

- Bilingualism is associated with improved brain functioning, higher scores on standardized tests, and enhanced career opportunities in some sectors.
- No research directly measuring the long-term effects of the CSB program.
- Overall limited research exploring the relationship between demonstrating additional language proficiencies in high school and future college success.

Seal of Biliteracy Stakeholder Relevance

A2. Fair Comparisons

- Students in economically disadvantaged schools do not have equal access to coursework in languages other than English.

A3. Stability

- Moderate stability based on the different pathways to biliteracy:
  - AP, IB, and SAT II exam scores
  - School-level district exams and coursework GPAs

Seal of Biliteracy System Utility

B1. Value to Students

- Students can earn college credits by accessing certain pathways (AP, IB, SAT II) to biliteracy.
- Increased employability in certain sectors.

B2. Public Understanding

- Bilingualism is well understood, but the CSB is a relatively new program.

B3. Content, Skills, or Competencies

- Students are assessed on what is learned in the classroom.

B4. Emphasis on Student Performance

- Indirect measurement of a school's inputs and processes.

Seal of Biliteracy Summary

C1. Minimal Burden

- Potential for AP, IB, or SAT II test fees, but otherwise minimal burden for all stakeholders.

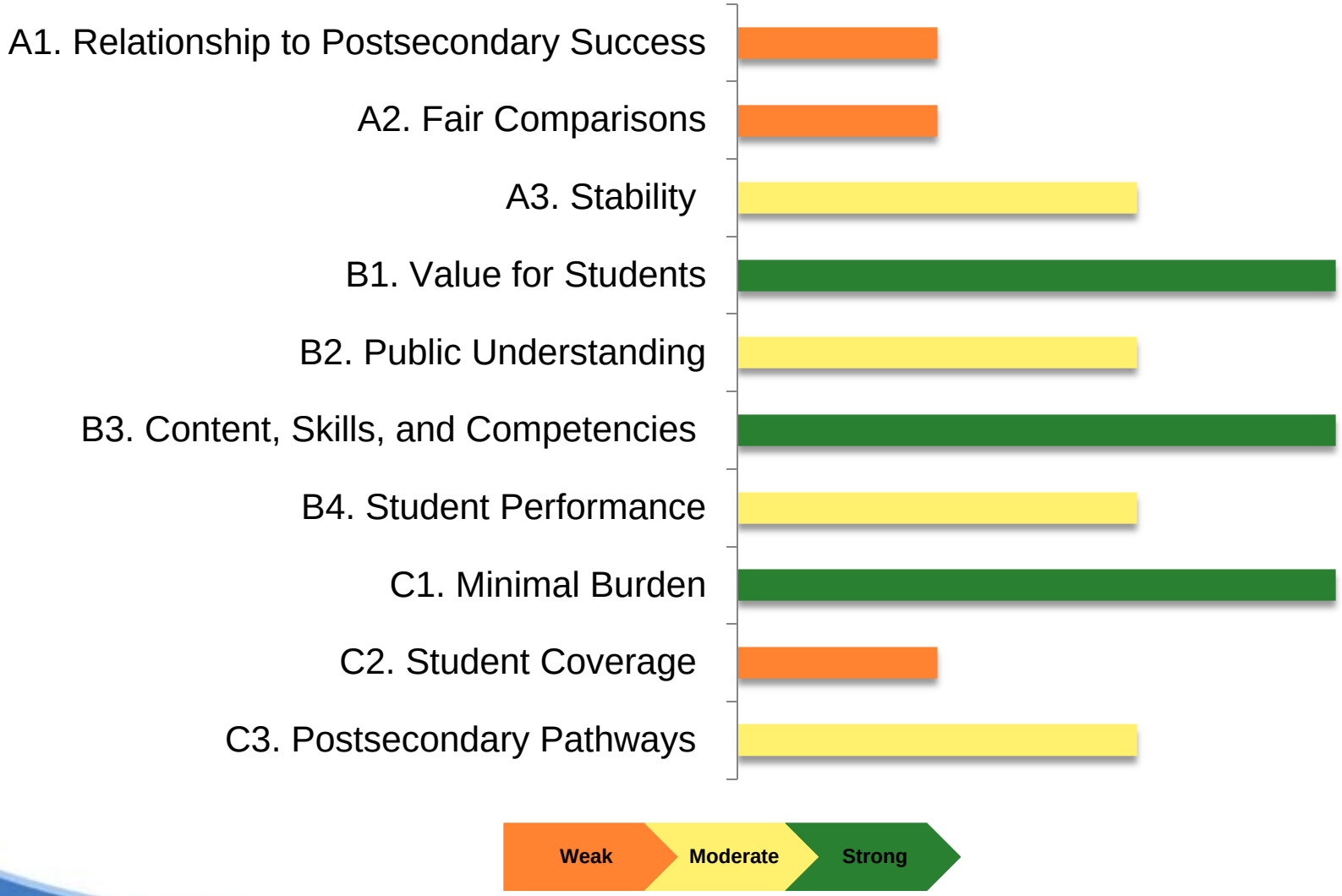
C2. Student Coverage

- A small fraction of the approximately 500,000 grade 12 students in CA.
  - More than 10,000 earned the CSB in 2012
  - Doubled to more than 21,000 in 2013

C3. Postsecondary Pathways

- Benefits may be modest in terms of college credits earned.
- May have modest effects on future career earnings.
- Benefits do exist for a variety of postsecondary pathways.

California State Seal of Biliteracy Summary



Innovative Measures Summary

- Innovative measures involve trade-offs between feasibility and effects on practice.
- Metacognitive and performance assessments can capture career and college preparedness in a way that examinations of content knowledge alone cannot.
- Metacognitive and performance assessments provide educators with actionable, immediate feedback that enhances the potential to adapt teaching and learning more rapidly and appropriately to student needs.

Questions or Comments?

COURSE-TAKING BEHAVIOR

A–G Subject Requirements

Career Technical Education (CTE) Course Pathways

Integrated Course Pathways

UC and CSU
A–G Subject Requirements

- A set of 15 yearlong high school courses required for admission to University of California (UC) and California State University (CSU) systems.
- Students must complete all 15 yearlong courses with a grade of C or better.
- Students must complete 11 of the 15 yearlong courses before their senior year for admission to the UC campuses.

Subject area	CA high school graduation requirements	CSU subject requirements	UC A–G subject requirements
(a) History/social science	**3 years** U.S. history and geography, world history or culture and geography, and ½ government, ½ civics	**2 years** U.S. history or American government and a social science course	**2 years** world history, cultures and historical geography and either U.S. history or ½ U.S. history and ½ government
(b) English	**3 years**	**4 years** college preparatory English that includes composition and literature	**4 years** college preparatory English that includes literature, writing, speaking and listening
(c) Mathematics	**2 years** including Algebra I	**3 years (4 recommended)** Algebra I, geometry, Algebra II	**3 years (4 recommended)** Algebra I, geometry, Algebra II
(d) Laboratory science	**2 years** biological and physical sciences	**2 years** biology and physical science	**2 years (3 recommended)** chosen from biology, chemistry, and physics
(e) Language other than English	**1 year** art, foreign language, or career technical education	**2 years** of the same language, including American sign language	**2 years (3 recommended)** of the same language or equivalent to second level of high school instruction
(f) Visual and performing arts	**1 year** art, foreign language, or career technical education	**1 year** dance, drama/theater, music, or visual art	**1 year** dance, drama/theater, music, or visual art
(g) College preparatory elective	**Not applicable**	**1 year**	**1 year**
Physical education	**2 years**	**Not applicable**	**Not applicable**

CTE Course Pathways

- CTE is delivered to students through:
  - individual high school courses
  - career academies within comprehensive high schools
  - Regional Occupation Centers & Programs (ROCPs)
  - internships
  - apprenticeships
  - work experience education
- CTE course pathways consist of 3–4 courses aligned to the California CTE Model Curriculum standards.

California CTE Model Curriculum Standards

- Agriculture and natural resources
- Arts, media, and entertainment
- Building and construction trades
- Business and finance
- Education, child development, and family services
- Energy, environment, and utilities
- Engineering and architecture
- Fashion and interior design
- Health science and medical technology
- Hospitality, tourism, and recreation
- Information and communication technologies
- Manufacturing and product development
- Marketing sales and service
- Public services
- Transportation

Course-Taking Behavior in Accountability

- Many state accountability systems take advanced course-taking behavior (AP, IB, or dual enrollment) into account.
- Few take into consideration the quality and challenge of the course pathways taken.
  - Georgia, Maryland, New Mexico, New York, and North Carolina have some measure of specific course pathways taken
- A number of states measure the percentage of students who pass a CTE test leading to an industry credential, or those completing a pathway of CTE courses.
  - Florida, Georgia, Indiana, New Jersey, and Ohio

Integrated Course Pathways

- The California Career Pathways Trust and organizations such as Linked Learning are creating courses that combine rigorous academics with career-based and workplace learning.
- The number of CTE courses in California that are A–G approved has risen dramatically in the past decade.
- A course pathway indicator that gauges the quality of all courses taken, academic and CTE, has the potential to be more technically sound, more relevant to stakeholders, and more valuable than considering A–G and CTE course participation separately.

Example of an Integrated Course Pathway Indicator

1,000 API Points

Completed A–G requirements ***AND*** Completed CTE Course Pathway and passed a certification exam

800 API Points

Completed A–G requirements ***OR*** Completed CTE Course Pathway and passed a certification exam

600 API Points

Completed four years of any 3–4 A–F subject areas ***AND*** Completed 2 CTE courses

400 API Points

Completed four years of 1–2 A–F subject areas ***AND*** Completed 1 CTE course

200 API Points

The student met none of the previous indicators.

Course-Taking Behavior Technical Quality

A1. Relationship to Postsecondary Success

- An academically demanding curriculum predicts postsecondary success reasonably well.
- Completing a specific CTE pathway leads to increased wages.
- Neither A–G nor CTE course pathway completion alone is strongly related to *both* college and career success.
- An integrated course pathway that requires completion of A–G and a CTE course pathway has the potential to be a useful indicator of college *and* career preparedness.

Course-Taking Behavior Technical Quality

A2. Fair Comparisons

- Minority students and those eligible for free and reduced lunch are less likely to complete the A–G subject requirements and CTE course pathways.
  - Less likely to be taught by teachers with appropriate credentials
  - More likely to lack access to adequate learning materials

Course-Taking Behavior Technical Quality

A3. Stability

- Courses need to be more comparable and of more consistent quality to ensure strong stability.
- The UC Office of the President (UCOP) evaluates every A–G course offered in California high schools including CTE courses that satisfy
A–G requirements.
  - The UCOP course-evaluation process is not designed to determine if courses reviewed are aligned to the CCSS or CTE Model Curriculum Standards.

Course-Taking Behavior Stakeholder Relevance

B1. Value to Students

- Completing the A–G requirements satisfies the course-taking admission requirements at all public institutions of higher education in California.
- CTE course pathways can lead to industry certificates.

B2. Public Understanding

- A–G is more familiar than CTE course pathways.
- Few may be aware of overlaps in the two sets of requirements.

B3. Content, Skills, or Competencies

- Highly relevant school-level indicator.

B4. Emphasis on Student Performance

- Individual students complete multiple yearlong courses.

Course-Taking Behavior System Utility

C1. Minimal Burden

- Minimal for students.
- May require school districts to expand A–G and CTE course offerings.
- A rigorous course review system would increase likelihood that courses are appropriately challenging and that grades are comparable.

C2. Student Coverage

- 32% of high school seniors satisfied the A–G requirements in 2013.
- Approximately 26% completed a CTE course pathway in 2013.

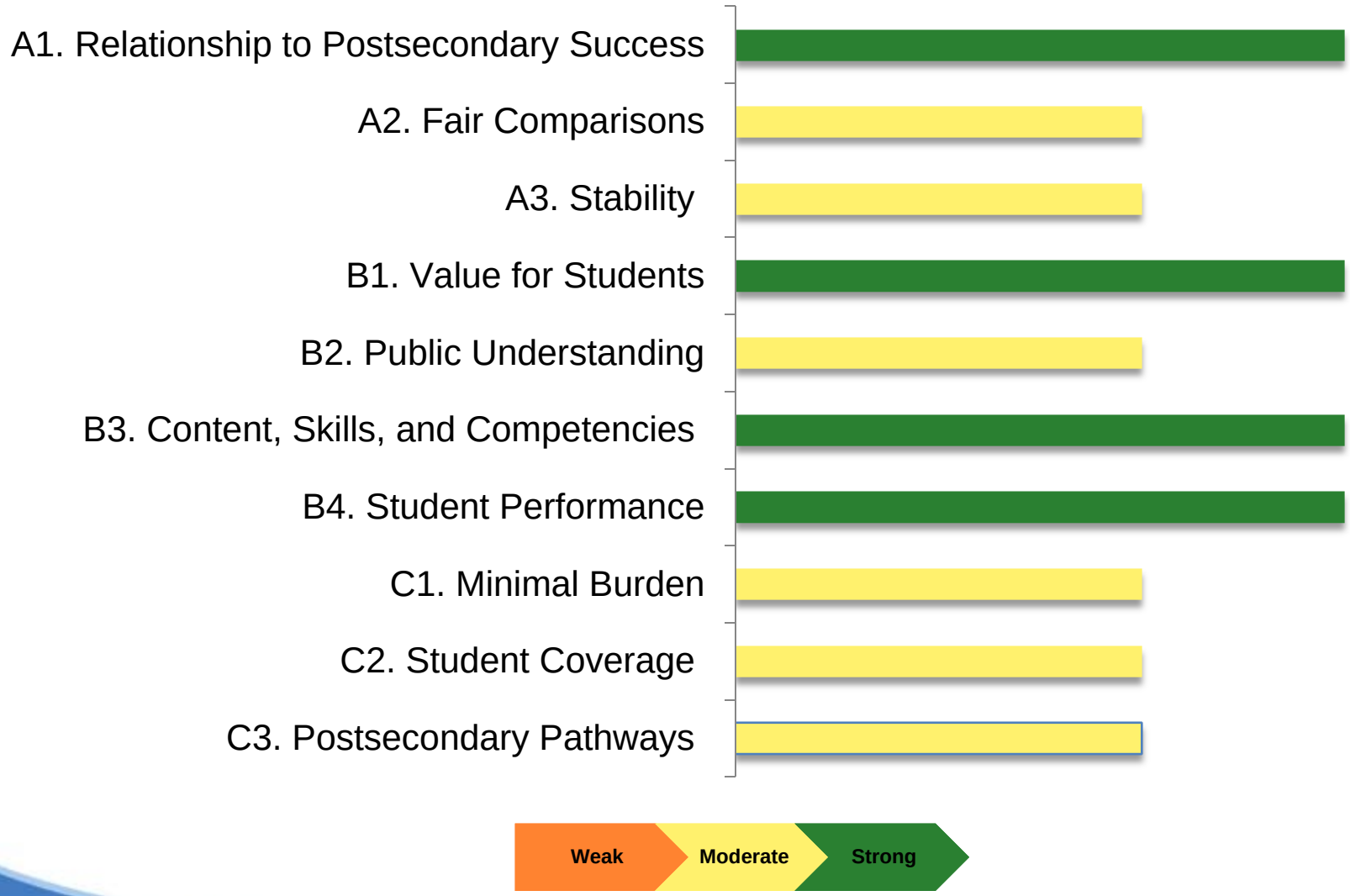
C3. Postsecondary Pathways

- A–G most relevant to four-year college-going pathway.
- CTE most relevant to career pathway.

Advantages of an Integrated Course Pathway

- An integrated course pathway that encourages students to complete the A–G subject requirements and a CTE course pathway has the potential to:
  - Enhance postsecondary success for a wider range of students
  - Increase the educational and employment value of the diploma
  - Limit system-level burden
  - Improve student coverage and minimize dysfunctional behaviors such as tracking
  - Be relevant to *both* the college and career-going pathway

Course-Taking Behavior Summary



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