

# Defining the College-Bound Core Curriculum in High Schools

Doreen Finkelstein  
The College Board



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## Questions for consideration:

- What's important to know about high school course-taking in preparation for college?
  - Breadth of coursework -- coverage of subject areas?
  - Depth of coursework -- number of units in a subject?
  - Reach of coursework – most advanced course taken (e.g., geometry vs. calculus)?
  - Rigor of coursework -- honors, IB<sup>®</sup>, AP<sup>®</sup>?
  - Achievement in coursework – grades?
  - Other?
- How can we distill the wealth of longitudinal data from high school transcripts into a meaningful measure (or set of measures)?

# What are the coursework requirements for high school graduation?

- According to NCES, as of 2005 (Planty, Provasnik & Daniel, 2007):
  - 45 states had statewide coursework requirements for public high school graduation
  - # of Carnegie units required ranged from 13-24

## Subject Area

## Range in Requirements

English

3 - 4 years

Math

2 - 4 years

Science

2 - 4 years

Social Studies

½ - 4 years

Foreign Language

0 – 2 years

# What are the coursework recommendations for acceptance to college?

| <u>Subject Area</u> | <u>UC San Diego (public)</u> | <u>San Diego State (public)</u> | <u>University of San Diego (private)</u> | <u>Stanford University (private)</u> |
|---------------------|------------------------------|---------------------------------|--|--------------------------------------|
| English             | 4 years                      | 4 years                         | 4 years                                  | 4 years                              |
| Math                | 4 years                      | 4 years                         | 3 - 4 years                              | 4 years                              |
| Science             | 3 years                      | 2 years                         | 3 - 4 years                              | 3+ years                             |
| Social Studies      | 2 years                      | 2 years                         | 2+ years                                 | 3+ years                             |
| Foreign Language    | 3 years                      | 2 years                         | 3 - 4 years                              | 3+ years                             |

# Various descriptive indices in the literature:

- Science pipeline (Burkham & Lee, 2003)
  - Level 1 – no science
  - Level 2 – primary physical science
  - Level 3 – secondary physical science / basic biology
  - Level 4 – general biology
  - Level 5 – chemistry I or physics I
  - Level 6 – chemistry I and physics I
  - Level 7 – chemistry II or physics II or advanced biology
  - Level 8 – chemistry I and physics I and Level 7
- Academic intensity index – The Toolbox Revisited (Adelman, 2006)
  - 31 gradations
  - Highest intensity: 3.75+ units of English, 3.75+ units of math, 2.5+ units of science, 2+ units of foreign language, 1+ units of computer science; ALSO calculus, pre-calculus or trigonometry; ALSO no remedial English or remedial math; ALSO more than one AP<sup>®</sup> course

# More questions for consideration:

- If we care about level of coursework, how do we deal with subject areas that do not have a natural progression, such as English or social studies?
- If we care about rigor of coursework, how do we deal with the different access to rigorous courses (e.g., AP®) among schools?
- How do we deal with the fact that courses with the same title on a transcript may cover very different content and breadth?
- If we validate against “college success,” how do we define college success?
  - Admission to college, first-year college GPA, retention to second year of college, overall college GPA, degree?

# Data: High School Senior Cohort

- 9<sup>th</sup> grade in '95-'96, 10<sup>th</sup> grade in '96-'97, 11<sup>th</sup> grade in '97-'98, 12<sup>th</sup> grade in '98-'99
  - $n = 75,751$
- Merged with NSC data: did the student enroll in a 4-year college in '99-'00?
  - $n = 35,116$  (46.4%)

# HS Courses and Enrolling in a 4-Year College

| <u>of Course</u>                        | <u>Type</u> | <u># Units - Enroll<br/>Point-Bis. Corr.</u> | <u>Avg # of Units:<br/>Did Not Enroll</u> | <u>Avg # of Units:<br/>Enrolled</u> |
|---|-------------|--|---|-------------------------------------|
| English                                 |             | .15  | 3.74                                      | 3.98                                |
| Math                                    |             | .21  | 3.16                                      | 3.56                                |
| Science                                 |             | .27  | 3.10                                      | 3.62                                |
| Social Studies                          |             | .14  | 3.05                                      | 3.31                                |
| Foreign Lang.                           |             | .32  | 1.16                                      | 1.90                                |
| Honors/AP <sup>®</sup> /IB <sup>®</sup> |             | .43  | 1.99                                      | 6.06                                |



## Data: Enrolled in State 4-Year College Cohort

- Students from the high school senior cohort who enrolled in a 4-year public college in the state in '99-'00
  - $n = 28,224$
- Merged with state public college records: did the student receive a bachelor's degree by '05-'06?
  - $n = 13,179$  (46.7%)

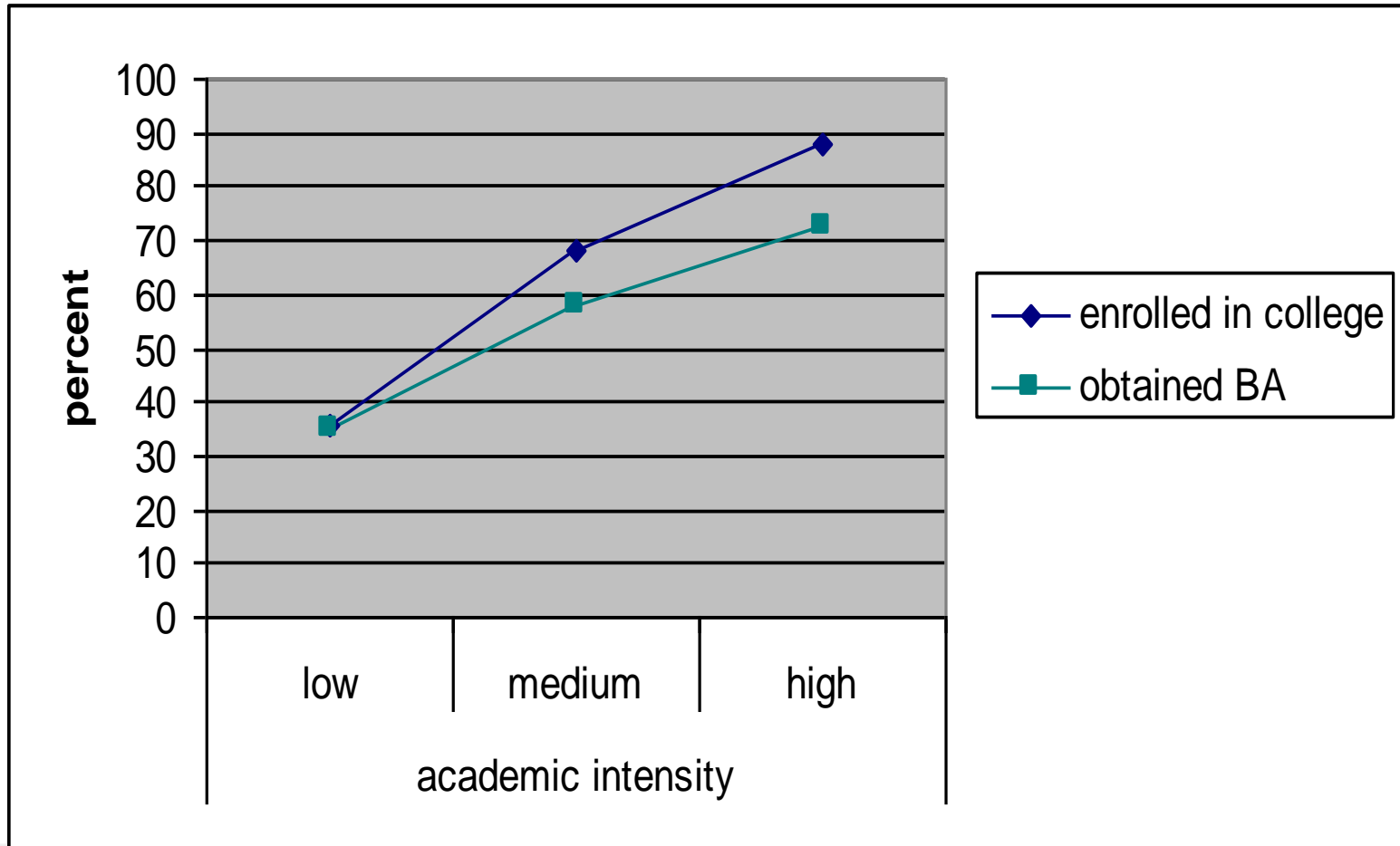
# HS Courses and Obtaining a BA Degree

| <u>of Course</u>                        | <u>Type</u> | <u># Units - BA Point-Bis. Corr.</u> | <u>Avg # of Units: No BA Degree</u> | <u>Avg # of Units: BA Degree</u> |
|---|-------------|--------------------------------------|-------------------------------------|----------------------------------|
| English                                 |             | .06                                  | 3.95                                | 4.01                             |
| Math                                    |             | .19                                  | 3.40                                | 3.73                             |
| Science                                 |             | .20                                  | 3.44                                | 3.81                             |
| Social Studies                          |             | .12                                  | 3.21                                | 3.39                             |
| Foreign Lang.                           |             | .13                                  | 1.77                                | 2.05                             |
| Honors/AP <sup>®</sup> /IB <sup>®</sup> |             | .35                                  | 4.44                                | 7.92                             |

# Academic Intensity Illustrative Example

- Decided that for each course type:
  - At or above 90<sup>th</sup> percentile in units = high intensity
  - At or above 50<sup>th</sup> percentile in units = medium intensity
  - Below 50<sup>th</sup> percentile in units = low intensity
- High intensity: 4+ units of English; 4+ units of math; 4+ units of science; 4+ units of social studies; 3+ units of foreign language; 11.5+ units of honors/AP<sup>®</sup>/IB<sup>®</sup>
- Medium intensity: 4+ units of English; 3+ units of math; 3+ units of science; 3+ units of social studies; 2+ units of foreign language; 1.5+ units of honors/AP<sup>®</sup>/IB<sup>®</sup>
- Low intensity: not meeting the above levels of coursework

# HS Intensity and College Outcomes



Base for enrolled in college %s: High School Senior Cohort  
Base for obtained BA %s: Enrolled in State 4-Year College Cohort

# Some final thoughts:

- Base populations matter
  - E.g., high school seniors vs. students who enrolled in college
- Measures matter
  - E.g., “college success” = enrollment vs. “college success” = BA degree within 7 years
- Local contexts matter
  - E.g., foreign language as a high school graduation requirement
- And a final question:
  - To what extent should the college-bound core curriculum be empirically defined (statistically related to college success), and to what extent should it be defined by the depth and breadth of coursework we feel most students should be taking in order to be considered “well-educated”?

# Questions, Comments, Suggestions

- Researchers are encouraged to freely express their professional judgment. Therefore, points of view or opinions stated in College Board presentations do not necessarily represent official College Board position or policy.
- Please forward any questions, comments, and suggestions to:

Doreen Finkelstein at: [dfinkelstein@collegeboard.org](mailto:dfinkelstein@collegeboard.org)