

This memo summarizes the literature on measures that are correlated with student achievement in secondary and post-secondary education.

I. Selected Literature Review on Secondary Education¹

- i. NCAN developed a set of Common Measures that are associated with post-secondary enrollment and completion are as follows:

Post-Secondary Enrollment Indicators			
Academic	Testing	Admissions	Financial Aid
Completed Common Core/Equivalent College Preparation Curriculum	SAT/ACT Score	Completed College Applications (by School Type)	Completed and Submitted a FAFSA Form
Enrolled in AP courses	Earned 3 or greater on AP tests	Number of Completed College Applications	Awarded Financial Aid
Have Mastery of Algebra II (or higher)			
Average High School GPA			
On-time Graduate			

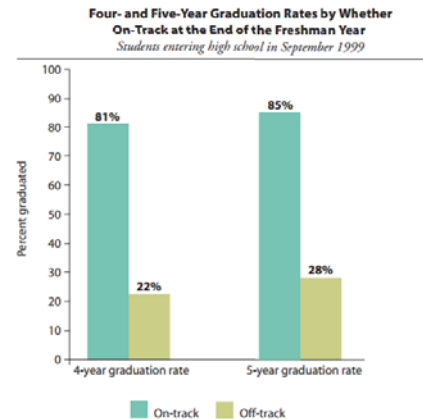
Post-Secondary Completion Indicators				
Pre-Enrollment	Enrollment	Academic	Financial Aid	Demographic
Participated in College Orientation Program	Enrolled within 6 months of high school graduation	Placed in remedial courses	Completed and submitted renewal FAFSA form	First-generation college attendee
Participated in Summer Bridge Program	Enrolled full-time vs part-time	Completed remedial coursework within one academic year	Awarded financial aid	Pell Grant eligible
		Completed college level math course	Worked more than 20 hours per week during school year	Race
		Completed more than 20 credits in first academic year		ESL Status
		Average College GPA		

- ii. The On-Track Indicator as a Predictor of High School Graduation (Allensworth and Easton, 2005).
- On-Track Indicator: A student in 9th grade is 'on-track' if she satisfied both criteria:
 - She accumulated at least five full course credits(the minimum number of credits required to be promoted to 10th grade in Chicago Public School Systems)

¹ Please refer to the end of the memo for links.

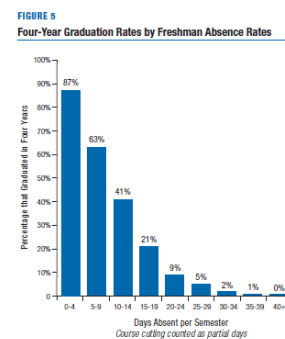
- She had no more than one semester of F in a core subject(English, Math, Science, or Social Studies).

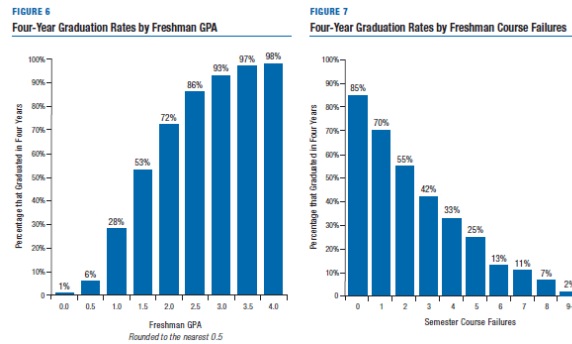
- Researchers studied a cohort of students entering a Chicago Public high school in 1999, and found a disparity in graduation rates between ‘on-track’ and ‘off-track’ students (See Figure on the right).
- The correlation between being ‘on-track’ and graduating high school remained strong after accounting for demographic factors *and* measures of earlier success (e.g. standardized test scores in 8th grade).
- Number of credits earned and the probability of graduation are positively correlated.
- Number of failures in core subjects is negatively associated with the probability of graduation
- Students that enter with high standardized test scores are more likely to be ‘on-track,’ but students with low or average test scores can also succeed in high school, with timely intervention and institutional support.
- *Recommendation: In order to improve graduation rates, schools and college success programs should track academic performance of their students from freshmen year or earlier.*



iii. What Matters for Staying On-Track and Graduating in Chicago Public High Schools (Elaine Allensworth, John Q. Easton, 2007)

- This study(extension of the 2005 report) explores more nuanced indicators of academic performance that are associated with high school graduation.
- Researchers look at average GPA, absence, and number of course failures, and graduation outcome for multiple cohorts of first-time 9th graders in Chicago Public high schools
- Even short periods of **absence** have a negative association with graduation(See Figure 5).
- Probability of graduation increases in freshmen year GPA(See Figure 6).
- Each additional **course failure** results in lower likelihood of graduation. Course failures are rarely aberrant indicators; students who fail in just one or two courses tend have broader academic problems(See Figure 7).



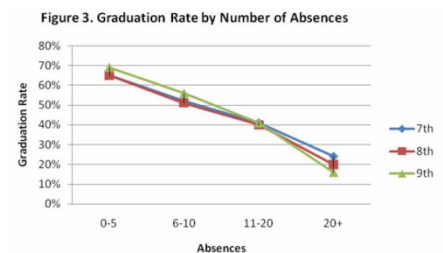
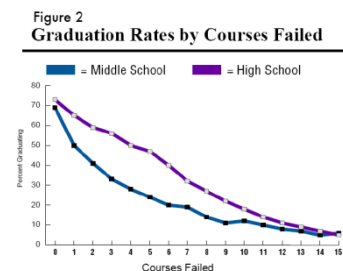


- *Recommendations: Use multiple indicators in different times of the school year to identify students in danger of dropping out*
 - *High absence rates can be used to identify students in need earlier in the school year*
 - *GPA(or expected GPA) can be tracked beginning in the middle of first semester*
 - *Course failures can be tracked at the end of each semester to gauge need for intervention*

iv. What Factors Predict High School Graduation in the Los Angeles Unified School District? (David Silver and Marisa Saunders, 2008)

- Authors tracked multiple cohorts of first-time freshmen enrolled in LAUSD schools
- They analyze transcript records and test scores in state-administered proficiency tests in order to identify factors that differentiate students who graduate
- Key Findings

- Likelihood of dropping out is greatest for 9th graders; it is important to measure academic experiences that lead up to this critical year
- Number of failures in core subjects(Math, English, Science, Social Science) in middle school has a negative association with high school graduation(See Figure 2).
- Students who failed closer to high school transition were less likely to graduate than those who failed in early middle school years
- Failing Algebra is particularly problematic, since it is a gateway course to more advanced mathematics and other opportunities
- Number of absence has a negative correlation with high school graduation(See Figure 3).
- Standardized test scores are positively associated with graduation



- *Recommendations: Start tracking the number of core subject failures and absence rates earlier than 9th grade to help students succeed in high school.*
- v. Why Students Drop out of School: A Review of 25 Years of Research (Russell Rumberger and Sun Ah Lim, 2008)
- Authors summarize useful indicators associated with high school graduation, based on review of 203 published studies
 - Indicators based on individual characteristics
 - Academic Performance: high school grades, standardized test scores, academic performance in earlier school years, student mobility, retention
 - Behaviors: attendance; misbehavior; substance use
 - Attitudes
 - Background: demographics, English proficiency, immigrant status
 - Indicators based on institutional characteristics:
 - Family characteristics
 - School characteristics: student body composition, school policies, available resources
- vi. Putting Middle Grades Students on the Graduation Path (Robert Balfanz, 2009)
- Author followed several cohorts of middle students from six school districts and identified factors associated with high school graduation
 - Key Findings:
 - Poor attendance has a negative correlation with high school graduation
 - GPA has a stronger positive correlation with high school graduation than standardized test scores
 - *Recommendations: schools/success programs should start tracking attendance and academic records, as early as middle school, and recognize good performance through public acknowledgement and rewards*

II. Selected Literature Review on Post-Secondary Education

- i. Student Progress Toward Degree Completion (Moore and Shulock, 2009)
- Authors reviewed the literature on metrics associated with college graduation, and identified three intermediary trackers
 - Key Findings:
 - Remediation
 - Did the student have remedial needs upon enrollment in college?
 - Did the student complete remedial programs within the first term of enrollment?
 - Gateway Courses
 - Did the student complete college-level Math and English courses in the first two years of college?
 - Did the student complete a college success/first-year experience program?

- Credit Accumulation and Related Academic Behaviors
 - Course completion
 - Full-time/part-time enrollment
 - Credits earned in the first year of college
 - GPA
 - *Recommendations: Start tracking information on remediation, gateway courses, and class performance from students' first semesters in college.*
- ii. The Missing “One-Offs”: The Hidden Supply of High-Achieving, Low-Income Students (Hoxby and Avery, 2012)
 - Authors studied college application behaviors of high-achieving, low-income students who would likely be admitted to the majority of selective institutions if they applied
 - ‘High-Achieving’ Students are defined as those who:
 - score at or above the 90th percentile on the ACT/SAT I(Math and Verbal) 2)
 - have high school GPA of A- or above
 - Key Findings on high-achieving, low-income students:
 - They apply in disproportionate numbers to non-selective institutions although those schools have meager resources per student and lower graduation rates
 - They lack information or encouragement that their high-achieving, high-income peers have, leading to divergent behaviors at the college application stage
 - If they apply to similar colleges to their high-income peers, their educational and career trajectories are similar
 - *Recommendations: mentoring/success programs should identify high-achieving, low-income students early on and provide additional guidance and encouragement throughout college preparation and application.*

III. Summary of Findings Most Applicable to First Graduate

- i. Academic performance throughout middle school, high school, and college is closely associated with eventual college graduation; **average GPA, number of credits earned,** and the **number of failures in course subjects** can be used to track students’ overall academic performance and identify students in danger of falling behind.
- ii. Academic performance during **transition years**(e.g. 9th grade, college freshmen year) is critical to long-term success
- iii. **Absenteeism**, even at low rates, is a worrying indicator that can be used to identify students who are falling behind or losing interest in school.
- iv. Completing **remediation** programs(if needed) and **gateway courses** early on in college is associated with on-time graduation.
- v. Algebra, among gateway courses, is particularly critical and should be completed early on in high school and college career.

IV. Potential Discussion Points for First Graduate

- i. On current practice:
 - What are the metrics that we currently track on our students?
 - Are we tracking students consistently throughout the ten-year program?
 - What are the key metrics that we report on the website and materials circulated to contributors?
 - Do we provide support for students based on the metrics we measure?
- ii. On potential improvements:
 - What are additional critical metrics that we should start tracking?
 - Are there metrics that we currently track that are not useful indicators?
 - Are there ways to change or improve the presentation of the metrics?
 - Is there a need to introduce additional programs for students who are exhibiting worrying behaviors on the key indicators?

V. List of Cited Studies

- i. “Common Measures for College Access and Success,” *National College Access Network*, October 2, 2012.
- ii. Elaine M. Allensworth and John Q. Easton, “The On-Track Indicator as a Predictor of High School Graduation,” *Consortium on Chicago School Research*, June 2005.
- iii. Elaine M. Allensworth and John Q. Easton, “What Matters for Staying On-Track and Graduating in Chicago Public High Schools,” *Consortium on Chicago School Research*, July 2007.
- iv. David Silver, Marisa Saunders, and Estela Zarate, “What Factors Predict High School Graduation in the Los Angeles Unified School District,” June 2008.
- v. Russell Rumberger and Sun Ah Lim, “Why Students Drop Out of School: A Review of 25 Years of Research,” October 2008.
- vi. Robert Balfanz, “Putting Middle Grades Students on the Graduation Path,” June 2009.
- vii. Colleen Moore and Nancy Shulock, “Student Progress Toward Degree Completion: Lessons from the Research Literature,” September 2009.
- viii. Caroline Hoxby and Christopher Avery, “The Missing “One-Offs”: The Hidden Supply of High-Achieving, Low-Income Students,” Spring 2013.