Grade 8 Math Acceleration

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Math Acceleration - Overview

- Current Curriculum - Topics and Progressions
- Student Achievement Data
  - Research
  - Analysis
- Standards Setting/Scale Score Setting
- Evaluation of Low-track Option
- Recommendations

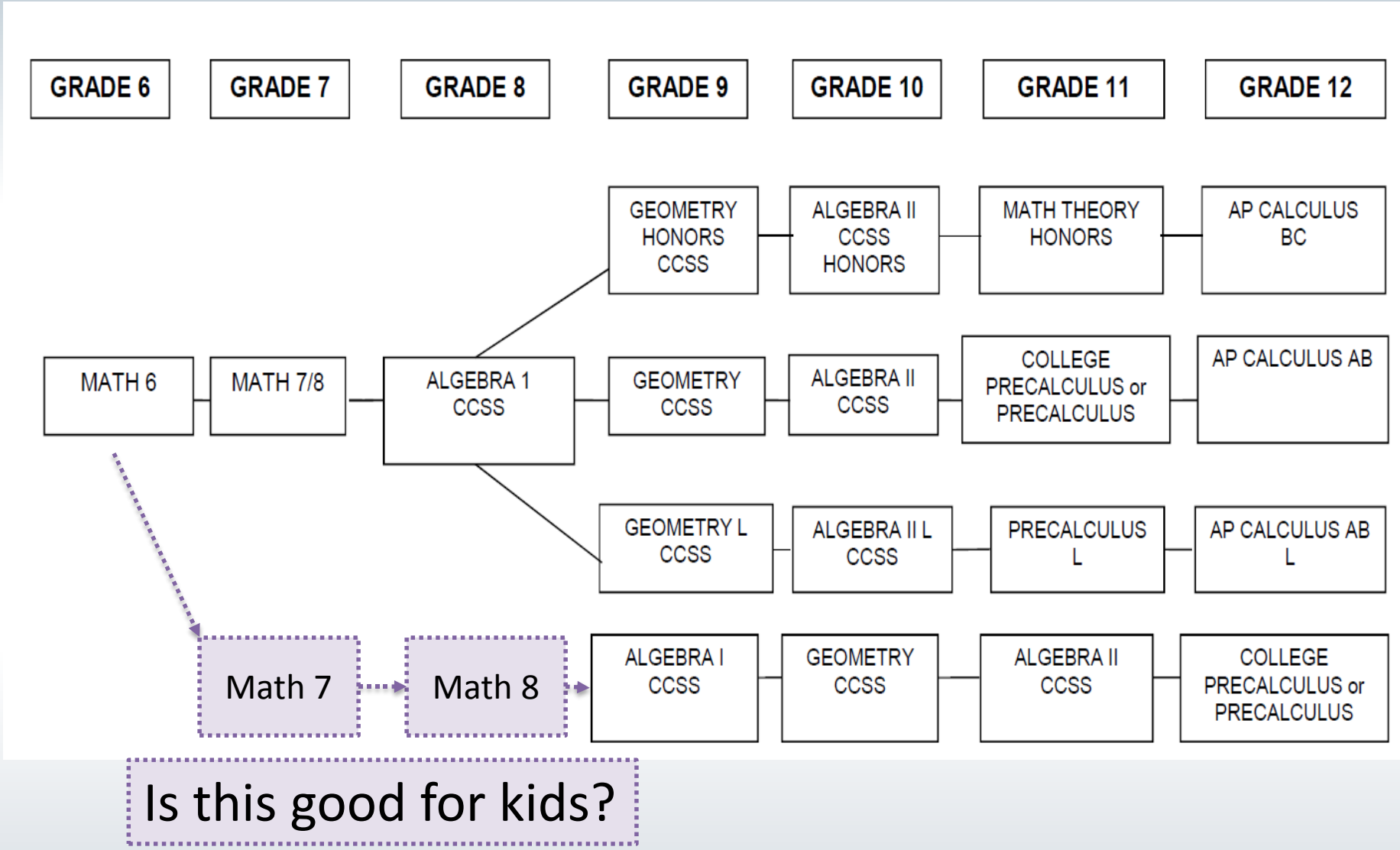
MATH CC STATE STANDARDS Aligned GRADES K-5

GRADE K	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5
Counting and Cardinality			Operations and Algebraic Thinking	Operations and Algebraic Thinking	Operations and Algebraic Thinking
Operations and Algebraic Thinking	Operations and Algebraic Thinking	Operations and Algebraic Thinking	Number and Operations in Base Ten	Number and Operations in Base Ten	Number and Operations in Base Ten
Number and Operations in Base Ten	Number and Operations in Base Ten	Number and Operations in Base Ten	Number and Operations-Fractions	Number and Operations-Fractions	Number and Operations-Fractions
Measurement and Data	Measurement and Data	Measurement and Data	Measurement and Data	Measurement and Data	Measurement and Data
Geometry	Geometry	Geometry	Geometry	Geometry	Geometry

MATH CC STATE STANDARDS Aligned
GRADES 6&7

GRADE 6	GRADE 7
Ratios and Proportional Relationships	Ratios and Proportional Relationships
The Number System	The Number System
Expressions and Equations	Expressions and Equations
Geometry	Geometry
Statistics and Probability	Statistics and Probability

TYPICAL PROGRESSION FOR MATH



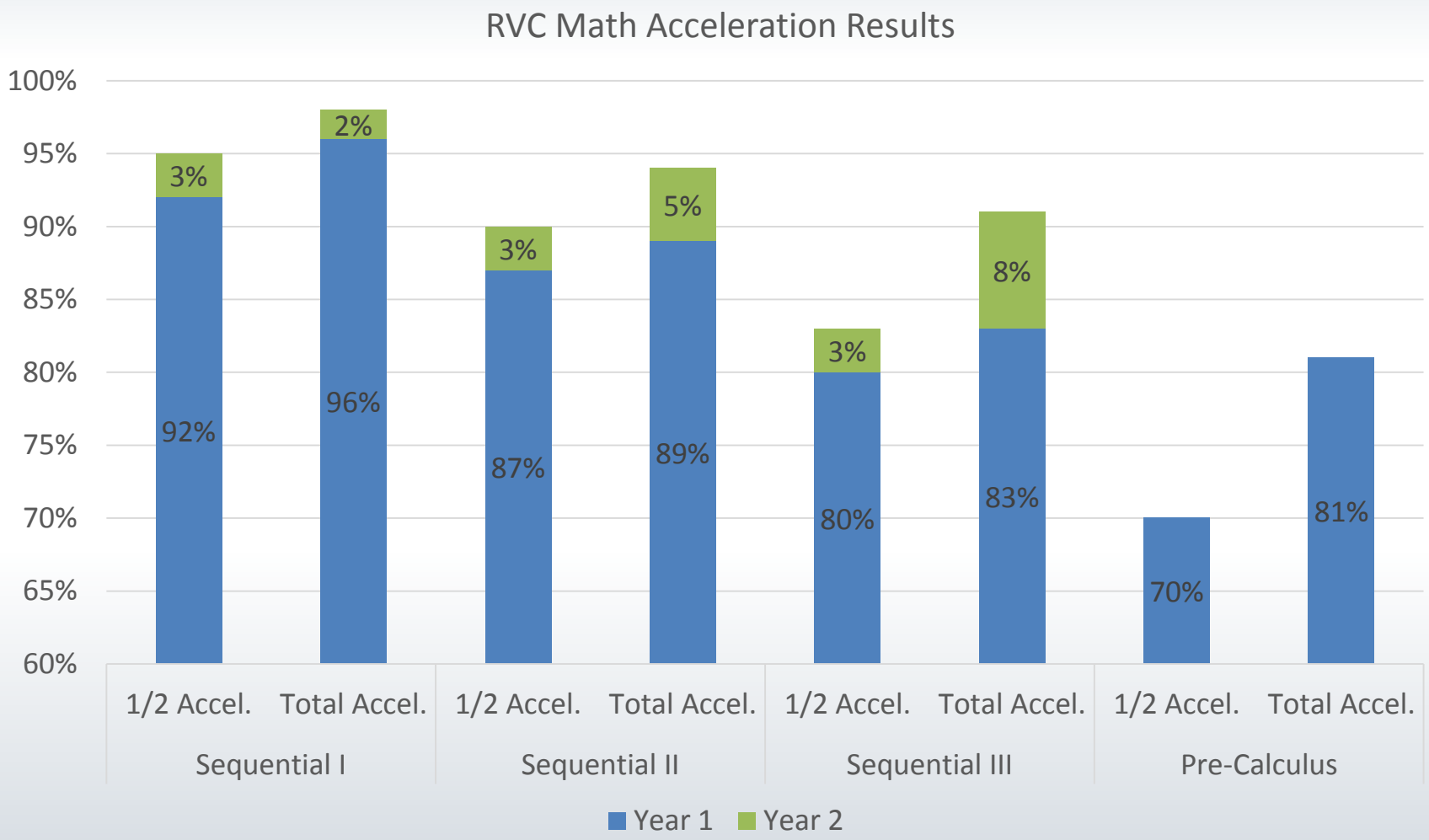
Is this good for kids?

Advantages of Current Approach

- Students are better prepared for SAT (more Trig in early 11th grade)
- Students have more time in HS schedule for:
  - Advanced math (AP Calculus)
  - Math electives*
  - Other electives (art, music, technology, etc.)
- Differentiation begins at high school

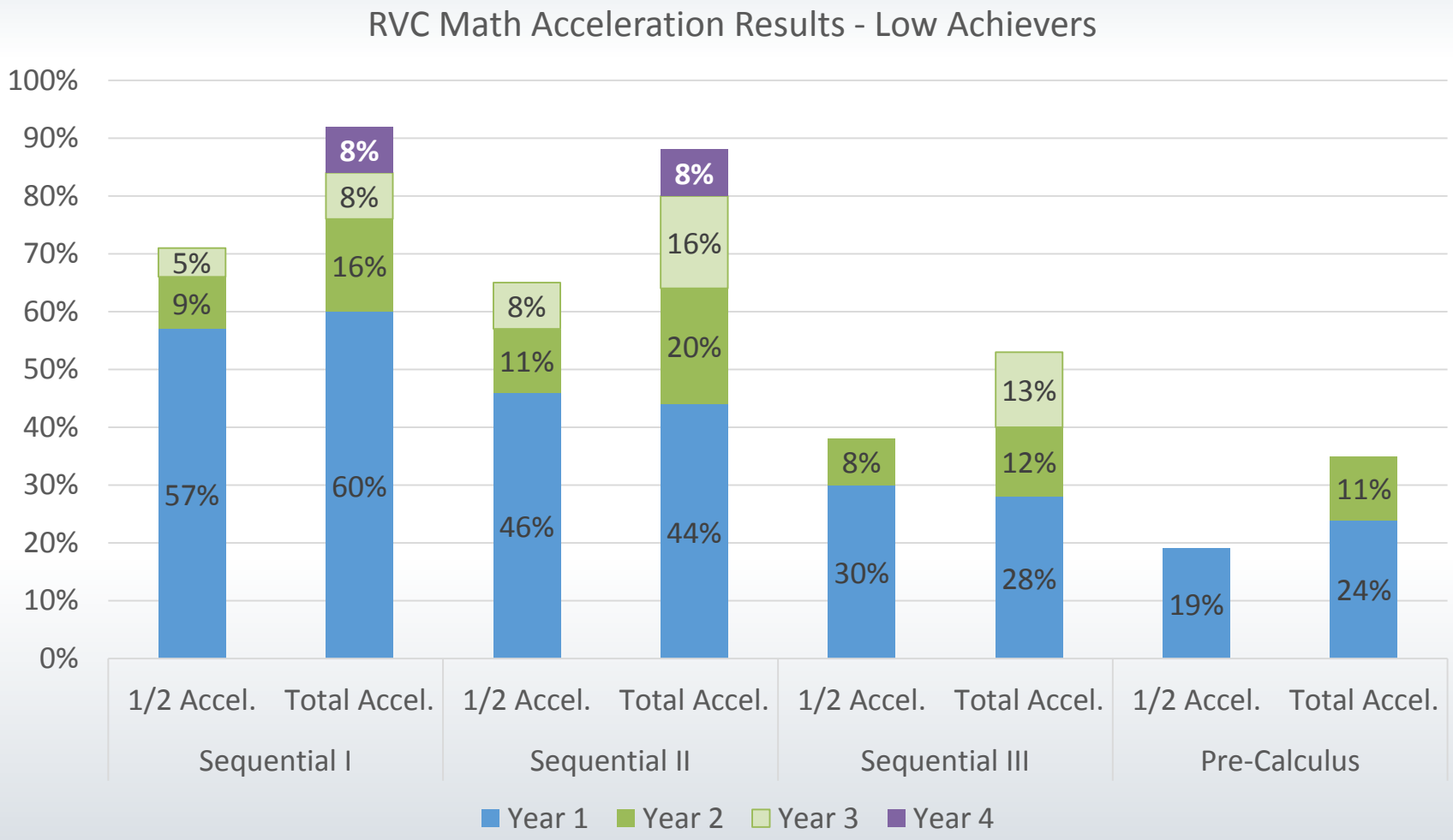
*Additional electives available in Mathematics include AP STATISTICS, ADVANCED MATHEMATICS WITH APPLICATIONS, DISCRETE MATHEMATICS, MATHEMATICAL FUNCTIONS, ADVANCED ALGEBRA, AND APPLIED MATH

Does Waiting Improve Success? No.



Burris, Carol (2003) "Providing Mathematics to Heterogeneously Grouped Middle School Students: The Longitudinal Effects on Students of Differing Initial Achievement Levels." Doctoral Dissertation

Same for “Low Achievers”



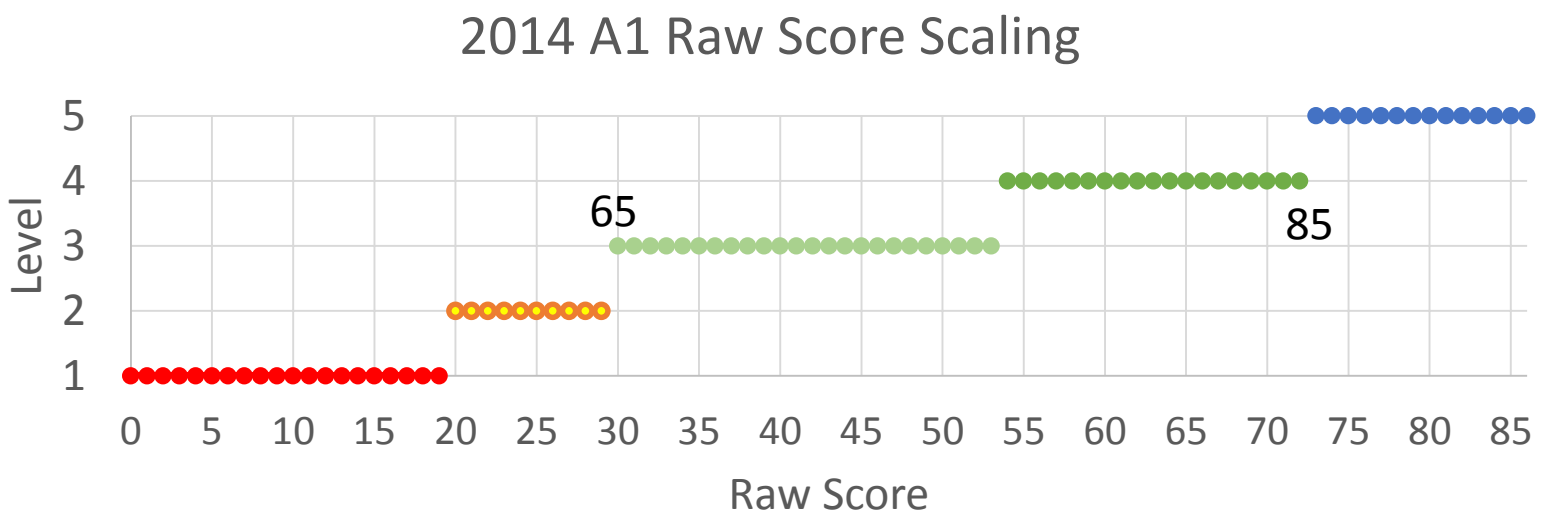
Accelerating Mathematics Achievement Using Heterogeneous Grouping Author(s): Carol Corbett Burris, Jay P. Heubert and Henry M. Levin Source: American Educational Research Journal, Vol. 43, No. 1 (Spring, 2006), pp. 105-136

Does Waiting Improve Success? Research: No.

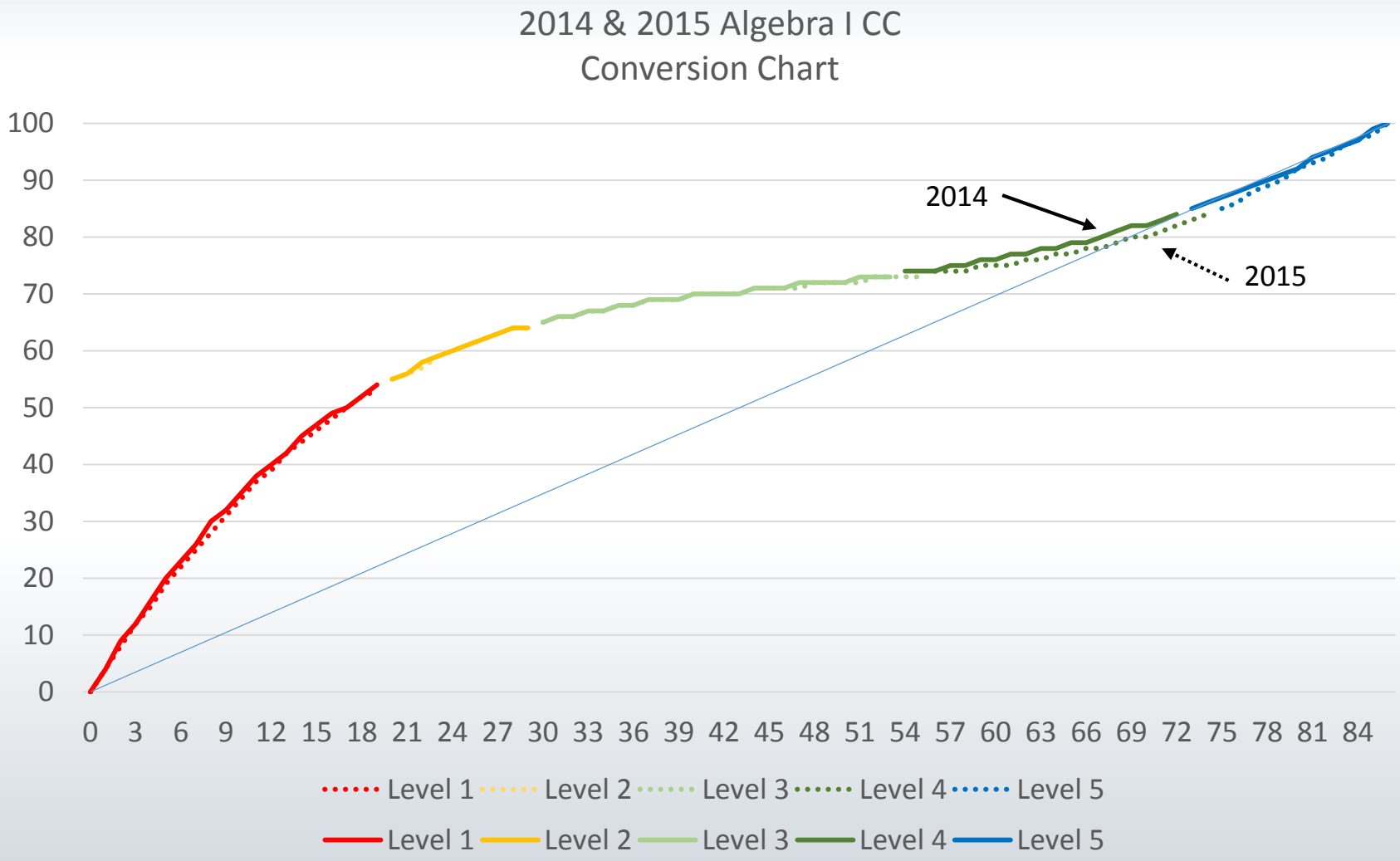
- Carol Burris (2003, 2006, 2014)
- Paula White (Univ. of WI, Madison, 1996)
  - C+ students down-tracked into slower paced class had 2% chance of completing higher Math
  - C+ students tracked into highest math had 91% chance of completing higher math (As summarized by Burris, C. (2014) p. 48.)
- John M. Peterson (1989)
  - “Students of the lowest achievement level benefitted more from studying the accelerated curriculum … than from the remedial curriculum supposedly designed to meet (their) needs.” (Quoted from Burris, C. (2014) p. 47.)

Item Response Theory

- Cut points
  - 1:2 = standard set
  - 2:3 = goal set (same passing rate)
  - 3:4 = standard set
  - 4:5 = standard set



[Raw Score]→[Scale Score] Conversion



Regents Exams

Math

- Integrated Algebra Special Administration.
- A1 – Regents Exam Workgroup recommendation under review.
- A2 – Standard setting this year.
- Focus on the scale (especially at top end) and role of trig.

Social Studies

- Fully educator-driven Global and U.S Exams.

Science

- Gearing up to start redesign.

New York State EDUCATION DEPARTMENT
Knowledge › Skill › Opportunity

Source: Presentation by Peter Swerdzewski, Ph.D. Assistant Commissioner of Assessment, Standards, and Curriculum. NYSCOSS Conference March 7, 2016

General Math 8 Option?

Perceived Pros

- Creates a program with a slower pace and lower expectations
- Students may find pace more manageable

Cons

- Unlikely to result in higher scores in 9th grade
- Creates a segregated track through 11th Grade
- Decides at age 11 which children will not attempt AP Calculus
- Program could be stigmatized
- Breaks up middle school teaching teams

Why are Math and Science Different?

Science

- Courses stand alone
  - Sequence less important
  - Can double up
  - Delay doesn't force track
- No AIS Requirement
  - Extra help only
- Undergoing significant revision (NGSS)

Math

- Courses are sequential
  - Foundation important
  - Very difficult to double up
  - Differentiation forces tracking
- AIS Component
  - Math lab, workshop, etc.
- Undergoing modest revision (Standards Revision)

Transcript Change?

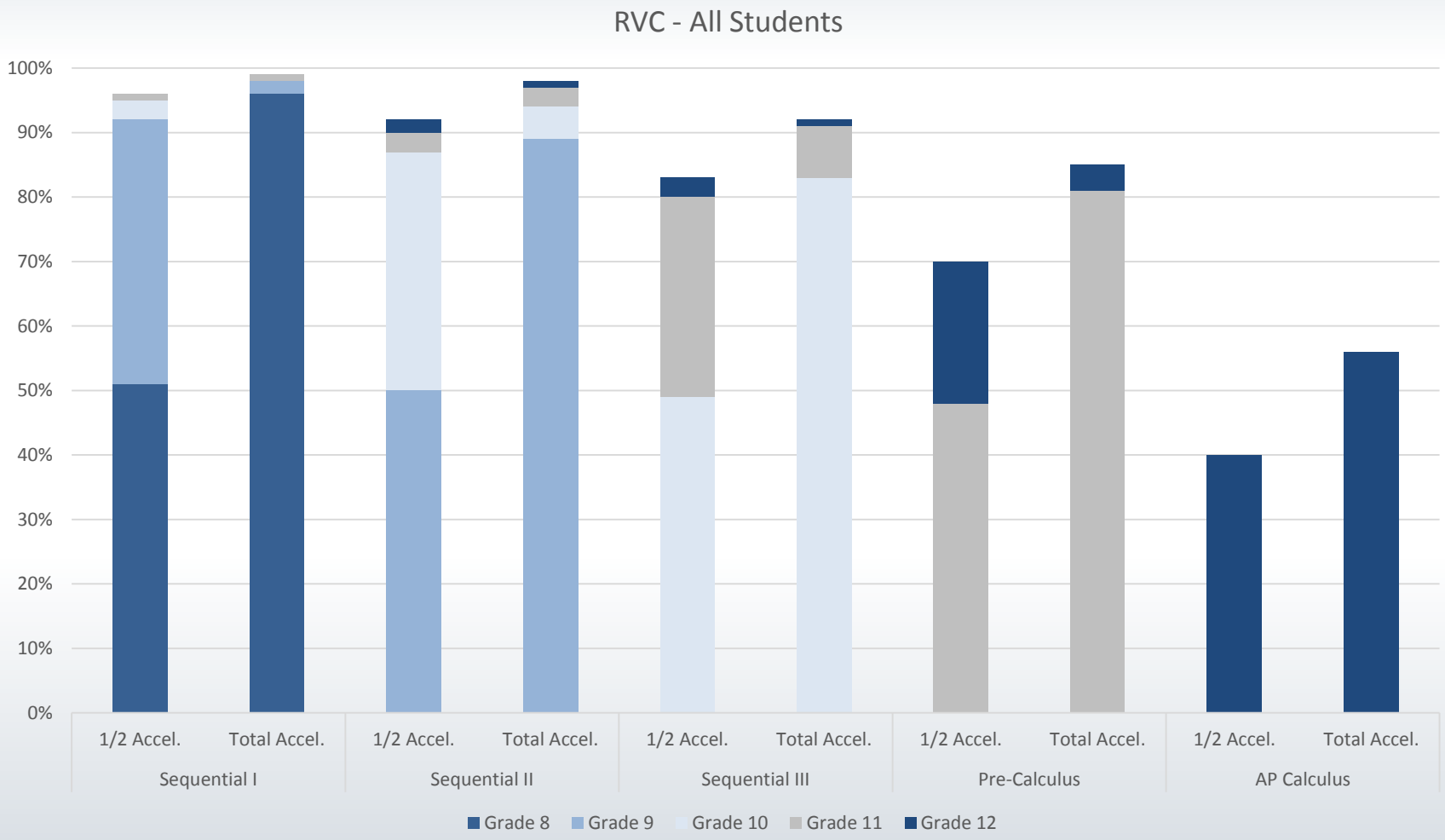
- Recommendation: Allow later/higher Regents exam grade to replace 8th grade Regents exam grade on transcript.
  - Only for accelerated classes taken in 8th grade (i.e. Earth Science and Algebra 1);
  - Any (higher) high school Regents exam grade would replace any middle school Regents exam grade, starting with current (2015-16) 8th graders;
  - Would not be used to recalculate class average;

Additional Recommendations

- "Keep building the ramp"
  - Common Core math instruction began in 2011-12;
  - Current 8th graders are first cohort with:
    - Go Math 6th grade (CC-aligned)
    - Big Ideas 7th grade (CC-aligned textbook)
  - Continue to review/enhance 6th & 7th grade math curriculum;
- Make all math options available in both HB Thompson & South Woods.
- Review all math sequences after NYSED revises standards.

APPENDIX

Detailed Data on Rockville Centre



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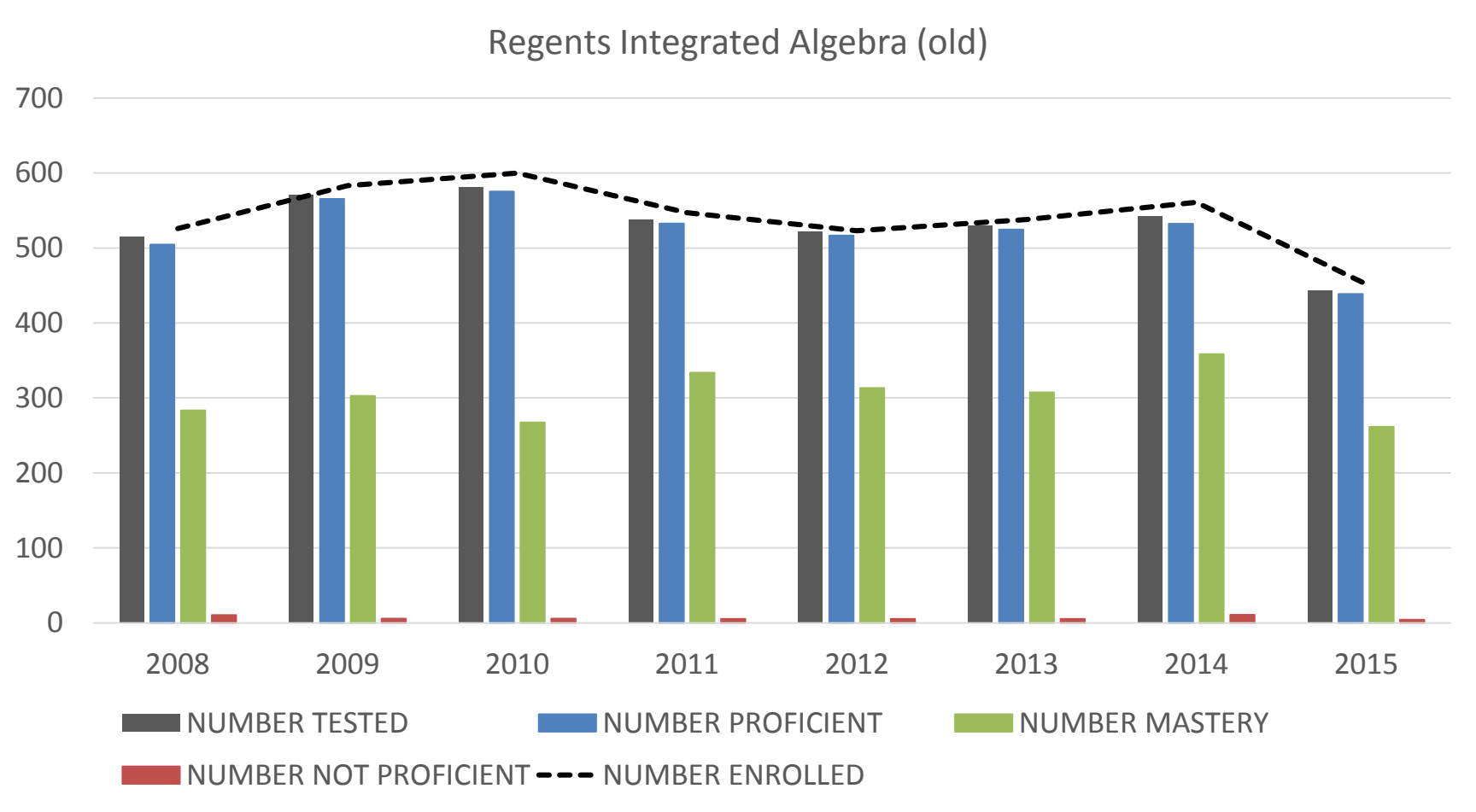
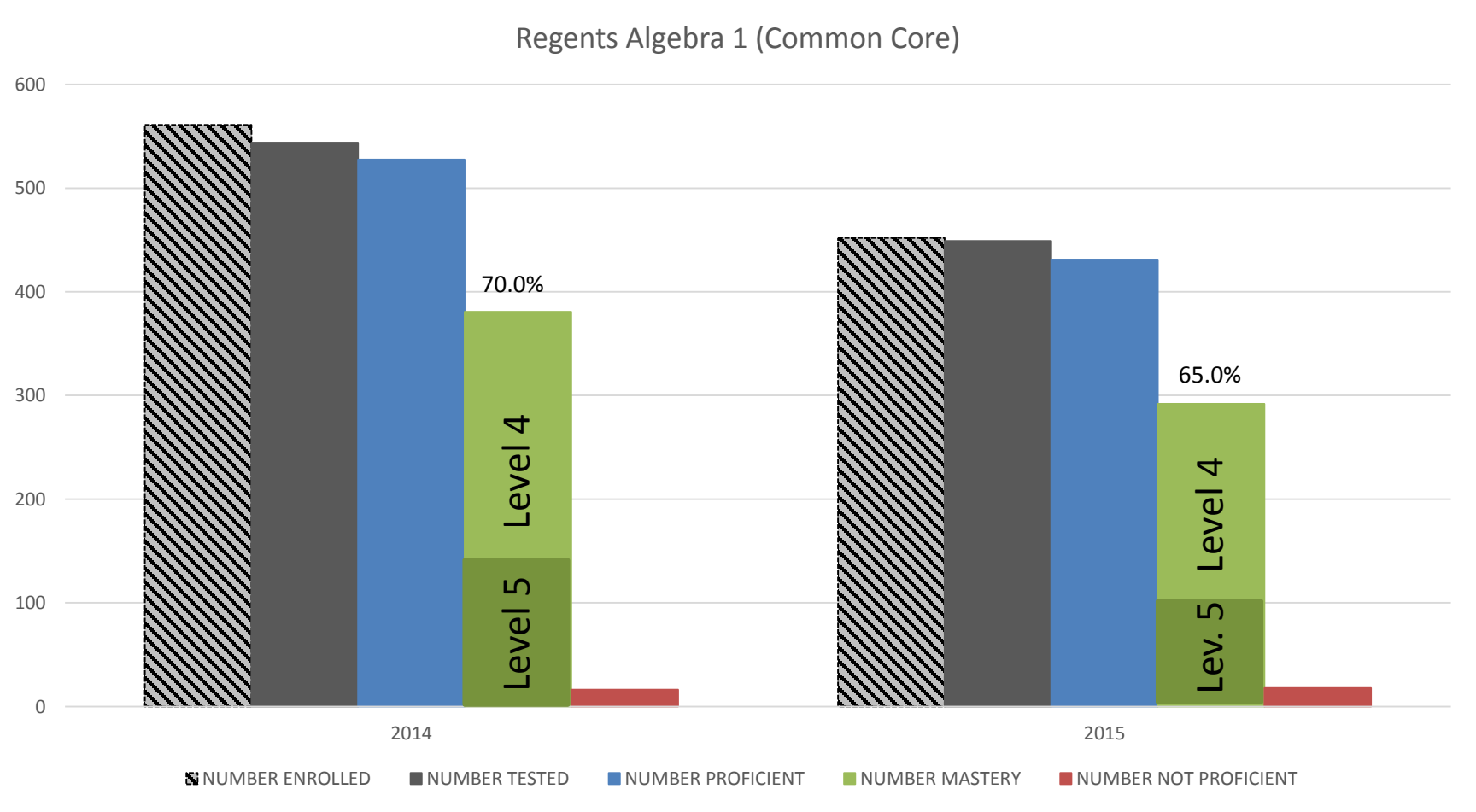
Counterintuitive Findings From RVC Universal Acceleration Initiative

Hypothesis	Finding
Sequential 1 passing rates will fall because course is taken before students are ready;	Passing rates improve overall – more pass in 8th grade than previously passed in 8th and 9th put together;
Passing rates on higher math will drop because rushing students leaves them with a weaker foundation;	Passing rates on higher math improve even more noticeably than Sequential 1 rates;
AP Math participation will not increase because AP-appropriate students were already accelerated in middle school;	Successful completion of AP Math increased significantly;

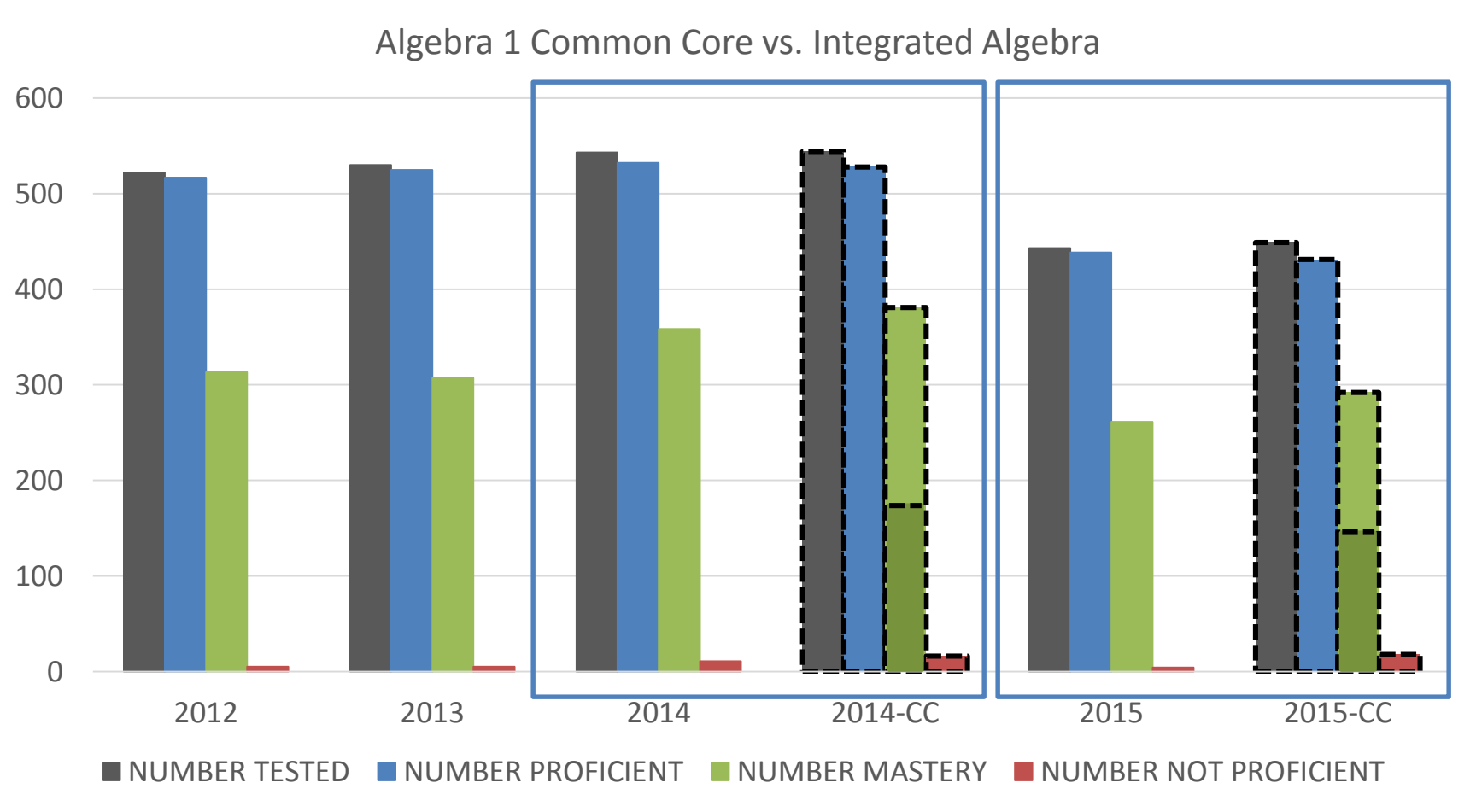
Student Achievement – Old Algebra 1



Student Achievement – New Algebra 1



Algebra 1 (Common Core vs. Old)



Math Standards History

- 1967 – Math 9, Math 10, Math 11
- 1977 – Sequential I, II, III
- 2004 – Math A/Math B
- 2005 – Integrated Algebra, Geometry, Alg.2/Trig.
  - Adopted 2005; assessed in 2007-08
- 2010 – Common Core
  - Adopted 2010; assessed in 2013-14
- 2016?? – Common Core Review
  - Commissioner Elia announces review of entire CC Standards; indicates “Commencement Math” needs adjustment, early grade rigor needs attention.

Bibliography

- Burris, Carol C., "Providing Mathematics to Heterogeneously Grouped Middle School Students: The Longitudinal Effects on Students of Differing Initial Achievement Levels." Ed.D. Teachers College, Columbia University, 2003. Print.
- Carol Corbett Burris, Jay P. Heubert and Henry M. Levin. "Accelerating Mathematics Achievement Using Heterogeneous Grouping." *American Educational Research Journal*, Vol. 43, No. 1 (Spring, 2006), pp. 105-136 https://cxwork.gseis.ucla.edu/pli/14/mp/js/fieldwork-portfolio/docs/burris-research-article-on-tracking Accessed: 4/17/16 9:22 p.m.
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