REMEDIAL COURSEWORK IN MARYLAND COLLEGES: EXAMINING HIGH SCHOOL PREDICTORS AND COLLEGE OUTCOMES

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Remedial Coursework in Maryland: Examining Trends, High School Predictors, and College Outcomes

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INTRODUCTION

- A college-ready student should enter college with the expectation of passing an introductory credit-bearing course.

- Under-prepared students need to take non-credit bearing courses (remedial coursework) prior to enrolling in credit-bearing courses.

- Nationally, about 30-40% of students entering college need to take remedial coursework (NCES, 2014; Rose, 2012).

- Indicates a mismatch in high school academic preparation and college academic expectations.

INTRODUCTION

- Minority students and low SES students are more likely to need remedial coursework (Attewell et al., 2006).

- High school academics also related to need for remedial coursework (Chen, 2016; Radford et al., 2012).

- Needing remedial coursework is associated with negative outcomes (Attewell et al., 2006; Clotfelter et al., 2015).

- Importance of early identification of students to prevent negative outcomes associated with needing remedial coursework.

RESEARCH QUESTIONS

- What are the overall rates of assessment to need remedial coursework in math, English, and reading in Maryland?

- What are the associations between demographic characteristics, high school attendance, and high school assessment scores with likelihood of assessment to need remedial coursework?

- What are the college outcomes associated with needing remedial coursework?

Method

- Data were from the Maryland Longitudinal Data System (MLDS)
- Population for rates and high school predictors
  - Maryland public high school graduates (2013-2014)
  - Enrolled in Maryland college (2014-2015)
- Population for college Outcomes
  - Maryland public high school graduates (2008-2009)
  - Enrolled in Maryland college (2009-2010)

MEASURE: REMEDIAL COURSEWORK

- Math, English, and Reading remedial assessments administered to first time undergraduates

- Coded 0/1
  - 0 = remediation not assessed or not needed;
  - 1 = either assessed to need remedial coursework or took remedial coursework

Measures: High School Predictors

- Attendance
  - Number of five-day school week equivalents a student attended during 12th grade
  - Calculated a ratio of days attended/days enrolled
  - Used ratio to calculate the number of weeks a student would have attended if he/she were enrolled the entire school year (36 weeks)
- State High School Assessments (HSA)
  - Algebra and English assessments were included
  - Created an indicator of whether the student ever failed a HSA

MEASURES: COLLEGE OUTCOMES

- Grades earned in first non-remedial math and English course
- Degree earned
  - Associate, Bachelor's, and Certificate
  - Final degree earned by academic year 2014-2015
- Time to final degree earned

WHAT ARE THE RATES OF ASSESSMENT TO NEED REMEDIAL COURSEWORK?

| Subject	Percent	Range (District)
Any Subject		
Math		
English		
Reading		

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WHAT ARE THE RATES OF ASSESSMENT TO NEED REMEDIAL COURSEWORK?

Subject	Percent	Range (District)
Any Subject	41%	23-69%
Math		
English		
Reading		

WHAT ARE THE RATES OF ASSESSMENT TO NEED REMEDIAL COURSEWORK?

Subject	Percent	Range (District)
Any Subject	41%	23-69%
Math	37%	20-54%
English	18%	8-45%
Reading	18%	2-66%

In Which Subjects do Students Need Remedial Coursework?
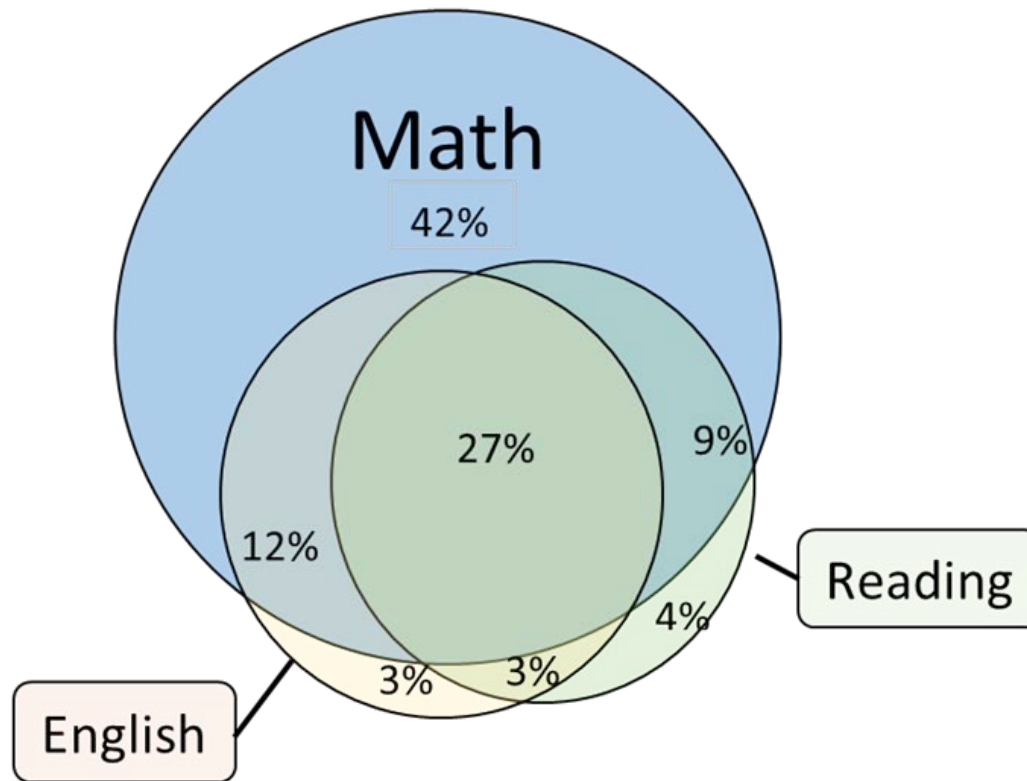
What are the High School Predictors of Needing Remedial Coursework?

- Analyses
  - Multi-level model (2 levels)
    - Level 1 = individual student
    - Level 2 = high school
  - Binary event as outcome
    - 0 = remediation not assessed or not needed;
    - 1 = either assessed to need remedial coursework or took remedial coursework

	Est (*SE*)	*OR*
	Log Odds of Remedial	Odds Ratio
	+ or -	*OR* > 1 *OR* < 1

RESULTS: PREDICTING REMEDIAL COURSEWORK IN ANY SUBJECT (LEVEL 1 MODEL)

	Est (*SE*)	*OR*
Intercept	1.44 (0.22)	
Female	0.07 (0.03)	1.07

RESULTS: PREDICTING REMEDIAL COURSEWORK IN ANY SUBJECT (LEVEL 1 MODEL)

	Est (*SE*)	*OR*
Intercept	1.44 (0.22)	
Female	0.07 (0.03)	1.07
Black	0.41 (0.04)	1.50
Other Race	0.14 (0.06)	1.15
Hispanic	0.40 (0.05)	1.49

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Hispanic	0.40 (0.05)	1.49
FARMs	0.29 (0.03)	1.34
English Learner	-1.39 (0.11)	0.25
Special Ed	0.55 (0.06)	1.73

RESULTS: PREDICTING REMEDIAL COURSEWORK IN ANY SUBJECT (LEVEL 1 MODEL)

	Est (*SE*)	*OR*
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English Learner	-1.39 (0.11)	0.25
Special Ed	0.55 (0.06)	1.73
Attendance	-0.07 (0.01)	0.93
Ever Fail HSA (M)	0.77 (0.04)	2.17
Ever Fail HSA (E)	0.68 (0.04)	1.97

Results: Predicting Remedial Coursework in Any Subject (Level 1 Model)

	Est (*SE*)	*OR*
Intercept	1.44 (0.22)	
Female	0.07 (0.03)	1.07
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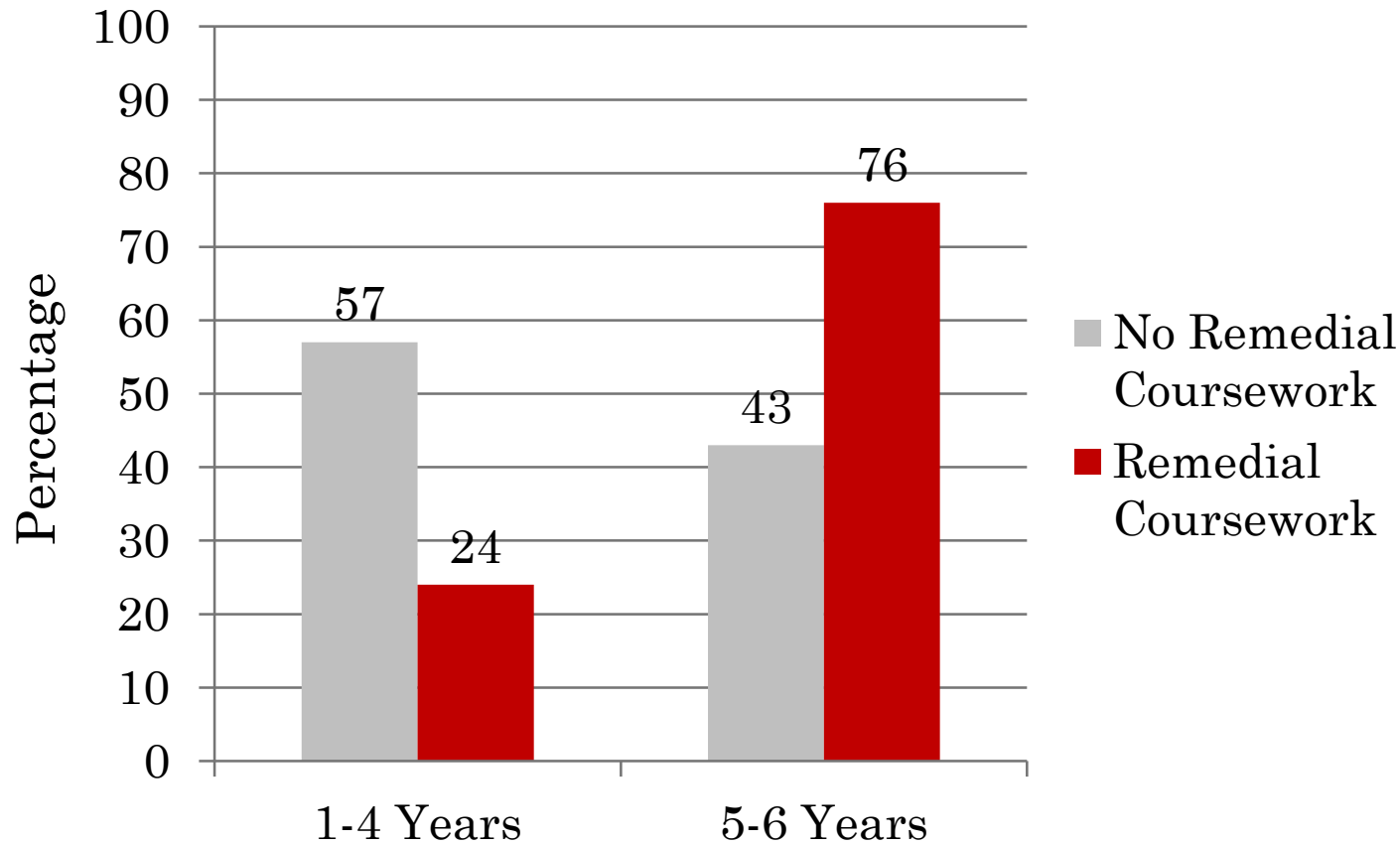# RESULTS: GRADES EARNED

Grade Earned in First Non-Remedial Math Course
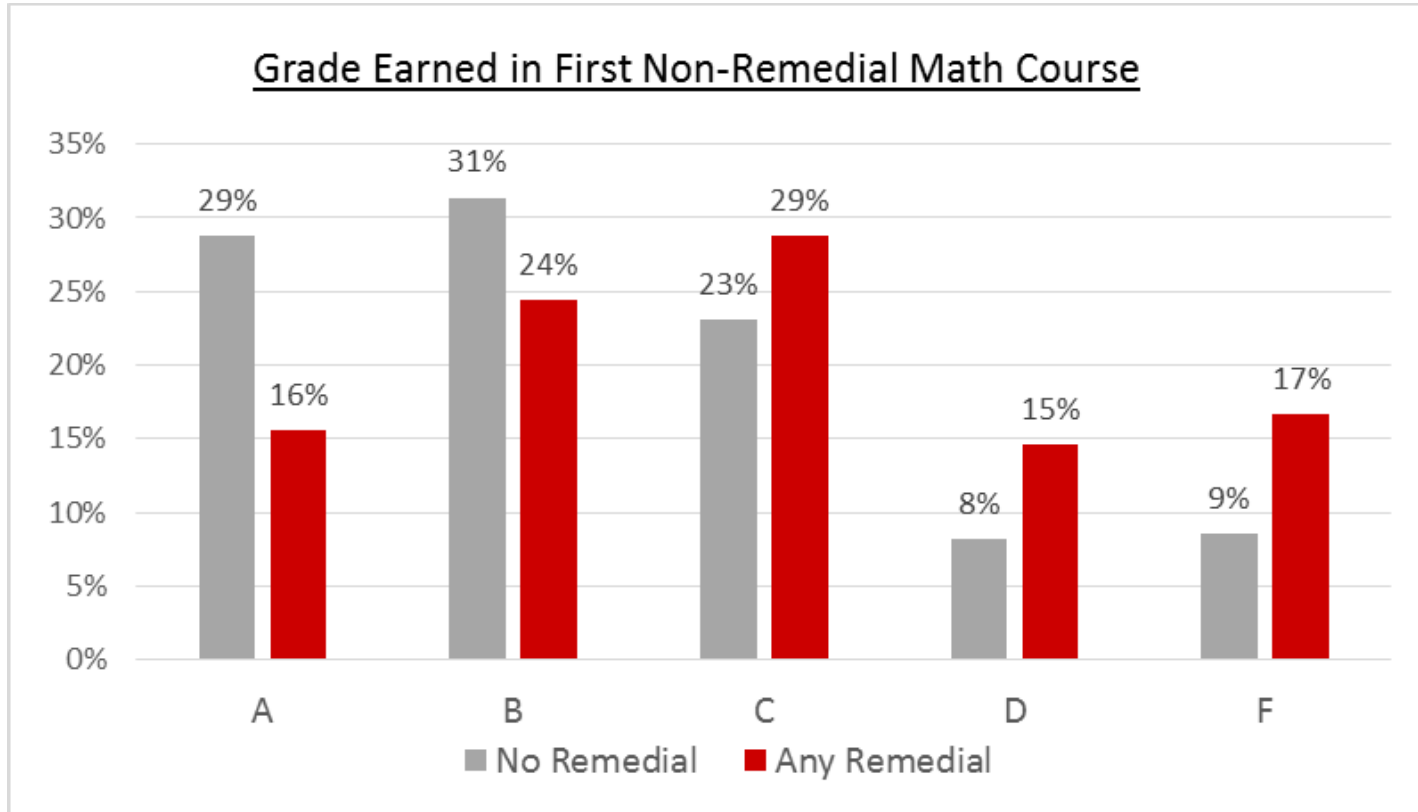
RESULTS: DEGREES EARNED
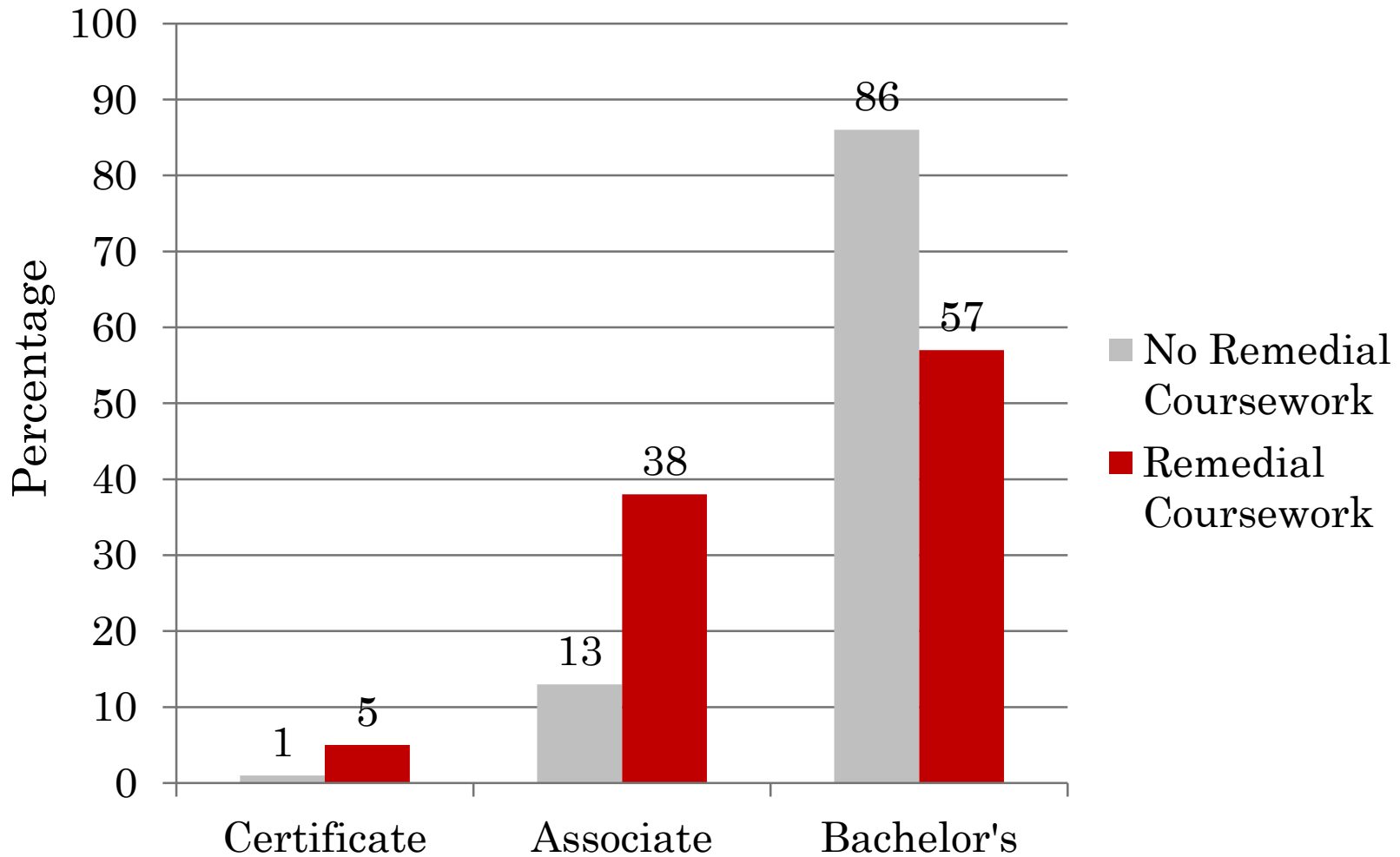
RESULTS: TIME TO BACHELOR'S DEGREE

Summary of Results

- About 40% of Maryland high school graduates entering a Maryland college need remedial coursework.

- Special education and failing a HSA are the strongest predictors of needing remedial coursework.

- Needing remedial coursework is associated with:
  - Poorer grades in first non-remedial course
  - Lower likelihood of earning a Bachelor's degree
  - Increased time to Bachelor's degree

Limitations

- Remedial assessment information is available only for students who attended Maryland postsecondary institutions

- Limited information about college coursework

- Continuous measure of remedial assessment scores is not available and would provide for more rigorous analyses

Discussion

- Rate of needing remedial coursework in Maryland is similar to national rates (NCES, 2014; Chen, 2016; Rose, 2012).

- High school factors substantially impact whether a student is assessed to need remedial coursework upon entering college.
  - Special Education
  - Failing a HSA

- Identification of early risk factors for being under-prepared enables targeted services in high school.

DIRECTIONS FOR FUTURE RESEARCH

- Additional high school predictors of interest
  - Course-taking patterns
  - Grades earned in high school courses
- Analyses at the high school district and postsecondary institution levels
- Relation of needing remedial coursework to financial aid
- Examination of workforce outcomes

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The MLDS Center is an independent agency of the State of Maryland. The mission of the Center is to develop and maintain the Maryland Longitudinal Data System in order to provide analyses, produce relevant information, and inform choices to improve student and workforce outcomes in the State of Maryland.