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Better Data • Informed Choices • Improved Results

Prevalence and upstream predictors of remedial education in Maryland community colleges

Mathew C. Uretsky
Stacey L. Shipe
Angela K. Henneberger

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Introduction

- A college-ready student should enter college with the expectation of passing college coursework.
- Underprepared students need to take remedial coursework to prepare for college level
- Nationally, about 30-40% of students entering college need to take remedial coursework (NCES, 2014; Rose, 2012).
- May indicate a mismatch in high school academic preparation and college academic expectations.

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Introduction Continued

- 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).
- Highlights the importance of early identification and intervention.

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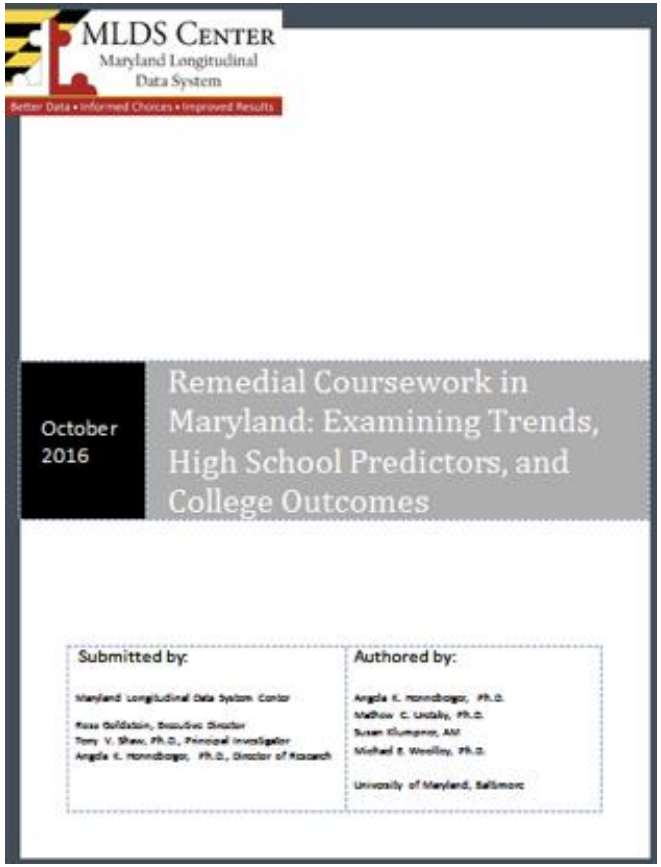
Prior Research from the MLDS Center



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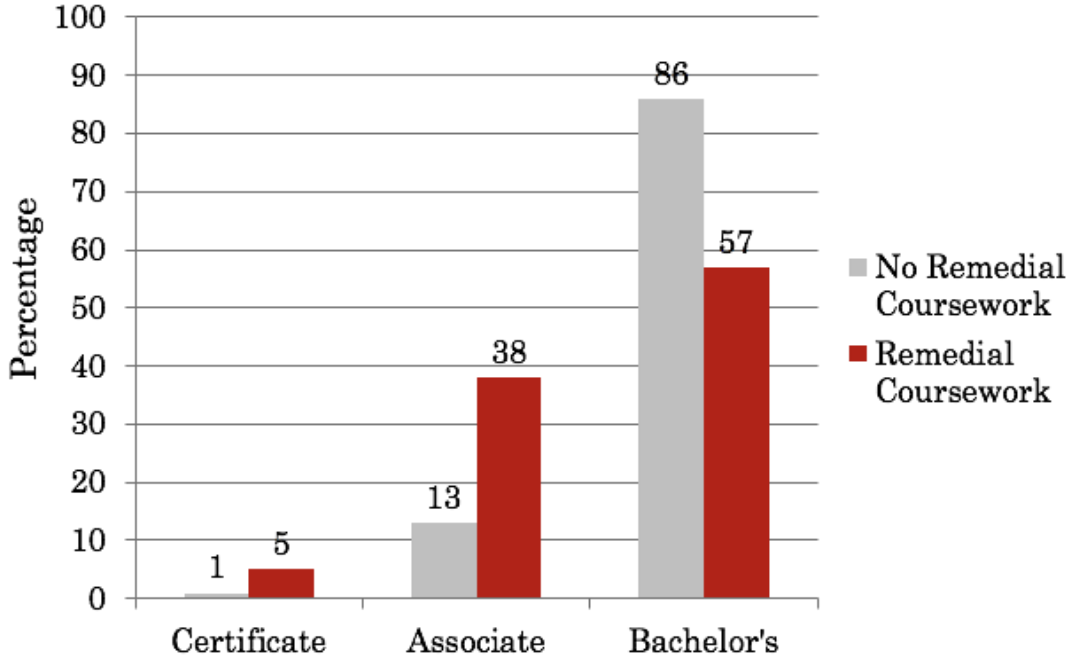
The Maryland Context: College Degree Outcomes

- Students who needed remedial coursework had lower rates of attaining a bachelor's degree and higher rates of attaining an associate degree



Data are from Maryland public high school graduates (2008-2009) who enrolled in a Maryland college (2009-2010)

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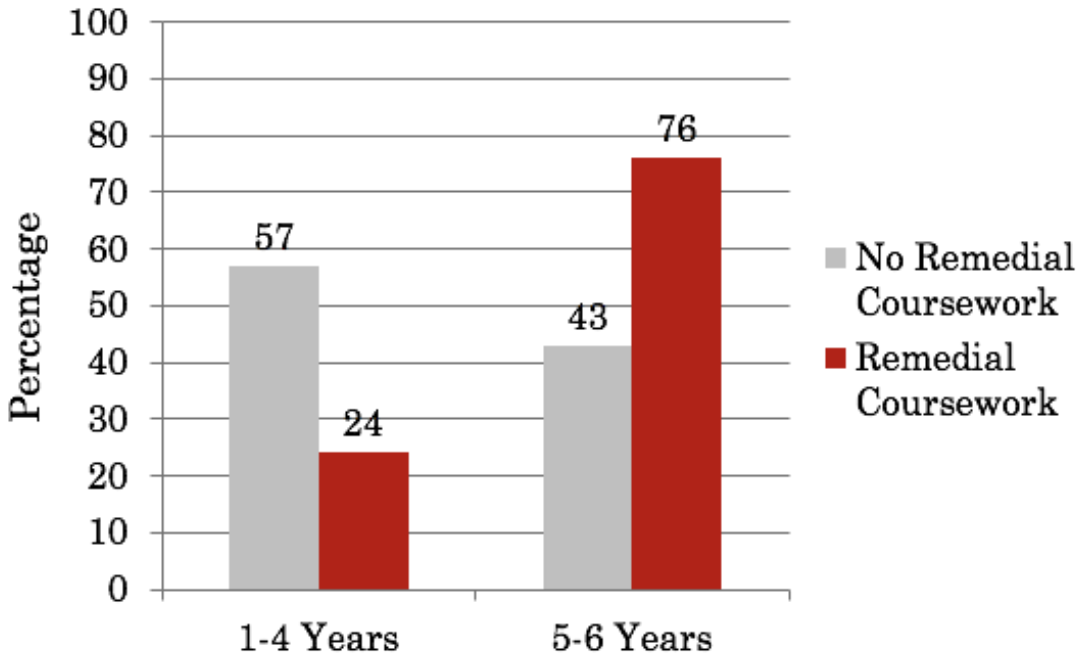
The Maryland Context: Years to Degree

- Students who needed remedial coursework took longer to obtain a degree (5-6 years)



Data are from Maryland public high school graduates (2008-2009) who enrolled in a Maryland college (2009-2010)

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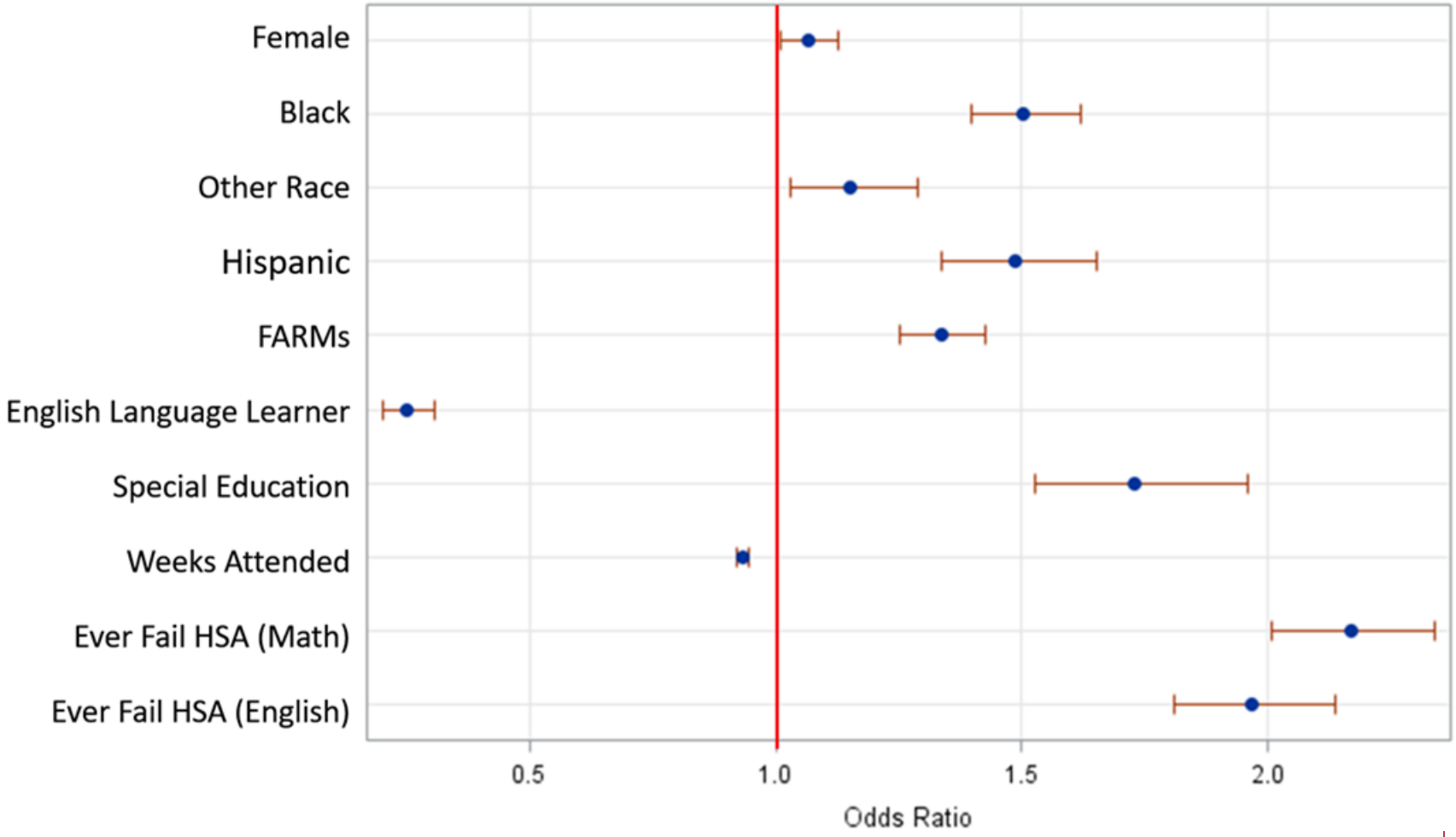
The Maryland Context: Predictors of Needing Remedial Coursework



Data are from Maryland public high school graduates (2013-2014) who enrolled in a Maryland college (2014-2015)

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The Current Study

- Focuses on Maryland Community College students
  - Represent the majority of students who need remedial coursework (Chen, 2016; Henneberger et al., 2016)
  - Have a common cut point to determine need (Halbach, 2015)
- Expands upon the prior study to include high school-level predictors of remedial coursework
- Disentangling the role of student- and high school-level factors will help policy makers to determine whether student-oriented or school-oriented prevention may be most useful.

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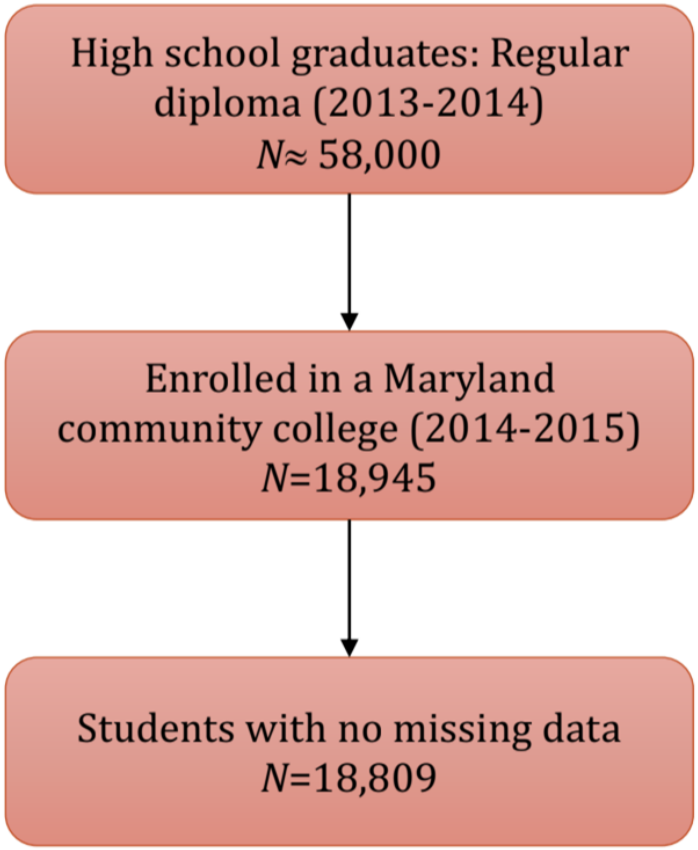
Method: Data

- Linked data sources postsecondary, college enrollment, and assessment data
- 5 years of administrative records from MLDS
  - 18,800 students attending
  - 228 high schools across
  - 24 local school systems in Maryland
- Inclusion criteria
  - Maryland public high school graduate AY 2013-2014
  - Enrolled in Maryland Community College AY 2014-2015

Sample Selection Criteria

Figure 1. Sample Selection



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Method: Measures

- Dependent variable - Need for remedial coursework in (1) math & (2) English
- Independent Variables
  - Individual student characteristics.
    - demographic characteristics
    - attendance and academic performance; and
    - placement characteristics
  - High School-Level characteristics
    - % FARMS
    - % English Learner (EL)
    - % fifth year graduate
    - Average weeks attended

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Method: Analyses

- Multilevel logit models
  - Two-level model (Student nested within school)
  - Dummy variables for 24 Maryland jurisdictions
- Random effects to model the intercepts
- Fixed effects for the independent variables
- All continuous covariates were grand-mean centered log-likelihood difference test

Student-level Sample Characteristics (N = 18,814)

	n	%
Female (N = 18,809)	9,860	52
White (n=18,814)	9,368	50
Hispanic (n=18,814)	2,379	13
English Language Learner (n=18,814)	1,037	6
FARMS Eligible (n=18,814)	7,771	41
Special Education (n=18,814)	1,758	9
GPA 3.0 or Above (n=18,469)	5,476	30
Foreign Language Indicator* (n=18,469)	7,533	41
Math Indicator* (n=18,469)	5,275	29
Science Indicator* (n=18,469)	3,314	18
Fifth-Year Graduate (n=18,814)	347	2
	Mean	**SD**
Weeks Attended (n=18,803)	34	4.658

Note. *Indicates student took two or more classes in the subject with a grade or B or higher.

School-level Sample Characteristics (*n*=228)

	Mean	SD
% FARMS	50	27.538
% English Language Learner	4	5.088
% Fifth-Year Graduate	10	15.358
Mean Weeks Attended	33	24.724

Note. *Indicates student took two or more classes in the subject with a grade or B or higher

Percentage, Distribution, and Subject level Overlap of Remedial Assessment Outcomes

	Total (*N*=18,814)		Assessed to Need Remedial (*n* =10,774)	
	f	%	*f*	%
Any Remedial	10,774	57	-	-
Math	9,925	52	9,925	92
English	5,315	28	5,315	49
Reading	4,738	25	4,738	44

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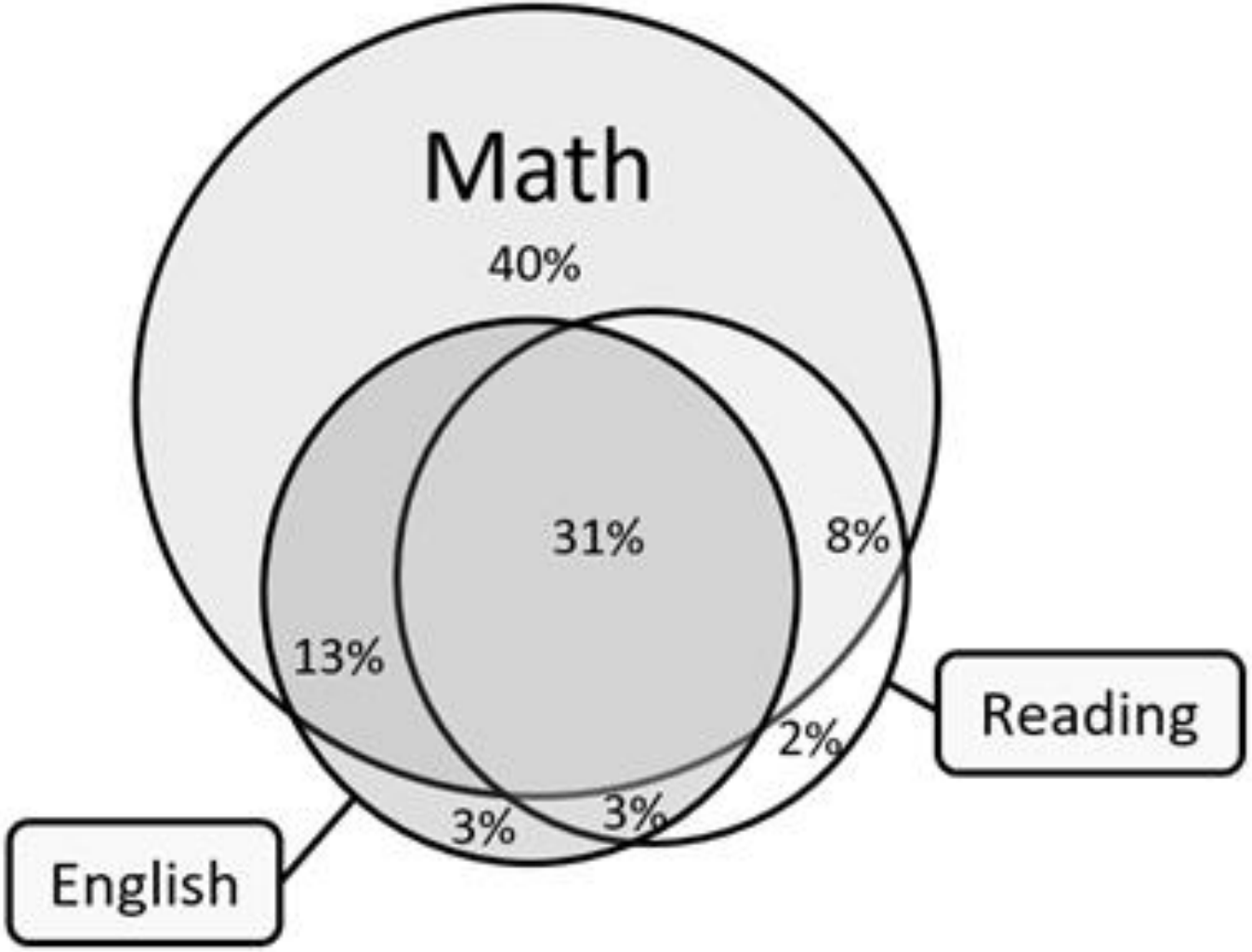
Rates of Need for Remedial Coursework by Subject Area



Results for the Multilevel Model - Student Characteristics (Math)

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	p	*OR*	
Fixed Effects			
Intercept	.001		
Student Characteristics			
Female	<.0001	1.476	↑
White	.410	.966	
Hispanic	<.0001	1.333	↑
English Language Learner	<.0001	.375	↓
Free & Reduced Meals	.031	1.088	↑
Special Education	<.0001	1.256	↑
GPA 3.0 or Above	<.0001	.609	↓
Foreign Language Indicator*	<.0001	.764	↓
Math Indicator*	<.0001	.420	↓
Science Indicator*	<.0001	.575	↓
Fifth-Year Graduate	.001	.664	↓
Weeks Attended	.834	1.037	

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Results for the Multilevel Model - School Characteristics (Math)

	p	*OR*	
School Characteristics			
% FARMS	<.0001	1.089	↑
% English Language Learner	.242	.932	
% Fifth-Year Graduate	.029	.931	↓
Mean Weeks Attended	.989	1.002	
Covariance Parameters			
Intercept (School)	<.0001		

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Results for Multilevel Model English

- Similar patterns to those of Math
- Differences for English:
  - White students were less likely to need remedial coursework in English (OR = 0.81)
  - Fifth year graduate non-significant for English
  - Fifth year graduate (school-level) non-significant for English

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Discussion

- High levels of need for remedial coursework in Maryland community colleges
  - Highest rate for math
- Both individual-level and high school-level characteristics predict need for remedial coursework
  - Indicates the potential for multi-layered intervention at both the student and school levels
- Results were consistent for math and English with slight differences

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Discussion - Student Level

- Student-level academic performance in high school had a larger influence on the odds that a student would need remedial education than socio-demographic factors.

- EL student placement and fifth-year graduation functioned as protective factors
  - The extra support provided to these students may help to alleviate the need for remedial coursework upon entering a Maryland community college.

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Discussion - School level

- FARMs
  - Schools may be under-resourced in terms of preparing students for college-level coursework
- Percentage of fifth-year graduates
  - Additional supports may be provided in these schools
  - Schools with more experience with fifth year graduates may be better at preparing all students for college level math

Limitations

- Not able to control for confounders not included in the MLDS, found to be important in other studies
  - Behavioral variables
  - Parental education
  - School climate
  - Teacher professional development on college readiness
- Dichotomous yes/no outcomes

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Future Research

- Fifth-year of high school vs. remedial in college
- Early identification - trajectories
- High school course taking patterns
- Subject overlap
- Measurement issues
  - Psychometrics
  - Regression discontinuity

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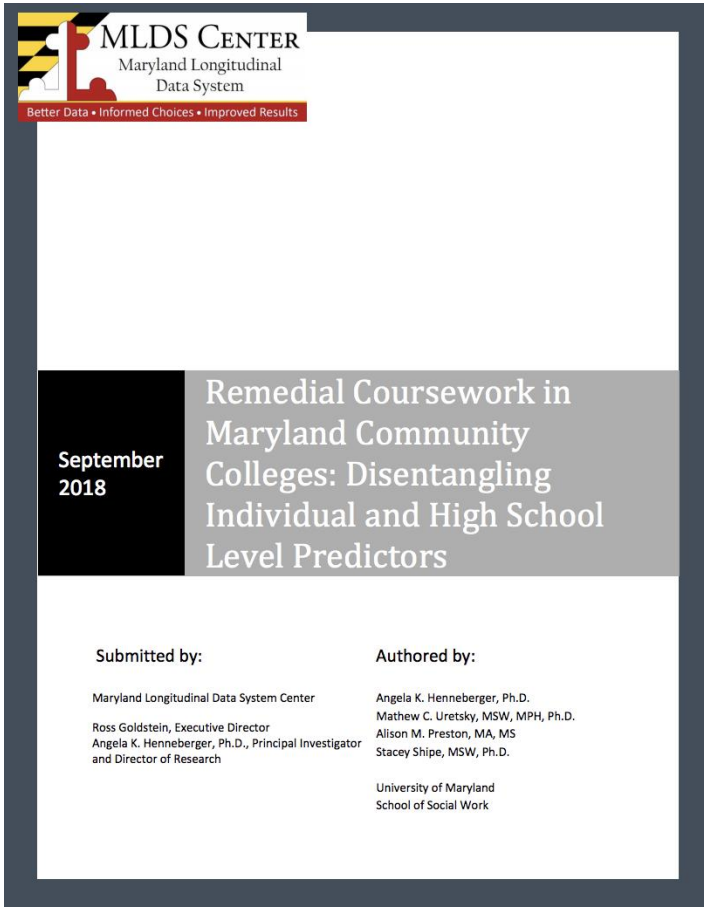
For More Information



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Questions and Contact

Mathew C. Uretsky, Ph.D., MSW, MPH
Assistant Professor
Portland State University
muretsky@pdx.edu

Stacey L. Shipe, PhD, MSc, MSW
Assistant Professor
Binghamton University
sshipe@binghamton.edu

Angela K. Henneberger, Ph.D.
Director of Research
Maryland Longitudinal Data System Center
angela.henneberger@maryland.gov

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