

Who's Prepared for College Work?

Conventional Wisdom Confirmed and Myths Debunked

Paul Stern
Dave Pavelchek

November 2006



Social & Economic Sciences Research Center-Puget Sound Division
203 E. 4th Avenue, Suite 521
P.O. Box 43170
Olympia, WA 98504-3170
(360) 586-9292
Fax: (360) 586-2279

About SESRC

The Social and Economic Sciences Research Center (SESRC) at Washington State University is a recognized leader in the development and conduct of survey research.

SESRC-Puget Sound Division provides technical services and consultation to assist clients in acquiring data, understanding what data means, and applying that information to solving problems. The SESRC Puget Sound Division specializes in research design, data collection and analysis, using both qualitative and quantitative methods. The Division also provides interpretive reports, policy studies, presentations and consulting services directly to individual clients, organizations and consortia.

Acknowledgements

The authors wish to acknowledge the support of staff at the two school districts that contributed data to this project. Thanks also to the Washington Educational Research Association (WERA) and the Office of Superintendent of Public Instruction (OSPI) Office of Research, Evaluation and Accountability for their financial support for this study.

EXECUTIVE SUMMARY

Who's Prepared for College Work? Conventional Wisdom Confirmed and Myths Debunked

By: Paul Stern and Dave Pavelchek
Social & Economic Sciences Research Center, Puget Sound Office¹
Washington State University
November 2006

When they move on to college, Washington state high school graduates enroll in remedial courses at high rates. According to the most current state-level data available, 49 percent of the class of 2004 graduates attending a public community or technical college (CTC)² in Washington took at least one remedial math course in their first year and 24 percent enrolled in remedial English.³ These statewide data count all students attending community and technical colleges. This paper focuses on a somewhat smaller group of students who not only attended a community or technical college, but also took a math course or an English course in their first year, such that their placement into a college-level or remedial course could be observed from enrollment records.⁴

This paper attempts to identify the key contributing factors to being “college ready” in math and English. Using transcript data from a two school districts in Washington, SESRC analyzed the relationship between students’ high school courses and grades and whether or not they enrolled in remedial math or remedial English at a community college. Students who enrolled directly in college-level math or English courses are referred to as “college ready” in this paper.

Key Findings:

College Attendance and Remediation

- College attendance patterns influence district remediation rates. Remediation rates at the district level are not just a function of the preparation of graduates for college, but also depend on the percentage of students who attend college and the distribution of those students across two-year and four-year institutions.
- Districts that send a proportionately larger percentage of graduates to four-year colleges may have higher community/technical college remediation rates than districts which send fewer students to four-year colleges and a greater share of their graduates to a community or technical college.

¹ This analysis was supported by the Washington Educational Research Association (WERA) and the Office of Research, Evaluation and Accountability at the State Superintendent of Public Instruction.

² Over 50% of Washington Public high school graduates who enroll in college in the year after graduation do so at a public in-state community or technical college.

³ The Washington State Graduate Follow-up Study. http://www.sesrc.wsu.edu/gfs/GFS_Reports/class_2004.asp

⁴ Students who enrolled at a CTC but did not enroll in math or English in their first year were excluded from this study because nothing definitive could be deduced about their preparation for college-level work.

Key Findings (continued):

Math

- Algebra II was not the key threshold course for college-level math for these students. Only eighteen percent (18%) of graduates whose most advanced course in math was Algebra II were college ready. In contrast, 51% of students who stopped at Pre-Calculus were college ready, as were 82% of students who completed high school Calculus.
- A student's grades in math were a strong predictor of being college ready. Students with an A or B GPA in math were far more likely to be college ready (54%) than those with a C (28%) or lower (7%).
- Whether or not a student took a math class in the year before they attempted college math was not a significant predictor of college-level math readiness, once a student's highest math course level was taken into account. Students who stopped with Pre-Calculus in their Junior year and those who stopped with Pre-Calculus in their Senior year had the same rate of math-readiness.
- Logistic regression results support these conclusions. The variables that had significant independent effects are the highest level of math taken, grades in math, and being Asian-American. Neither gender nor taking math, chemistry, or physics in the senior year were statistically significant factors.

English

- Almost all graduates who enrolled in honors or AP English (93%) were likely to be college ready. There was no significant difference between those who stopped at a junior or a senior-level English course.
- Like math, grades were also a strong predictor of placement into college-level English. Excluding honors/AP students, graduates with a B average or better GPA in English (74%) were more likely to be college ready than those with a C average or worse (64%).
- Logistic regression results support these conclusions. The variables that had significant independent effects were the highest level of English taken and grades in English. In addition, being Caucasian and not being an English Language Learner (ELL) student also were significant positive factors. Neither gender nor taking an English course in the senior year were statistically significant.

Next Steps

There are several ways one could move this research forward. First, working with larger samples and additional data elements may help sort out more fruitful hypotheses for examining preparedness for college-level work. With larger samples, separate analysis by ELL status and/or minority group may yield insights. Rather than using enrollments in remedial math and English, analyzing graduates' preparedness based on placement test scores would be a more powerful measure. Additional data that might prove useful could include standardized test scores (SAT, ACT, WASL) and information about the language spoken at home. Finally, because the ultimate goal is alignment of secondary preparation, not with placement tests, but with the functional requirements of college-level coursework, a broader investigation and validation of the current preparedness assessment instruments may be in order.

INTRODUCTION

BACKGROUND

A majority of recent high school graduates in Washington take remedial⁵ courses in math and/or English when they enroll in a community or technical college (CTC). With increased attention to educational reform has come increased interest in understanding and reducing the need for remedial enrollments.

Statewide, approximately 49% of graduates attending a CTC in the year after they graduate enroll in a remedial math class and 24% enroll in remedial English.⁶ The need to take remedial courses has at least the following negative impacts:

- (1) Financial and time costs to the student and the state for learning content that could have been learned in high school.
- (2) Students who enroll in remedial math or English may be more likely to leave college before earning a degree or certificate.
- (3) Students may be deterred from pursuing some programs of study or careers.

Previous studies by Edmonds School District⁷ and WSU-SESRC⁸ found a relationship between math courses and grades in high school and student enrollment in remedial math classes at community colleges. This study assesses whether the math-related results found in two prior studies apply to the districts in this study, with some additional data and methodological refinements. This study applies a similar methodology to the relationship between English courses and grades and subsequent enrollment in remedial English.

RESEARCH QUESTIONS

This project explored the relationship of high school coursework and grades to remedial enrollments in the first year after graduation. While other studies have explored remedial mathematics, this is the first application of this analysis to remedial English. Questions analyzed in this report include:

- What level of high school math and English appears to prepare students for college-level placement tests in math and English?
- Does a student's GPA in math or English predict whether they will need to take remedial courses?

⁵ Remedial courses are sometimes called “pre-college” or “developmental.” The distinguishing characteristic is that they do not earn credit towards a college degree.

⁶ CTCs offer separate remedial courses in reading and writing, which are combined in this analysis. Statewide, remedial Writing enrollments for recent graduates are about twice as common as remedial Reading enrollments. See <http://www.sbctc.ctc.edu/docs/data/research_reports/resh_06-1_pre-college_courses.doc>

⁷ Math Transitions Study: What Does it Take for a High School Student to be Prepared for College-Level Math at the Community College? Nancy Katims and N. Lynn Caulkins, Edmonds School District. May 2005. <katimsn@edmonds.wednet.edu>

⁸ Remedial Course-Taking Patterns among Recent High School Graduates. Paul Stern and Dave Pavelchek, Washington State University Social and Economic Sciences Research Center. July 2005. <sternpo@wsu.edu>

- Does timing of high school coursework influence the need for remedial instruction? Do students who skip math or English courses in their senior year increase their likelihood of needing remedial work?
- What is the role of English Language Learner (ELL) status and ethnicity as ‘predictors’ of English remedial enrollment?
- For students that do not take math in their senior year, does taking chemistry or physics substitute for math in affecting their placement into college-level math?

Students were identified as “college ready” in this study if they enrolled in college-level math and English courses at a community college in the year after graduation, without first taking a remedial course. Students were identified as “not college ready” if they enrolled in a remedial math or English course. Students whose enrollment at the community or technical college did not include either math or English were excluded from the analysis because it was not possible to deduce their level of preparation for college-level work.

All community and technical colleges in Washington use placement tests to assess student preparation, and to recommend or require remedial courses. Therefore, this study is actually analyzing readiness for the placement tests, rather than readiness for college-level work.⁹ This study does not address the question of whether the placement tests are effective, nor how high school courses and grades relate to performance once students begin college-level courses.

Findings from two previous remedial math studies by Edmonds School District and WSU-SESRC include:

1. Algebra II is not the key threshold course for entry to college-level math.
2. In addition to completing at least Pre-Calculus, the other strongest predictor of college-level math readiness was a student’s grade in Algebra II.
3. The effect of whether or not a student took a high school math class in the year before they attempted college-level math is an unresolved question. It did not have an independent effect on readiness for college-level math in the SESRC study, and it did have an independent effect in the Edmonds study.

⁹ Some students also obtain instructor permission to enroll in college-level courses despite below college-level scores on placement tests. Without access to actual placement test scores, this factor could not be analyzed.

DATA SOURCES

This project brought together data from two sources: school district records and community and technical college enrollment records.

High School Transcript and Demographic Data

To facilitate analyzing four years of transcript information for each graduate, District staff classified their math and English courses into 5 levels. Levels 1 through 4 represent typical grade level courses for Freshman through Senior years, with Level 5 representing courses taken by more advanced students in their senior year. Broadly speaking, the levels correspond to:

LEVEL	Math Course	English Course
1	Algebra	Freshman English
2	Geometry	Sophomore English
3	Algebra II	Junior English
4	Pre-Calculus/Trig	Senior English
5	Calculus/AP	Honors/AP English

Each of the research questions were analyzed by:

- Courses taken and grades earned by the graduate
- Graduates' cumulative GPA in each subject

The questions were also analyzed by demographic characteristics:

- Gender,
- Ethnicity, and
- Eligibility for the English Language Learner (ELL) program.¹⁰

STUDY SAMPLE

The study relied on datasets compiled by SESRC for district-specific research projects. The graduates in this study were from two large districts in Washington. Both agreed to let SESRC use their data anonymously for this report. The large sample that results from combining these two districts provides increased statistical power and allows greater confidence in the results. The two suburban districts are quite different. District A, which provided transcript data for their graduating Class of 2002, serves a relatively affluent suburb. District B, which provided transcript data for the graduating classes of 2003 and 2004, serves a less affluent, “blue collar” suburb.

¹⁰ In District A, ELL only identifies students who *participated* in their ELL program. At District B, the variable identifies all students who were *eligible* for ELL services, whether or not they received services.

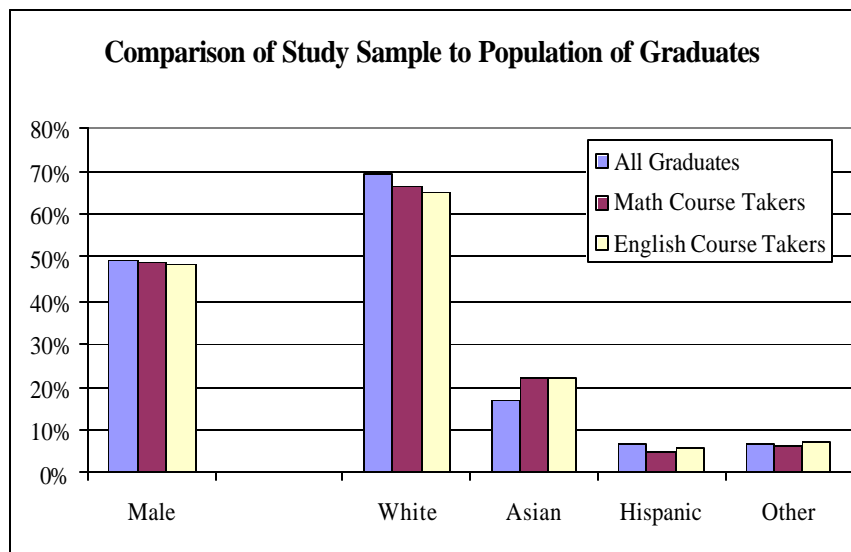
The two districts provided records on approximately 3,600 graduates. The study sample was narrowed to only include graduates who:

- took at least one class from a district high school in each of the last three years of high school,
- did not have any transfer or correspondence courses on their transcript
- were not home schooled or in Special Education, and
- enrolled at a Community or Technical College within a year of graduation and enrolled in a math or English course.¹¹

Of the approximately 3,600 graduates, just over 900 met the above conditions, including enrolling in a math or English course at a community college. Of these, 717 took an English class and 649 took a math class.

The demographics of the 903 graduates analyzed in this study were not very different from the demographics of the entire population of 3,600 graduates.

The population of all graduates was 49% male and 51% female. The percentage of males in the study sample differs from the population of all graduates by a percentage point.

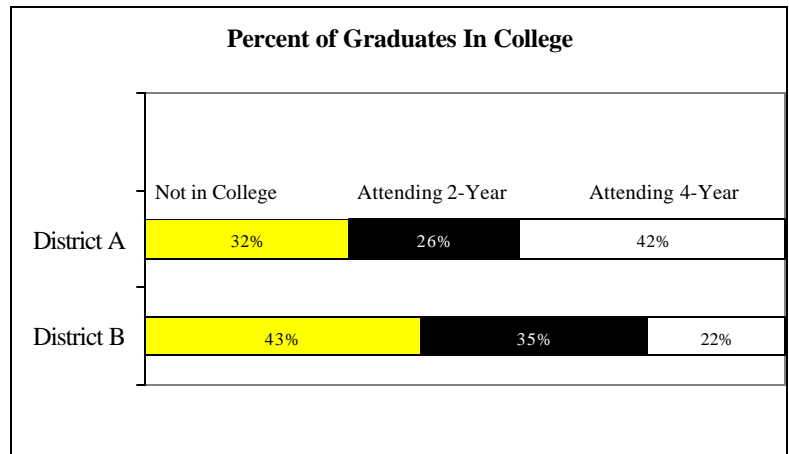


The graduate population had an ethnic distribution of 70% Caucasian, 17% Asian American, 7% Hispanic, and 7% Other (African American and Native American). The math and English groups had a slightly higher share of Asian Americans, with approximately 66% Caucasian, 22% Asian American, 5% Hispanic, and 6% Other. (See chart above.) Approximately 12% of the study sample was eligible for an English Language Learners program (ELL) while in high school compared to 9% of all graduates from the two districts.

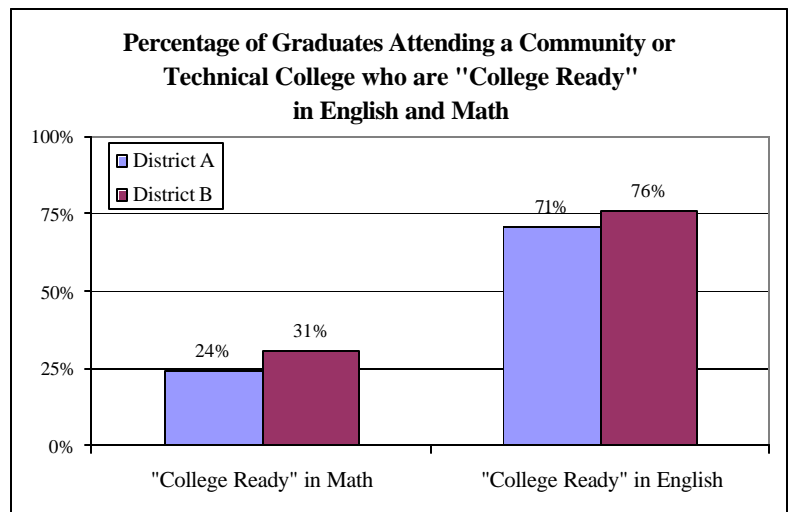
¹¹ Students are not required to take remedial courses until they wish to enroll in a course with a math or English prerequisite. Therefore, adequacy of preparation can only reliably be determined for students who took a math course or an English course.

COLLEGE ATTENDANCE AND REMEDIATION RATES

Analysis of results from the National Student Clearinghouse for each of these districts shows that graduates from District A were much more likely to attend college than those from District B.¹² Among those who attended college, the majority from District A tended to enroll in four-year institutions and the majority of college students from District B started at two-year colleges.



Without the information on the percentage of students enrolled at two and four-year colleges, one might look at the chart below and falsely assume that District B was the more affluent (or better performing) district.



It is important to keep in mind that socio-economic status (SES) relates to the percentage of students needing remediation in two distinct and offsetting ways. On one hand, districts that serve lower income areas are more likely to have poorer educational outcomes, including higher enrollments in remedial math and English in college.

On the other hand, higher income districts send more of their graduates to college, and more to baccalaureate institutions. However, as shown in this pairing of districts, if the analysis focuses exclusively on CTC enrollments, then it is important to consider college enrollment patterns as well. Affluent districts tend to send their “middle” students to community and technical colleges, while less affluent districts send their “upper middle.”

In this case, District A sent their 43rd to 68th percentile graduates to a community or technical college while District B sent their 23rd to 57th percentile graduate.¹³ Given this fact, simple comparison of the community and technical college remedial rates across districts would be inappropriate.

¹² Source: College Enrollment Study results for these districts. For a copy of the state-level College Enrollment Study, please see www.sesrc.wsu.edu/nsc.

¹³ This is not to say that valedictorians do not attend 2-year colleges and less prepared students do not attend four-year colleges. However, prior research has shown that, as a statistical tendency, students with higher GPAs and better preparation tend to enroll at four year colleges. Please see www.sesrc.wsu.edu/k12 for Washington examples of such data.

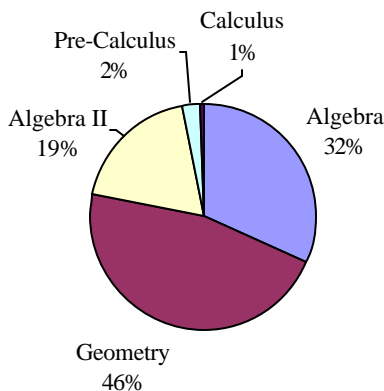
MATHEMATICS

This analysis of math remediation focused on the 649 students who enrolled in a math course at a community or technical college in the year following graduation. Those who did not enroll in a math class were not included in this analysis.

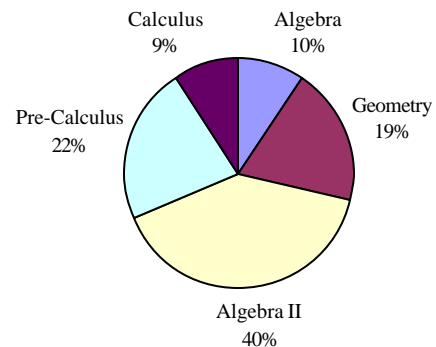
Extent of Math Preparation in High School

Slightly less than half (46%) of the students in this study were enrolled in Geometry their sophomore year and another 19% were enrolled in Algebra II. (See left chart.) By the time they graduated, 29% had stopped their high school math at Algebra or Geometry, 40% stopped taking math at the Algebra II level, slightly more than one-fifth completed through Pre-Calculus (22%), and 9% had taken Calculus in high school. (See chart at right.)

Level of Math Taken Sophomore Year



Highest Level of Math Taken

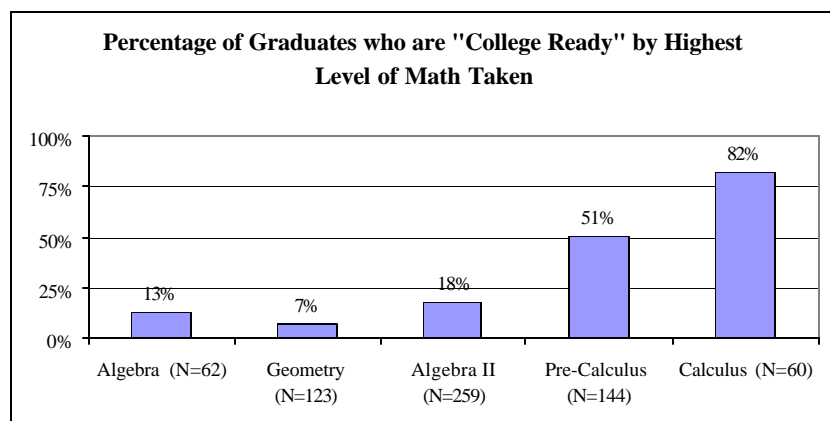


Finding #1: Overall, 29% of graduates in this study were college ready in math.

Of the 649 students who enrolled in math at a CTC, 185 enrolled first in a college-level math course and 464 enrolled in a remedial-level math course. The 185 out of 649 provides the 29% “college ready” statistic.

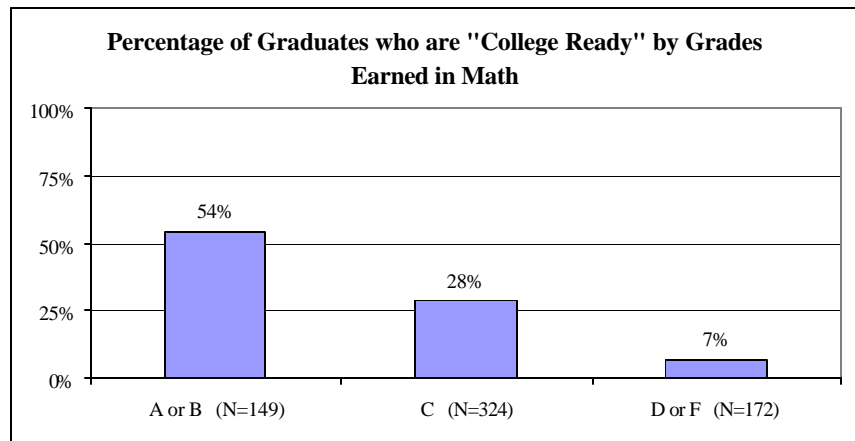
Finding #2: Algebra II is not the key threshold course for college-level math.

Only eighteen percent (18%) of the 259 graduates who stopped taking math at the Algebra II level were college ready; 51% of students who stopped at Pre-Calculus were college ready, and 82% of students who completed Calculus did not enroll in math remediation. These rates are almost identical to the findings from the earlier WSU and Edmonds studies.

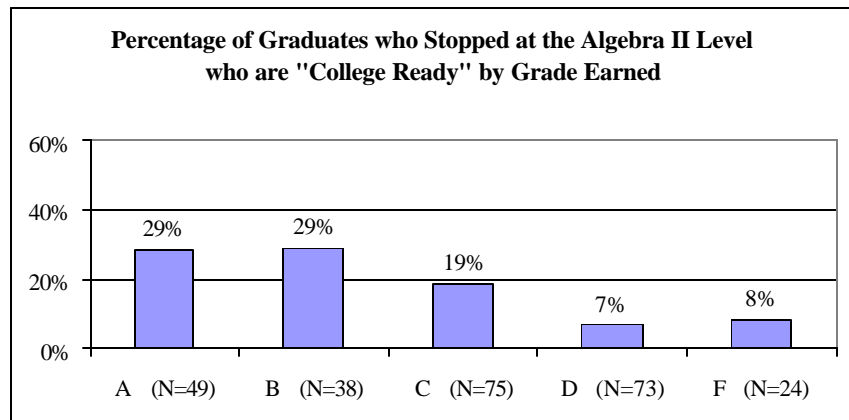


Finding #3: Beyond the highest level of math completed, the next strongest correlate of readiness for college-level math was a graduate's GPA in math.

In WSU's prior study, the grade earned in Algebra II was a better predictor of college readiness than the overall GPA in math. However, this study finds that both are equally good predictors. A little over half the graduates who earned an A or B in math were college ready compared to a little over a quarter (28%) of those with a C average. Fewer than one in ten graduates with a D or lower started in a college-level math course. (See the top chart.)



Disentangling the effect of grades in Algebra II from the effect of taking higher levels of math is difficult since students who earn A's in Algebra II are more likely to eventually take Pre-Calculus and Calculus than students

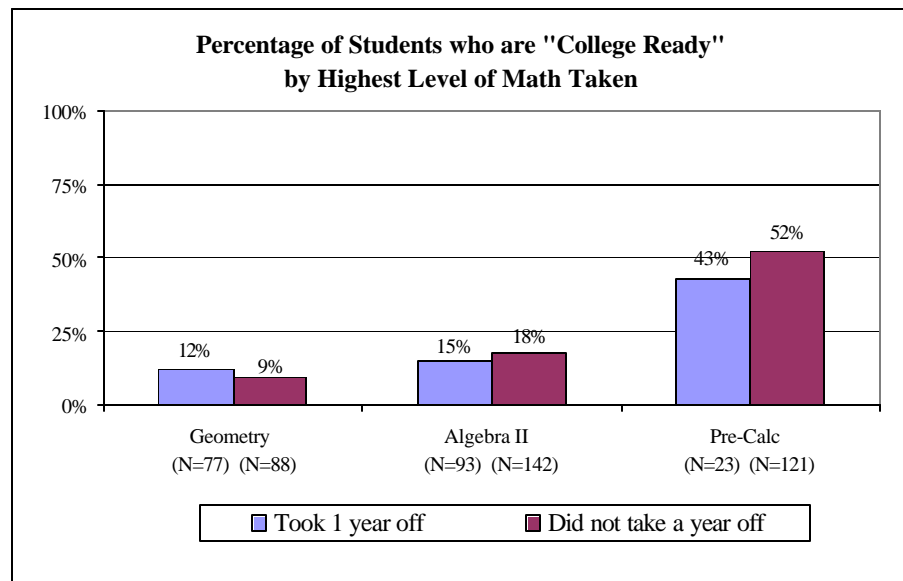


with lower Algebra II grades. Focusing exclusively on the 259 graduates who took no math above the Algebra II level, 29% of the students who earned an A or B were college ready, compared to 19% of those who earned a C, and 8% of students earning a D or F. (See the lower chart)

Finding #4: After adjustment for either the grade earned in math or the student’s highest math course, the effect of taking math in the senior year of high school is not significant.

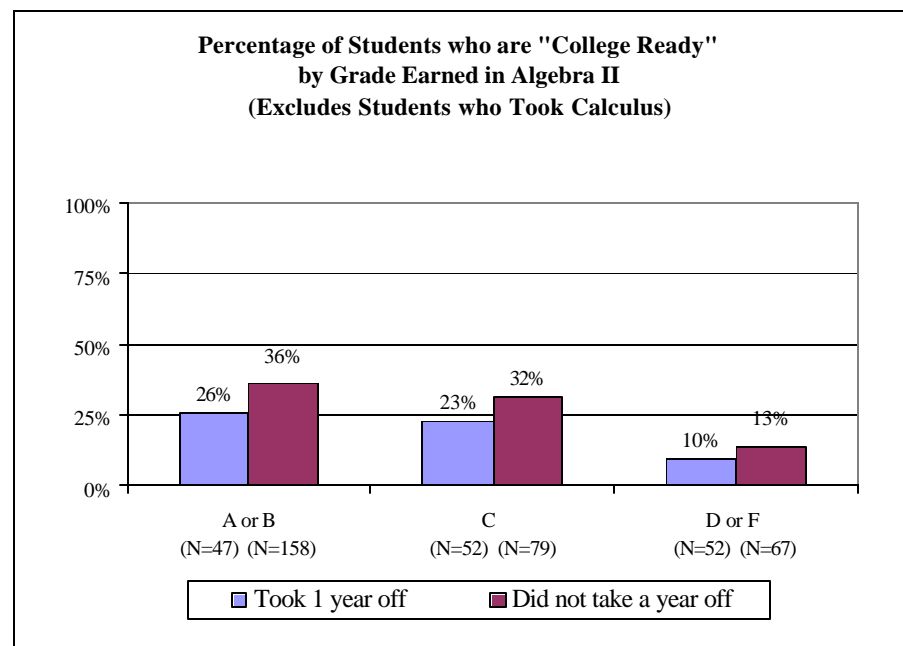
The importance of math in the senior year was tested by comparing the percent who were college ready between groups that stopped at the same level or that earned similar grades in the same course.

As shown in the chart at right, when the data is analyzed by the highest math course taken, enrolling in math the year before attempting college math made little difference in rates of remedial enrollment.



Grouping students by their grade in Algebra II produced similar results.

While those who did not take a year off performed slightly better in five of the six pairings shown in the two charts here, none of the differences were statistically significant at the 95% confidence level.



Thus, the reported importance of taking math senior year does not appear to result from math ‘atrophy,’ but rather because taking math in senior year usually advances a graduate’s math preparation to a higher level (for example from Algebra II to Pre-Calculus). Taking a higher level math course does significantly increase their chances of passing a placement test.

Finding #5: After adjusting for the highest level of math taken, for math grades, and for student ethnicity, neither taking math or a quantitative science class in senior year nor gender are additional predictors of a graduate's need for remedial math.

Pooling three years of graduates provided adequate sample to use a logistic regression model to explore which variables most successfully predicted remedial enrollments in math in combination with other factors. A regression model can identify which of several related factors are most consistently associated with an outcome, such that they can be said to explain or “predict” that outcome – and which are therefore most likely to indicate causal relationships.

With respect to graduates' readiness for college-level coursework, some factors are very closely related. As such, it is hard to discern which relationships are strongest and most likely to be causal. Simple crosstabulations are often not effective in determining which factors have true independent effects, and which are merely related to significant factors. For example, taking math in the senior year is strongly related with taking a higher level of math. Asian students often have higher math grades.

To try to sort out the underlying relationships, logistical regression using all of the preparation and demographic variables was applied. Both forward and backward incremental procedures were applied to arrive at reliable models.¹⁴ The forward procedure selects the strongest predicting factor first, then recalculates the effect of all the remaining variables, and adds variables one by one until none of the remaining variables would be statistically significant if added to the model. Backward modeling takes the opposite approach, starting with all the variables in the model, deleting the factor furthest from significance, and recalculating the model, repeatedly deleting the most insignificant factor until all the variables remaining in the model are statistically significant. Forward and Backward approaches do not always arrive at the same result, and can indicate even more complicated relationships among factors. Fortunately in this case, both forward and backward modeling identified the same set of variables in the final model.

For mathematics, the most important variable to predict whether a graduate would be ready for college-level math was their highest level math course. The second most important factor was their GPA in math. Third, even after taking into consideration the first two factors, was whether or not they were Asian-American.¹⁵

No other variables were statistically significant. Once the level, grades, and student ethnicity were taken into consideration, whether or not they took a math or quantitative science class in their senior year was not important. The gender of the graduate was also not significant.

¹⁴ Forward and backward stepwise logistic regressions in SPSS.

¹⁵ See Appendix A for regression details.

ENGLISH

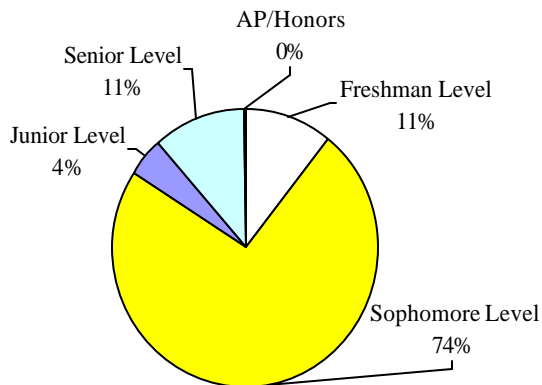
As mentioned earlier, although remedial courses in English constitute one-third of remedial enrollments, all of the recent work in Washington has focused on math preparation. In order to fill this, this study applied similar techniques to those used for studying math preparation. As a first foray in this area, the questions and analysis are more generalized, and do not have the sharpened focus that we are beginning to bring to bear on math. If these results serve more to raise additional questions and suggest additional or alternative analytic approaches, that will be neither surprising nor disappointing to the authors.

The analysis of remedial English focused on the 717 students who enrolled in an English course at a community or technical college in the year following graduation. Those who did not enroll in an English class were not included in this analysis.

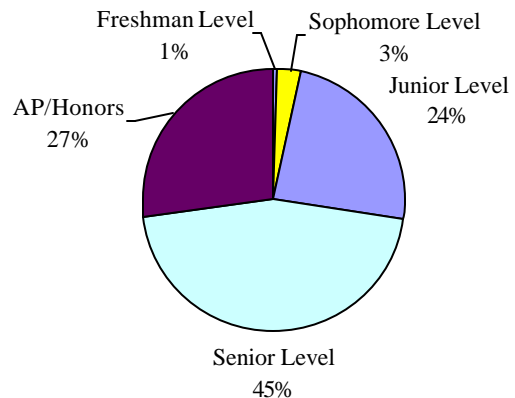
Extent of English Preparation in High School

Approximately three quarters (74%) of the 717 students in this study were enrolled in sophomore level English in their 10th grade year. (See left chart.) By the time they graduated, more than one quarter had enrolled in an Advanced Placement or Honors-level English class (27%), another 45 percent stopped at senior level English, and one quarter had completed a junior-level course. (See chart at right.)

Level of English Taken Sophomore Year



Highest Level of English Taken

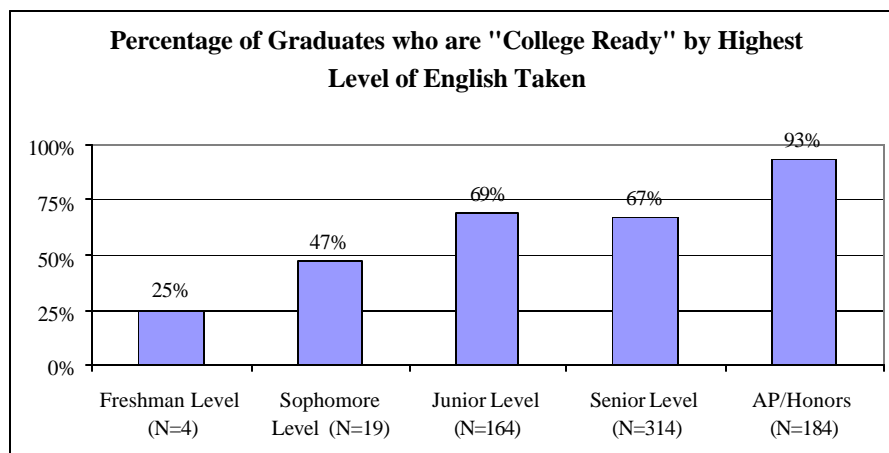


Finding #1: Overall, 74% of students included in this study were college ready in English.

Of the 717 students who enrolled in English at a CTC, 532 enrolled first in a college-level English course and 185 enrolled in a remedial-level English course. The 532 out of 717 provides the 74% “college ready” statistic.

Finding #2: The highest level completed in English was the best predictor of the likelihood for being ready for college-level English.

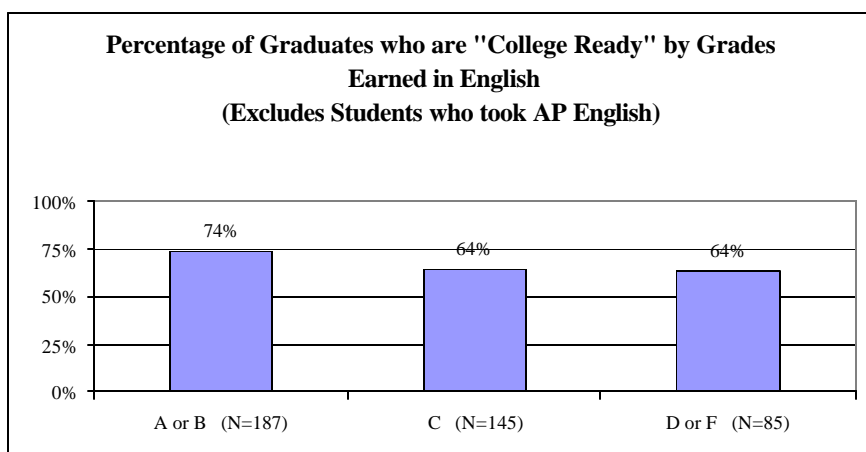
Junior level English was the critical course for college-bound students. Just over two-thirds of graduates who stopped at junior level and senior level English were college ready. Only 7% of graduates who took an Advanced Placement or Honors Course in English enrolled in remedial English at a CTC. Note the small sample sizes of students who stopped at the freshman and sophomore levels.



Finding #3: In addition to completing at least junior level English, the other strongest correlate of being ready for college-level English was a graduate's high school GPA in English.

Approximately three-quarters (74%) of graduates who had a GPA in their English classes of a B level or better were college ready compared to two-thirds (64%) of those with a C grade or lower.

Since virtually no students who took AP English needed remediation, those students were removed from this chart to provide a clearer indicator of the effect of grades on the "average" high school graduate.



There were not enough graduates in the sample without a senior year English course to be able to analyze whether or not taking English in the senior year decreased the odds of needing remediation in English.

Finding #4: ELL and race were statistically significant predictors of the need for remediation

As with the math sample, the larger pool of graduates provided an adequate sample to create a logistic regression model. A regression model can identify factors that are consistently associated with an outcome, such that they can be said to explain or “predict” that outcome. (See a fuller discussion of logistical regression in the math section.)

Similar to the math portion of the study, a computer program developed the regression model using an incremental or “stepwise” methodology. Models were developed both “backward” by starting with all factors and excluding insignificant factors one by one until an optimum model was created, and also “forward” by bringing variables in one by one until there were no more significant variables to add. The final set of variables selected by both the forward and backward methods was identical.

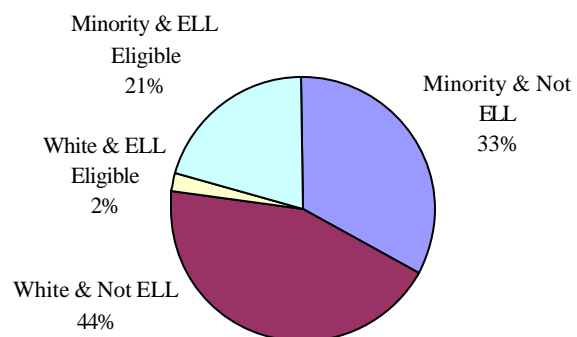
As with mathematics, the most important variable to predict whether a graduate would be college ready was the highest level course they took. The second variable was the graduate’s ELL (English Language Learner) status. The third most important was their GPA in English. In addition, even after taking these variables into consideration, the district they attended, and the graduates’ ethnicity were both significant.¹⁶ Eligibility for ELL and being non-white decreased the likelihood the graduate would be college ready. Graduating from District A (the more affluent district) increased the likelihood of being college ready, even after courses, grades, language and ethnicity were accounted for.

Once these variables were taken into consideration, whether or not they took an English class in their senior year was not important. The graduate’s gender was also not statistically significant.

Although ELL students and minority students were more likely to enroll in a remedial English class than White non-ELL graduates, one should not assume that the remedial English issue only affects recent immigrants of color.

Over three quarters (77%) of graduates who took a remedial English class did not participate in ELL. Further, the majority of those were identified as Caucasian (44% of the overall total).

**Enrollments in Remedial English
by Race and ELL Status**



¹⁶ See Appendix B for regression details.

CONCLUSIONS

Math: Among students who enrolled in a math course at a community or technical college within a year of graduation...

- Graduates were most likely to enroll in a college-level course if they had taken at least pre-calculus (51%) or calculus (82%)
- Math grades were the next strongest predictor with 54% who have a B average or better being college ready.
- Asian-Americans were more likely to be college ready in math.
- There is no difference by gender nor evidence of math ‘atrophy’ from not taking math or quantitative science in the senior year of high school.

English: Among students who enrolled in a English course at a community or technical college within a year of graduation...

- Graduates were most likely to enroll in a college-level course if they had taken AP or Honors English (93%). Those who stop at Junior (69%) or Senior (67%) level fared somewhat worse.
- Grades in English were the next strongest predictor.
- Being non-white significantly lowered the likelihood that a graduate would be ready for college-level English. And, understandably, graduates who qualified for ELL services were more likely to need remediation than those who did not qualify for ELL services.

Next Steps: There are several ways one could move this research forward. First, working with larger samples and additional data elements may help sort out more fruitful hypotheses for examining preparedness for college-level work. With larger samples, separate analysis by ELL status and or minority group may yield insights. Rather than using enrollments in remedial math and English, analyzing graduates’ preparedness based on placement test scores would be a more powerful measure. Additional data that might prove useful could include standardized test scores (SAT, ACT, WASL) and information about the language spoken at home. Finally, because the ultimate goal is alignment of secondary preparation, not with placement tests, but with the functional requirements of college-level coursework, a broader investigation and validation of the current preparedness assessment instruments may be in order.

APPENDIX A

College Readiness in Math: Regression Results

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	630	67.6
	Missing Cases	302	32.4
	Total	932	100.0

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
3	580.129	.252	.359

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 3	MAXMTHLV	.843	.117	52.331	1	.000	2.324
	MTHGPA	.986	.164	36.293	1	.000	2.680
	ASIAN	.616	.237	6.726	1	.010	1.851
	Constant	-6.302	.533	139.936	1	.000	.002
Variable(s) entered on step 1: MAXMTHLV.							
Variable(s) entered on step 2: MTHGPA.							
Variable(s) entered on step 3: ASIAN.							

Variables not in the Equation					
			Score	df	Sig.
Step 3	Variables	SRYMATH	.356	1	.551
		DISTRICT	.078	1	.781
		TRADDIS	.041	1	.839
		MALE	3.063	1	.080
		ELL	.110	1	.740
		SPED	1.106	1	.293
		SRQUANT	.172	1	.678

APPENDIX B

College Readiness in English: Regression Results

Case Processing Summary			
Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	717	76.9
	Missing Cases	215	23.1
	Total	932	100.0

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
6	703.018	.149	.219

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 6	MAXENGLV	.680	.113	35.958	1	.000	1.975
	ENGGPA	.496	.143	12.051	1	.001	1.642
	DISTRICT	.786	.210	14.054	1	.000	2.194
	ASIAN	-.907	.233	15.124	1	.000	.404
	TRADDIS	-1.017	.342	8.824	1	.003	.362
	ELL	-1.012	.296	11.718	1	.001	.364
	Constant	-3.838	.676	32.275	1	.000	.022
Variable(s) entered on step 1: MAXENGLV.							
Variable(s) entered on step 2: ELL.							
Variable(s) entered on step 3: ENGGPA.							
Variable(s) entered on step 4: DISTRICT.							
Variable(s) entered on step 5: ASIAN.							
Variable(s) entered on step 6: TRADDIS.							

Variables not in the Equation					
			Score	df	Sig.
Step 6	Variables	SRYRENG	1.091	1	.296
		MALE	.059	1	.808
		SPED	1.709	1	.191