

## Calculating the Costs of Remedial Placement Testing

By Olga Rodríguez, Brooks Bowden, Clive Belfield, and Judith Scott-Clayton

**Many community college students are assigned to remediation.** Of the more than one million new students who enter community colleges each fall, nearly 70 percent are assigned to remedial coursework (also called developmental education).<sup>1</sup> These students are deemed underprepared for college-level courses in at least one subject (reading, writing, or math) based on their performance on placement tests taken at college entry. The cost of providing remediation is high—nationwide, the direct cost at community colleges alone may be as much as \$4 billion annually<sup>2</sup>—yet the evidence about the effectiveness of remediation is not compelling.

Many students assigned to remediation never progress to take college-level courses. And studies comparing students who scored just above and just below the remedial placement test cutoffs have found that, with a few exceptions, assignment to remediation among such students does little to improve student outcomes.<sup>3</sup> What is more, many students are misclassified in the remedial assessment process. A recent study using a predictive model and data from one community college system found that one in four test-takers in math and one in three test-takers in English are severely misplaced using current test-based policies, with underplacements being much more common than overplacements.<sup>4</sup> The same study suggests that the use of high school transcript information such as GPA in the assessment process could substantially reduce the prevalence of placement errors. It is therefore possible that if colleges devoted more attention and resources to the process of remedial assessment, they could improve the accuracy of placement.

This research has generated much recent policy discussion. Yet in order for colleges and college systems to engage in informed deliberation about their assessment practices, it is important to know how much the colleges currently spend on their placement test procedures relative to other costs, and it is important to understand that students also incur opportunity costs in taking placement tests. Without information on the costs of remedial placement testing, colleges cannot determine the budgetary consequences of changes to the testing process, nor can they estimate the burden such tests place on students.

Based on a longer report,<sup>5</sup> here we (1) present findings on the costs to colleges and students of remedial placement testing, (2) discuss the implications of these findings, and (3) provide guidance on similar analyses that could be undertaken by individual colleges.

DEFINITIONS
<b>INGREDIENTS METHOD</b>
A method used to identify and estimate all costs required to carry out a program or policy.
<b>OPPORTUNITY COST</b>
The cost of a resource used in a program or policy measured by the value of the next-best alternative use of that resource.

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## Data, Context, and Method

This study focuses on the resources required for remedial placement testing (not in providing remedial courses) during one calendar year, 2012. It uses data from three community colleges (Colleges A, B, and C) to examine the costs associated with the process of assessing incoming students and assigning some of them to remedial courses. Data were collected via interviews with testing center staff at the colleges.<sup>6</sup>

Testing differs at the three colleges. Whereas College A administers several placement tests (in pre-algebra, algebra, reading, and writing), Colleges B and C administer only two tests (in math and English). The tests themselves also differ. College A uses a standard computer-based reading test from a large vendor but has developed its own paper-and-pencil writing test; Colleges B and C use a customized computer-based English test (which covers reading and writing) that was developed by a vendor. For math, College A uses standard computer-based pre-algebra and algebra tests from a large vendor; Colleges B and C use a customized computer-based diagnostic math test developed by a vendor.

Furthermore, the colleges differ in how students take the tests. At College A, students typically take all tests on the same day; at Colleges B and C, students are encouraged to take the math and English tests on different days. The grading process also varies, at least for writing. At College A, the writing test is graded by trained readers who work within the college system; at Colleges B and C, almost all tests are graded by a computer.

This study employs the ingredients method, a well-established approach to estimating the costs of a policy or intervention that identifies all of the resources utilized during implementation.<sup>7</sup> In this study, we catalog the inputs required to perform placement testing and price these inputs out to derive the total cost of assigning students to either college-level or remedial courses. All ingredients are paired with national prices to allow for comparison across locations and thus reflect the opportunity cost of the resources used rather than the amount of expenditure.

## Findings

### Costs of Remedial Testing

We present summary costs data for remedial testing across the three colleges in Table 1. Table 1 also shows the distribution of spending across ingredients. From a social perspective, the total annual cost of remedial placement testing ranges from around \$300,000 to \$875,000. The colleges finance approximately 60 percent of the costs; the remaining costs, due to the opportunity cost of student time spent on testing and related activities, are borne by the students. Our findings indicate that remedial testing is labor intensive. Of the costs borne by the colleges, almost 75 percent are for personnel. At the per test level, spending by each college averages less than \$50 per test, and the total costs (including student costs) average less than \$75 per test. The per-test costs vary based on the content being tested (math, reading, or writing) and on the scoring system used (by hand or by computer). Of the cost borne by the students, we find that the costs of taking the test and the costs of related activities (commuting to the test site and preparing for the test) are almost evenly split.

TABLE 1: COSTS FOR REMEDIAL PLACEMENT TESTING AT THREE COLLEGES

		COLLEGE A		COLLEGE B		COLLEGE C	
	UNITS	COST	%	COST	%	COST	%
<b>PERSONNEL</b>							
Dean	FTEs	\$29,160	3	\$40,110	12	\$41,350	14
Director	FTEs	\$38,020	4	\$6,270	2	\$9,420	3
Administrative staff	FTEs	\$34,700	4	-	-	-	-
Proctors	Hours	\$95,370	11	\$36,770	11	\$41,290	14
Assistants/graders/readers	Hours/test	\$101,120	12	\$5,830	2	\$5,620	2
Overhead	Rental rate	\$107,990	12	\$45,400	14	\$26,800	9
<b>FACILITIES</b>							
Computer lab	Square feet	\$79,750	9	\$27,240	8	\$22,420	7
Office space	Square feet	\$11,310	1	\$2,830	1	\$1,890	1
Materials/equipment							
Computers	Per unit	\$7,380	1	\$4,630	1	\$4,040	1
Tests: writing/reading	Per test	\$18,720	2	\$6,780	2	\$6,880	2
Tests: math	Per test	\$21,200	2	\$10,240	3	\$9,490	3
<b>TOTAL COLLEGE EXPENDITURE [S]</b>		<b>\$544,720</b>	<b>62</b>	<b>\$186,100</b>	<b>58</b>	<b>\$169,200</b>	<b>56</b>
<b>STUDENT TIME</b>							
Writing or English	Hours	\$56,990	7	\$28,590	9	\$29,000	10
Reading	Hours	\$69,550	8	-	-	-	-
Math (I and II)	Hours	\$70,440	8	\$34,480	11	\$31,840	11
Commuting time	Hours	\$53,360	6	\$41,910	13	\$40,560	14
Test prep time	Hours	\$81,340	9	\$30,860	10	\$29,420	10
<b>TOTAL STUDENT OPPORTUNITY COST [T]</b>		<b>\$331,680</b>	<b>38</b>	<b>\$135,840</b>	<b>42</b>	<b>\$130,830</b>	<b>44</b>
<b>TOTAL SOCIAL COST [C = T + S]</b>		<b>\$876,400</b>		<b>\$321,940</b>		<b>\$300,030</b>	
<b>TESTS [N]</b>		<b>12,300</b>		<b>5,800</b>		<b>5,600</b>	
<b>SPENDING PER TEST [S/N]</b>		<b>\$44</b>		<b>\$32</b>		<b>\$30</b>	
<b>UNIT COST PER TEST [C/N]</b>		<b>\$71</b>		<b>\$56</b>		<b>\$54</b>	

Note. Costs reported in 2012 dollars. The number of tests includes all writing/English, reading, and math tests. Test numbers rounded to nearest 100. For details on sources and calculations, see Rodríguez et al. (2014).

### **Costs of Diagnosis Are Low in Proportion to the Costs of Treatment**

Our findings indicate that college spending on placement testing (diagnosis) is very low compared with spending on the subsequent remedial instruction (treatment). At Colleges A, B, and C, total college expenditures on remedial instruction are approximately \$9.3 million, \$2.0 million, and \$2.2 million respectively.<sup>8</sup> Remedial testing expenditures are therefore 6 percent, 9 percent, and 8 percent, respectively, of the remedial instruction totals.

### **Costs of Diagnosis Are Low in Proportion to the Costs of the Misplacement**

Recent research suggests that remedial placement testing is associated with high rates of underplacement (i.e., students who could succeed in college-level courses are instead assigned to remediation).<sup>9</sup> An underplacement rate of 20 percent in testing generates additional college costs of \$324 per misplaced student (assuming a misplaced student takes one remedial course at a cost of \$1,620 per course). This direct cost of misplacement alone is roughly 10 times what colleges in our study spend on a test. The time costs of misplacement for students are roughly 5 to 20 times larger than the time costs of the test.<sup>10</sup>

### **Costs of Diagnosis Are Low in Proportion to the Costs of the College Commitment**

Based on a detailed cost study of one community college, researchers have estimated that the average amount of college resources allocated to each student is \$13,970 over the entire period during which the student is enrolled at that college.<sup>11</sup> Therefore, in our study, as each student registers, the cost of remedial placement testing is roughly 0.5 percent (\$30–44 times the number of tests each student takes) of the amount the college commits to spending on the student when the student first registers.

### **Student Time Costs Are High in Proportion to Total Costs**

Our student time cost estimates are conservative in that we use the state minimum wage to calculate the opportunity cost of students' forgone earnings. Nonetheless our findings suggest that relative to what the colleges spend on placement testing, students' time commitment is substantial, comprising about 40 percent of the total cost. Although this type of cost might appear as "free" to the college, it may place a significant burden on students, even if they are not working, as childcare, family, and other responsibilities might increase opportunity costs in practical terms. The opportunity cost for students can potentially constrain colleges' ability to impose more thorough tests or diagnostics.

## **Discussion**

Our results indicate that college spending on remedial testing is low in proportion to how much colleges spend on remedial courses. It is low in proportion to the costs of misplacement. And it is low in proportion to the amount each college commits to spending on a student when the student first registers. These findings suggest that colleges may want to give much greater attention to their assessment practices and may want to reconsider how students are assigned to remedial or college-level courses.

Our study also finds that the cost per each placement test administered varies across the colleges. Much of the difference in total costs between colleges is driven by College A's use of a locally developed and graded writing exam, as well by the longer duration of time students spend on College A's battery of tests (4.5 hours versus 3 hours). Further, our finding that the students' time comprises a large proportion of the total costs suggests that colleges may want to consider remedial assessment options that require little or no investment of student time—for example, using high school grade point averages as a means to assess incoming students for remedial placement. Resources might then be reallocated to improvements in the advising that is part of the placement process. While a placement test might still be necessary for students who do not have a recent transcript or who have a high school grade point average in a particular range, the costs associated with placement would still be lower by adopting this alternative approach.

## Guidance for Future Inquiry

This study provides an example of how colleges or college systems might approach examining their own remedial assessment and placement practices and the costs associated with them. For colleges that want to undertake such an analysis, some guidance is provided below.

**Examine all resources.** All resources (or “ingredients”) utilized within an assessment system should be considered when evaluating the costs or resources used. Some ingredients may be easy to identify, such as test proctors, computers, and space for the testing center. Other ingredients, such as student time and the contributions of other administrative staff, are less easy to identify. In our study, we included all ingredients used during the testing and scoring process.

**Recognize that the most costly ingredients are often related to the people involved.** In education, most policies and practices rely heavily on time contributed by staff members, administrative personnel, teachers, and students. This time may be very important to the success of implementation and should be included in an examination of costs. In our study, over 75 percent of the costs were related to college personnel or students involved in remedial placement testing. College personnel costs accounted for 41–46 percent of total costs, and student time accounted for 38–44 percent of total costs. The remaining 14–15 percent of total costs were for materials, facilities, and equipment. Student costs may be substantial (indeed, time-constrained students rushing through placement tests could even undermine the tests’ accuracy). The costs to students of any change in placement procedures should be considered carefully.

**Consider the format, development, and grading of tests.** In our study, the colleges primarily used computers to administer placement tests to incoming students—only one of the tests used was paper based. However, the tests were developed differently, and the paper-based writing test was scored by hand. When designing or evaluating an assessment system, the development, grading, and content measured on placement tests are very important to understand. When computers are used, they require staff to help with technical issues. And test center computers that are made available for students may be in high demand during a short window of time during the school year. Moreover, the computer scoring of writing tests may be difficult. On the other hand, when paper tests are used and scored without computers, the tests must be kept, transported, and graded by trained staff or faculty. We do not assert that one of these options is superior to the other, but rather want to illustrate that these differences have cost consequences and should be considered when evaluating an assessment system.

## Endnotes

1. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (2014), Table 305.10.
2. Scott-Clayton & Rodríguez (2012).
3. See Jaggars & Stacey (2014).
4. Scott-Clayton, Crosta, & Belfield (2014).
5. Rodríguez, Bowden, Belfield, & Scott-Clayton (2014).
6. See Rodríguez et al. (2014) for descriptions of the college context and for the interview protocol.
7. Levin & McEwan (2001).
8. These estimates are based on total instructional expenditures on first-time degree-seeking enrollees at the three colleges in this study. We estimate total expenditures in remedial instruction by assuming that remedial courses represent 10 percent of total instructional expenditures allocated to first-time degree-seeking students.
9. Scott-Clayton, Crosta, & Belfield (2014).
10. This range of estimates is calculated using estimates of 1.5–3.5 hours of student time per test depending upon the site and subject (as reported by testing directors), and a rough estimate of 75–150 hours of class time and preparation time for a remedial course.
11. Belfield, Crosta, & Jenkins (2014).

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*Funding for this research was provided by the Bill & Melinda Gates Foundation.*