

## SCALING UP PRELIMINARY DATA ANALYSIS

Report Prepared by  
Voorhees Group LLC

Richard A. Voorhees, Ph.D.  
John A. Muffo, Ph.D.

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Contact:

[rick@voorheesgroup.org](mailto:rick@voorheesgroup.org)  
303-918-1981

[www.voorheesgroup.org](http://www.voorheesgroup.org)



## **Executive Summary**

This report is the first analysis of demographic and outcome data reported career pathway programs participating in the scale up of the national Breaking Through initiative. The five Scaling Up institutions are: Durham Technical Community College (Durham, North Carolina), Lake Michigan College (Benton Harbor, Michigan), Owensboro Community & Technical College (Owensboro, Kentucky), Pamlico Community College (Grantsboro, North Carolina), and Tacoma Community College (Tacoma, Washington).

These programs reported unit data for the 2009-2010 academic year in a template developed by Voorhees Group LLC. These data as reported here should be regarded as preliminary at this point, especially since key outcomes that should be attributed to career pathways programs require more time to mature.

Analysis of early outcomes suggests that the short-term retention rates for Scaling Up students are higher than historical rates for community college students. The unit record template also permits for the first time an analysis (preliminary) of participant academic gains. These analyses show that almost three-quarters of Scaling Up students are making progress in reading while nearly half make gains in mathematics within the timeframe for which these data were collected. Subsequent analysis using concordance scores reveal that nearly one-third of career pathways students make substantial gains of one level or more in reading and mathematics during the study period. At one site, academic gains for career pathways participants were almost twice that of a group of comparison students.

At the individual site level, comparison group analyses also suggest that Scaling Up students enroll and complete college-level student success courses at a higher level (Lake Michigan), have higher short-term retention rates (Owensboro Community and Technical College), and complete the career pathways developmental sequence at a higher rate after a key transition courses was redesigned (Tacoma Community College).

Recommendations about how to improve future data collection are presented. Suggestions for streamlining the unit record template conclude this report.

## **Data Notes**

Because the data reported here span just nine months, their analysis can be only preliminary. Two outcomes are especially critical to evaluating the effectiveness of career pathways programs: subsequent progression toward a degree or certificate in the community college, and employment. The timeframe in which these programs operated (and provided data) is too short to permit capturing of these key outcomes.

Comparisons across sites also should be approached judiciously. Each program operates differently, in whether it offers its own remedial education sequence, shares intake assessment instruments with the college-level developmental education program, or captures post-test data on students. Each program has also developed its own unique

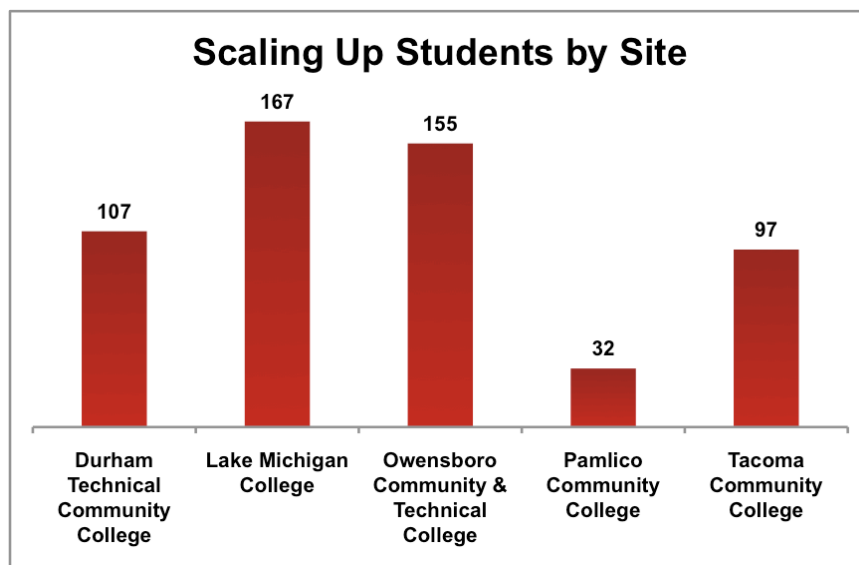
series of transition (or momentum) points as well, meaning that the pattern of student progression within the career pathways sequence is not common across programs.

A last caution lies in the area of making generalizations based on these data. The number of participants reported here is not sufficient to make broad statements about the effect of career pathways programs on a national level. While it is also relatively early in their academic histories, there are too few students in this sample to make sweeping statements about career pathways outcomes.

## Demographics

The Scaling Up sites served 561 students in 2009-2010. Figure 1 displays the distribution of students across programs.<sup>1</sup>

Figure 1



## Gender and Age

Gender proportions across the five sites are balanced (Figure 2). Table 1 displays the average age and proportion of females by site. The youngest participants are found at Pamlico while Lake Michigan College serves the oldest proportion. Pamlico also served proportionately more females while Owensboro enrolled the least. Overall, gender and average age are not significantly different from previous research in career pathways as reported to JFF (see Voorhees and Muffo, 2009).

<sup>1</sup> Figure 1 may not total to 561 owing to missing data

Figure 2

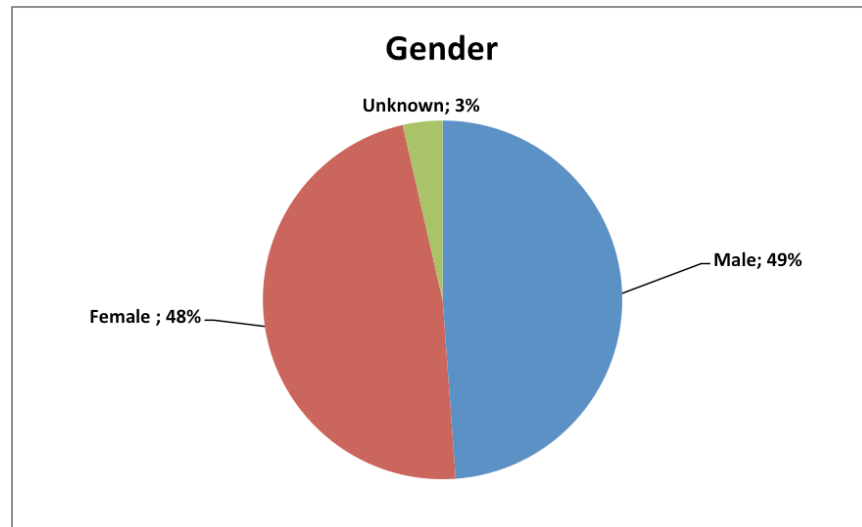


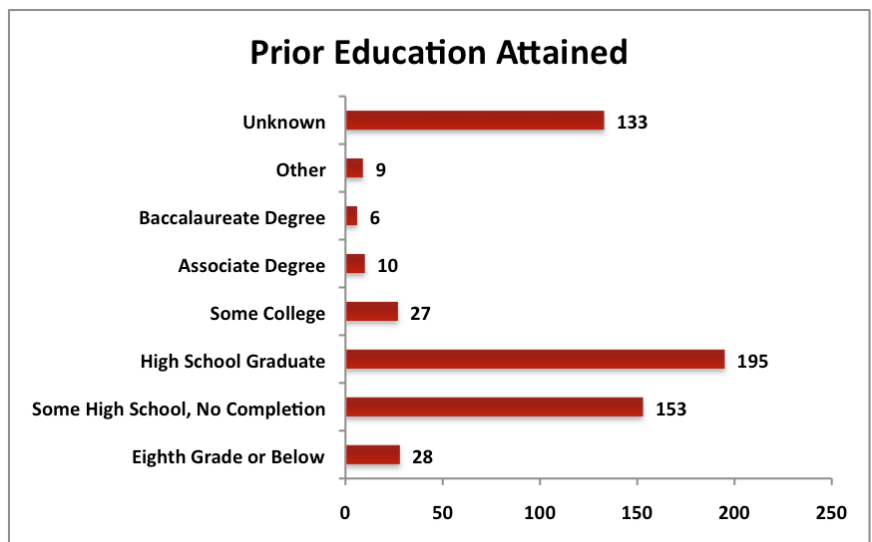
Table 1. Age and Gender by Site

Site	Average Age	% Female
Durham Technical Community College	28.0	46
Lake Michigan College	41.9	48
Owensboro Technical & Community College	35.9	36
Pamlico Community College	22.7	69
Tacoma Community College	33.8	70
Totals	34.9	48

### Prior Education

Formal education levels completed by participants prior to entry in career pathways programs are varied. Figure 3 shows that nearly one-third were high school graduates. Another third had not completed high school.

Figure 3



### Race and Ethnicity

Observing recent changes in federal reporting guidelines, ethnicity was reported separately from race in the unit record template (Figures 4 & 5).

Figure 4

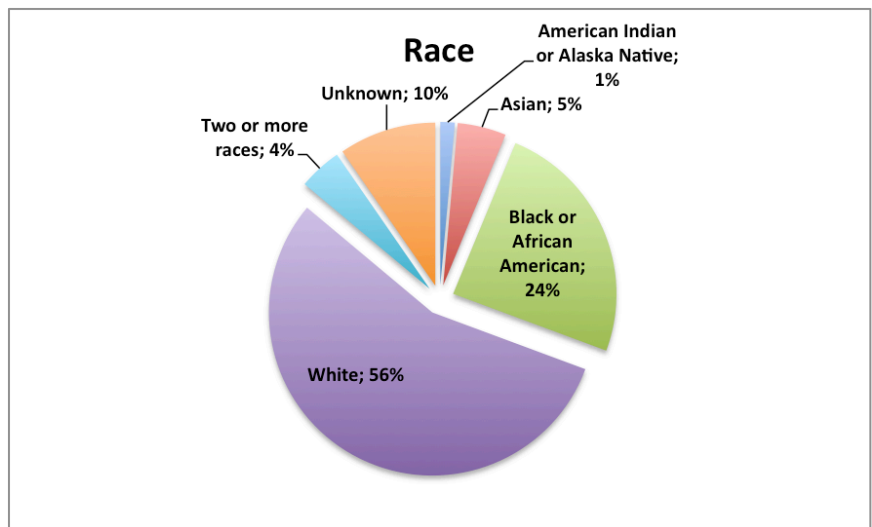
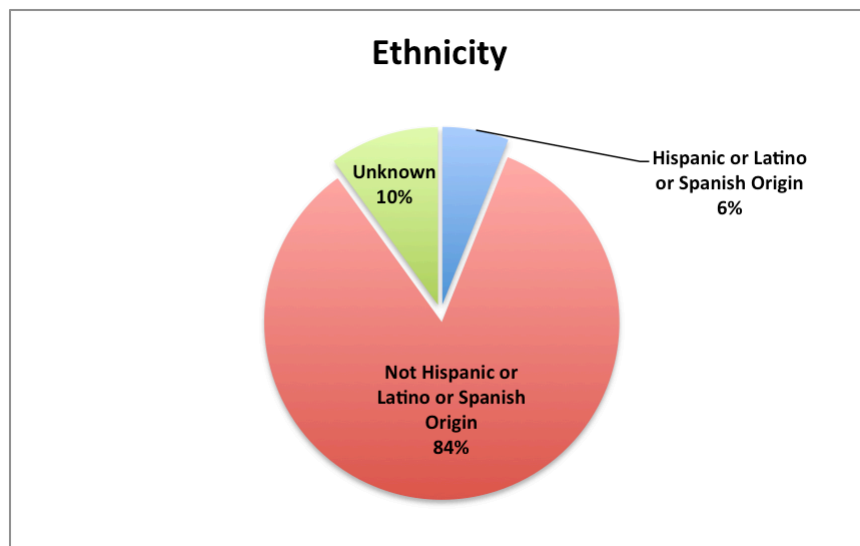


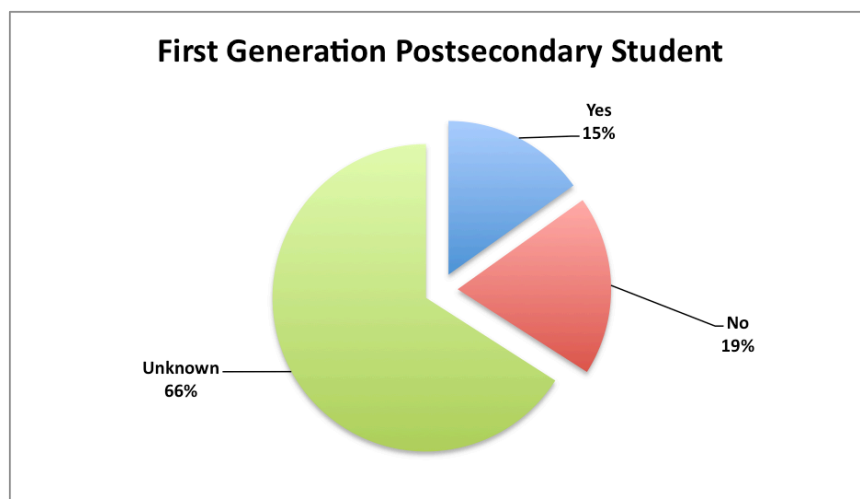
Figure 5



### First Generation Status

Figure 6 illustrates the impact of missing data from career pathways sites. Excluding missing cases from the analysis of this datapoint would produce a 45% statistic for the proportion of students who are first generation in college students.

Figure 6



### Single Parent Status

Figure 7

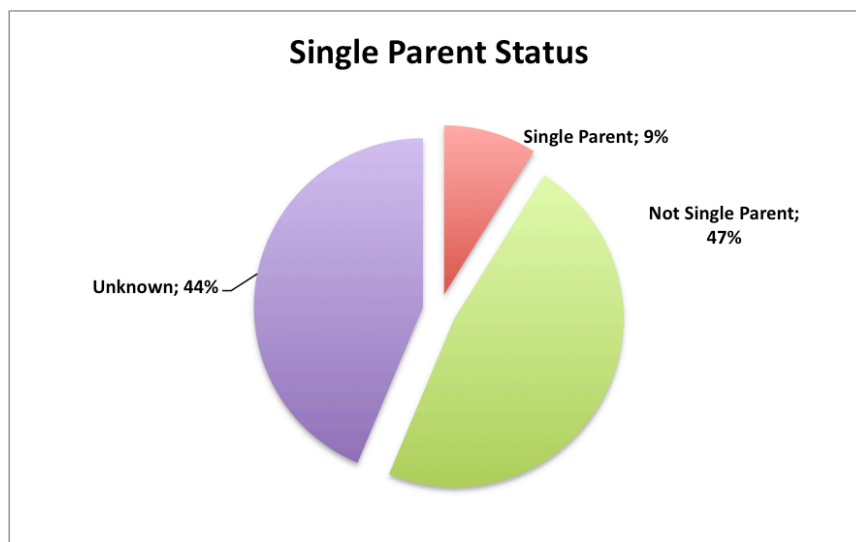
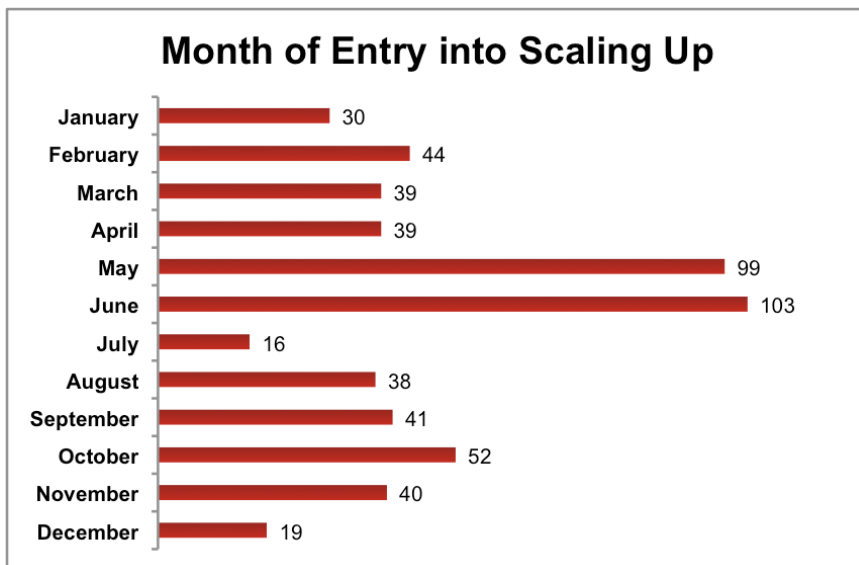


Figure 7 shows that the single parent status of four of ten of Scaling Up national participants is unknown, suggesting the need for local sites to use an intake form to gather this information directly from students as well as other demographic information not routinely collected by college's administrative data systems. At the same time, the 44% unknown statistic is an improvement for this datapoint over previous Breaking Through data collection (Voorhees & Muffo, 2009).

### Student Entry Points

A challenge in mapping student outcomes for career pathways programs can be found in their permeable nature and the impact of this flexibility on establishing cohorts to track through the program and beyond. Because career pathways programs operate in a continuous open-entry and open-exit fashion, multiple cohorts of new students are created throughout any given month and year. Figure 8 displays the months that students entered career pathway programs as reported for the 2009-2010 year. Contrast the simplicity of creating one cohort in a community college for a group of students who enter in the fall with the need to track 8 to 12, or more, cohorts for career pathways program and one can quickly see the challenge involved.

Figure 8



### Short-Term Progression

Table 2. Overall Progression, First Term to Second Term	
Continuing from Previous Term	75%
Re-enrolled from Other Terms	1%
Not Continuing	24%

The overall progression rate (term-to-term) for Scaling Up sites was 75% (Table 2). This overall rate is significantly higher than the historical range of rates (58% to 61%) reported for term-to-term retention rates for all first-time community college students (full-time and part-time) by Clagett (1997). Term-to-term retention rates have recently been reported between 70% to 79% at leading Achieving the Dream community colleges (Jacobs, 2010). In comparison, the range of short-term progression rates by Scaling Up sites was 61% to 89% (Table 3).

Table 3. Site by Site Student Progression, First Term to Second Term					
	% DTCC	% LMC	% OCTC	% PCC	% TCC
Continuing from Previous Term	70	n/a	89	69	61
Re-enrolled from Other Terms	0	n/a	0	16	0
Not Continuing	30	n/a	11	16	39
Note: Lake Michigan College reports that all career pathways students complete their programs in one term					

### Progression through Transition Points

In addition to term-to-term progression, each site was asked to identify its unique transition points, or phases, that students need to complete prior to completing the entire career pathway program. Completion of these phases is not linear in the sense that one phase needs to be completed before the next is completed.

These phases are described below and provide a glimpse of what each Scaling Up program regards as important steps for students to master along the career pathway. Completion rates for each phase are provided below, but the reader must bear in mind that these are rates for *all* students who were enrolled in career pathway programs regardless of their entry date. The completion rates for the phases below will undoubtedly increase over time as students who enrolled in, say, April and May of 2010, have the opportunity to complete each phase.

#### Durham Technical Community College

Phase #1: Complete ABE Low. Earliest date the student tested in all three TABE categories at 6.0 or over, 23%

Phase #2: Completed ABE High. Earliest date the student tested in all three TABE categories at 9.0 or over, 1%

Phase #3: Completed GED/AHS Prep Low. Earliest date the student tested in all three TABE categories at 11.0 or over, 10%.

Phase #4: Completed transitions course with a grade of C or better, 7%

Phase #5: Graduated AHS/GED, 3%

Phase #6: Enrolled in college program and enrolled in credit courses, 0%

### **Lake Michigan College**

Phase #1—Complete bundled Career and College Essentials workshop (academic remediation and career-specific training), 48%

Phase #2 – Complete unbundled CCE/Remediation course with the option to complete the career-specific training at a later date, 1%

### **Owensboro Community and Technical College**

Phase #1—Enrolled in first Career Pathways class. 85%

Phase #2—Enrolled in next in sequence of Career Pathways class (variable number of classes to complete by career area), 68%

### **Pamlico Community College**

Phase #1—Pass three GED tests, 84%

Phase #2—Complete GED, 66%

Phase #3—Enroll in postsecondary education, 31%

Phase #4—Participate in SSC and On Course program, 19%

Phase #5—Enroll in college-level math or English, 9%

Phase #6—Complete occupational certification or course, 13%

### **Tacoma Community College**

Phase 1—Obtain GED, 8%

Phase 2—Completed Transition Course, 29%

Phase 3—Obtained PT Certificate/ Complete I-BEST, 5%

Phase 4—Took Accuplacer (College placement test), 21%

Phase 5—Enrolled in Developmental Ed/English for Academic Purposes, 23%

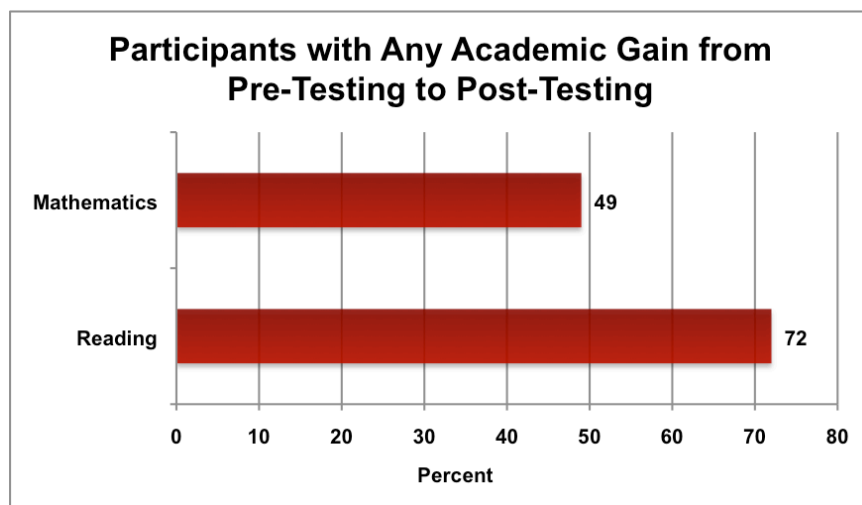
Phase 6—Enrolled in unsupported college level course, 13%

### **Academic Gains**

Data collected from the unit record template allows JFF to estimate academic gains of career pathways students for the first time. We compared pre-test scores in reading and mathematics to the scores of students who were also post-tested. Less than half of all students had post-test scores. There are three reasons for this: a) students had not yet completed the career pathways remedial sequence; b) the site didn't report career pathways post-test scores; or c) the site doesn't require students to sit for post-testing. The result at this writing is that gain scores are only available for less than half of all students (n=262 in reading and n=220 in math). As noted above, subsequent reporting cycles will undoubtedly increase the proportion of students post-tested. The impact of

post-testing additional students on the overall proportion of all Scaling Up students who made *any* academic gains in reading and math is not yet known (Figure 9).

Figure 9



Below, we analyze the preliminary academic gain data submitted by the sites in two ways. First, we analyze the raw or scaled scores for each site as reported in the data template. Second, we utilize a concordance table to standardize scores in reading and math across all sites to make a preliminary estimate of academic gains for all Scaling Up students.

### Academic Gains in Mathematics and Reading by Site Reported Scores

Among the four sites reporting post-test data for their career pathways remedial sequence, early analysis points to academic gains. The proportion of students with gains in reading scores was two-thirds or better at Durham Tech, Pamlico, and Tacoma. The largest academic gains occurred for students whose pre-test levels were lowest.

#### Durham Technical Community College

DTCC Pre- and Post-Test , TABE (Expressed as Grade Level Equivalents)		
Reading (n=97)	Pre-Test	Post-Test
Average (SD)	8.1 (2.2)	9.0 (2.3)
Average Grade Level Equivalent Gain	n/a	0.98
% Students with Gains	n/a	96
% Students with One Year or Greater Gain	n/a	31

<b>DTCC Pre- and Post-Test , TABE (Expressed as Grade Level Equivalents)</b>		
<b>Mathematics (n=97)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	6.5 (1.8)	7.7 (2.4)
Average Grade Level Gain	n/a	1.17
% Students with Gains	n/a	44
% Students with One Year or Greater Gain	n/a	37

### Lake Michigan College

<b>LMC Pre- and Post-Test, WorkKeys</b>		
<b>Reading (n=45)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	5.1 (1.0)	5.4 (0.9)
Average WorkKeys Gain	n/a	0.29
% Students with Gains	n/a	38
% Students with One Year or Greater Gain	n/a	38
<b>Mathematics (n=47)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	4.7 (0.9)	4.8 (1.2)
Average WorkKeys Level Gain	n/a	.2
% Students with Gains	n/a	34
% Students with One Year or Greater Gain	n/a	34
Note: WorkKeys results are reported on a scale of 3-7. Unlike TABE, these are not grade level equivalents.		

### Owensboro Community and Technical College

OCTC does not post-test career pathways students.

### Pamlico Community College

<b>PCC Pre- and Post-Test, TABE Survey (Raw Score)</b>		
<b>Reading (n=12)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	577.6 (69.8)	581.1 (19.8)
Average TABE Survey Raw Score Gain	n/a	3.5
% Students with Gains	n/a	67
<b>Mathematics (n=97)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	543.7 (63.0)	559.3 (36.0)
Average TABE Survey Raw Score Gain	n/a	15.6
% Students with Gains	n/a	63

## Tacoma Community College

<b>TCC Pre- and Post-Test , CASAS Raw Score (Comprehensive Adult Student Assessment Systems)</b>		
<b>Reading (n=16)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	227.8 (9.4)	232.0 (10.0)
Average CASAS Raw Score Gain	n/a	4.1
% of Students with Gains	n/a	71
<b>Mathematics (n=45)</b>	<b>Pre-Test</b>	<b>Post-Test</b>
Average (SD)	229.8 (8.2)	232.4 (9.9)
Average CASAS Raw Score Gain	n/a	2.5
% of Students with Gains	n/a	65

### Academic Gains and Concordance Scores

Standardizing the assessment scores from the five sites into one scale for analysis provides a mechanism for a general discussion of the total academic gains across the Scaling Up initiative. The concordance table used here is published by the U. S. Department of Labor (2007) by its Employment and Training Administration (ETA) division. It offers the advantage of a common vocabulary and framework for literacy categories, the range of corresponding scores between TABE and WorkKeys and CASAS, and the relationship of literacy categories to basic reading and writing, numeracy skills, and functional and workforce skills.

Table 4 shows the relationship between the ETA adult literacy categories and those basic skill needs. Although, workforce development and community college remedial programs may use different definitions of basic skills, the categories in Table 4 are presented for illustration only. For example, the threshold for “not basic skills deficient” may or may not correspond to a given college’s threshold for determining whether students should be placed in “regular” developmental education. Strawn (2008), for example, points to the general lack of crosswalks between programs that serve low literate adults and community college developmental programs.

Figure 11

Table 4 Relationship of Adult Literacy Categories to Basic Skills Needs	
Beginning ABE Literacy	Basic Skills Deficient
Beginning Basic Education	
Low Intermediate Basic Education	
High Intermediate Basic Education	
Low Adult Secondary Education	Not Basic Skills Deficient
High Adult Secondary Education	

**Entering Education Functioning Levels.** Of the 561 career pathways students reported by the sites, 409 (71.6%) completed math pre-tests, and 438 (76.7%) completed reading pre-tests. Using the categories found in Table 4, 33% of the students entering Scaling Up programs were “basic skills deficient” in reading (Figure 10) while 47% were deficient in mathematics (Figure 11). It should be noted again that these categories have been developed for adult literacy programs on the national level and may or may not correspond directly to the thresholds in place at the host Scaling Up colleges to determine basic skills deficiencies and placement in the “regular” community college developmental education sequence.

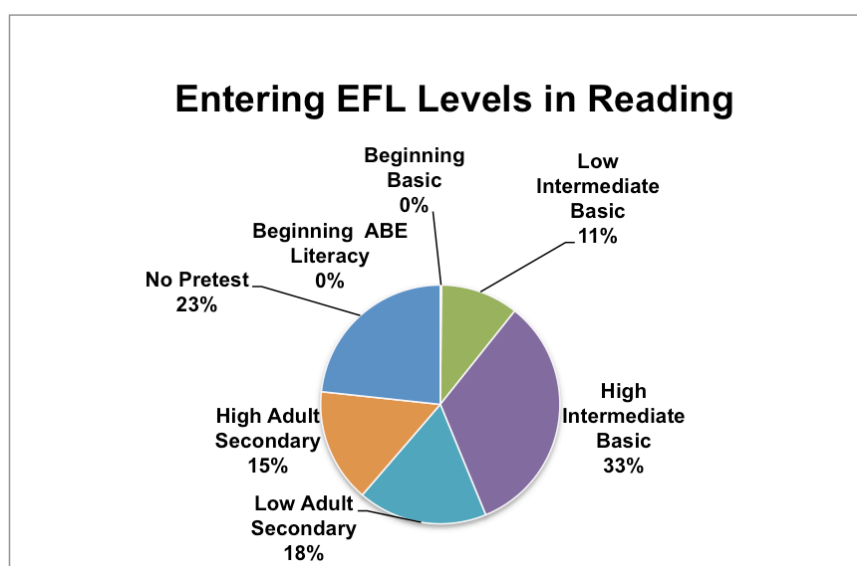
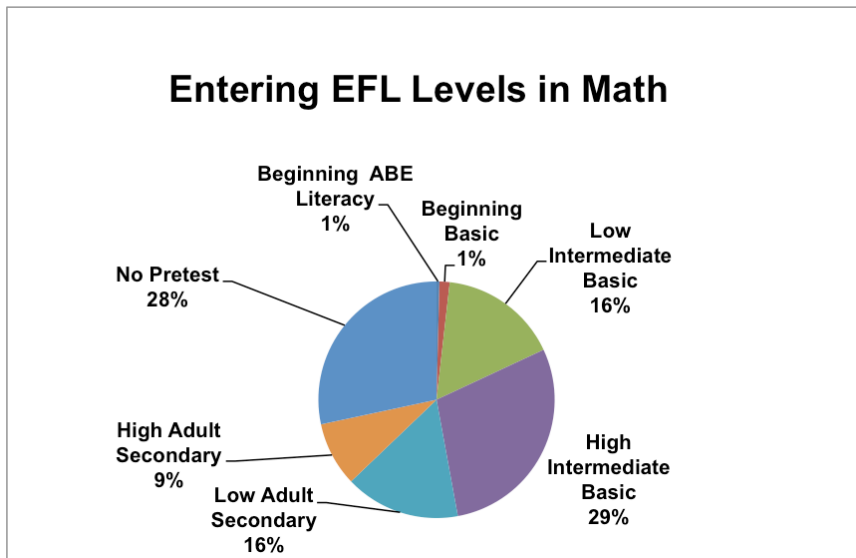


Figure 10

Figure 11



**Gains in Education Functioning Levels.** At the time that sites reported data for the 2009-2010 year, 220 of the 561 students (39.2%) were reported as having both pre-test and post-test scores in math, while 262 (46.7%) were both pre-tested and retested in reading. In reading, 22% experienced an increase of 1 EFL level, 7% experienced an increase of 2 EFL levels, and 2% experienced an increase of 3 levels, with the remaining 69% testing at the same level or below (Figure 12).

Figure 12

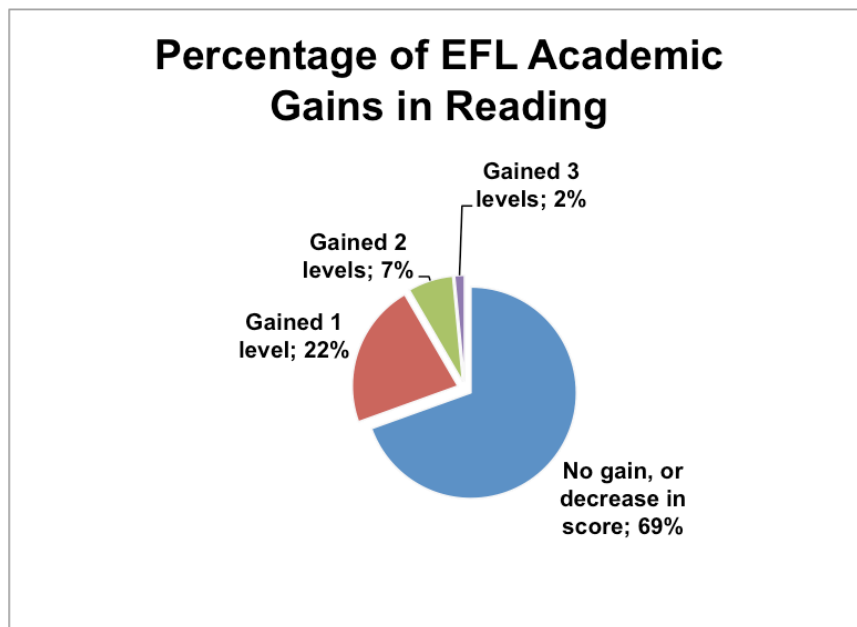
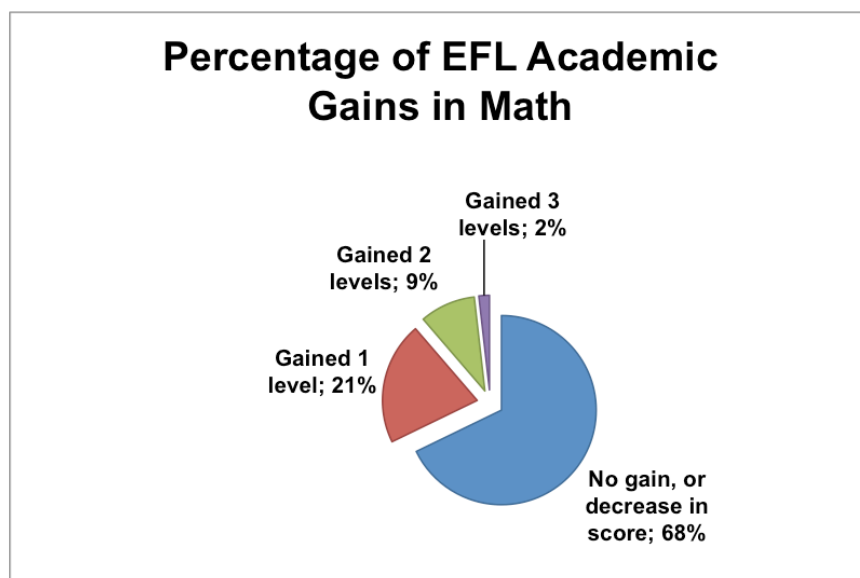


Figure 13



Among students for whom pre-test and post-test math scores were available, 21% experienced an increase of 1 EFL level, 9% experienced an increase of 2 EFL levels, and 2% experienced an increase of 3 levels (Figure 13). The remaining students (68%) tested at the same level or lower. Post-test scores reported were the most recently available at the time of this report and may not reflect subsequent efforts by programs and students to raise their scores. Further, at the point of this analysis, many students had not yet post-tested, reinforcing our advice that this analysis of be regarded as only preliminary.

### Other Comparative Outcomes

Sites were required to develop comparison groups to participate in Scaling Up. Following are select datapoints from each site comparing early Scaling Up student outcomes to a site-selected comparison group.

#### **Durham Technical Community College**

DTCC has compared the academic gain (TABE Grade Equivalent scores) of its Scaling Up students and a random sample of students enrolled in the college who were not enrolled in career pathways programs but who exhibited a band of intake assessment scores that were comparable to the Scaling Up students. These results depict substantial gains for Scaling Up students in three academic areas, language, reading, and mathematics.

DTCC Comparison of Students Groups with Pre-Test Scores between 6.0 to 8.9 on the TABE with Post-Test Scores 9.0 or Above in 2009-2010.		
	% Scaling Up Students	% Comparison Group
Language	80.0	50.4
Math	84.6	46.0
Reading	77.9	41.6

DTCC Comparison of Students Groups with Pre-Test Scores below 9.0 on the TABE with Post-Test Scores 9.0 or Above in 2009-2010.		
	% Scaling Up Students	% Comparison Group
Language	55.9	29.2
Math	44.1	27.5
Reading	63.4	26.8

### Lake Michigan College

LMC compared its Scaling Up students to a random sample of students enrolled in “regular” college-offered developmental education in completion of coursework and in completion of the LMC’s College Success Class. The comparison group consisted of a random sample of students drawn from all new students meeting these criteria: 1) aged 19 and older, 2) two levels down in remedial mathematics, and 3) an occupational major. The results below demonstrate significantly higher rates of achievement for Scaling Up students.

LMC Comparative Outcomes		
Measure	% Scaling Up Participants (n=81)	% Comparison Group (n=102)
Completed Program/Course	94	62
Enrolled College Success	100	25
Successful College Success with Grade of “C” or better	94	21

### Owensboro Community & Technical College

Owensboro Community & Technical College's Scaling Up students are retained at a higher rate after their first term of enrollment than a comparison group. OCTC's comparison group consisted of a random sample of students who were enrolled in the "regular" developmental education sequence and whose intake assessment scores were comparable to the Scaling Up cohort.

OCTC Comparative Outcomes		
Measure	% Scaling Up Participants (n=155)	% Comparison Group (n=113)
Returned from First Term	89	81

### Pamlico Community College

Pamlico Community College's comparison group also selected a random sample of students enrolled in "regular" college-offered developmental education classes as a comparison group. Preliminary findings suggest that Scaling Up participants are placed in college-level developmental English classes at a rate similar to the comparison group. While the career pathway entry rate for the higher level developmental English class is somewhat lower, the similarity in their placement rate indicates career pathways levels the playing field between career pathway students who enter the college with a lower skill set and complete noncredit remedial classes compared to students entering credit-bearing developmental education classes directly.

PCC Preliminary Comparisons: Placement in College-Offered Developmental Education		
	% Scaling Up Students (n=15)	% Comparison Group (n=32)
Placed into English 085	13.3	9.4
Placed into English 095	86.7	90.6

### Tacoma Community College

TCC identified a "historical" comparison group of students who enrolled in the same courses before the start of its Scaling Up interventions. These include students who enrolled in ABE/GED level 5/6, ESL Level 6 and the "old" transitions course. TCC has since revamped its transition course for use with new career pathways students in Scaling Up beginning in fall 2009. The data below compare the number of students who post-tested in both mathematics and reading in career pathways, as proxy measure for completion of the career pathways remedial sequence before and after this curricular change.

TCC Preliminary Comparisons: Proportions Completing Career Pathways Remedial Sequence		
	% 2009-2010 Scaling Up Cohort (Treatment Group, n=100)	% 2008-2009 Career Pathways Sample (Historical Comparison Group, n=100)
Post-Tested in Mathematics	45	29
Post-Tested in Reading	91	76

### Recommendations for Future Data Collection and Analyses

Following are advice and suggestions that JFF may wish to consider to improve future data collection and analyses activities. This advice follows Voorhees Group LLC's experience in developing the career pathways data template, our work with the individual sites to collect and report data, and assisting JFF staff to make best use of these data.

1. The data collection cycle should incorporate retrieval of the template one month after the conclusion of each academic term. In this way, sites can prepare chunks of data from a fixed timeframe without waiting until the conclusion of an academic year when the task may be overwhelming. Periodic collection will also enable JFF to spot missing data and to respond quickly to any difficulties that sites experience.
2. Use of an intake form to gather data that cannot be found elsewhere in the institution is uneven across the five Scaling Up sites. While all sites use some variant of an intake form, it is clear that it is not used with all students. This results in missing demographic data that are of clear interest to career pathways program including single parent status, first generation status, and estimates of family income.
3. Jobs for the Future should consider establishing an institutional research function to regularly harvest career pathways data and coordinate their collection and editing in cooperation with each site. Such a function would not necessarily require a high level of statistical or research expertise to implement. Analysis and interpretation could be outsourced but basic data gathering would be done in-house.
4. The template is somewhat burdensome to the sites. Our recommendation above (#1) calls for staggering the reporting cycle so that it becomes more manageable throughout a given year. We also believe that as experience is gained working with the template that it will become easier to populate, especially as key data are located throughout the campus and as expertise is gained in gathering and reporting data. At the same time, we acknowledge that certain datapoints could be eliminated to lessen the burden on sites. Knowing what to eliminate, of

- course, requires a sense of what JFF and its funders would like to know about career pathways programs. We discuss variables that might be eliminated below as a starting point while continuing to advocate that JFF and its partners should be most interested in the penultimate evaluation question: which types of students change in which ways given which types of influences?
5. Our task was to analyze the data available to JFF through the unit record template. As a consequence, the analyses presented here are decidedly quantitative and should be supplemented by qualitative research, especially with written records of interviews with staff and institutional leaders to better determine where challenges lie in increasing student completion of career pathway programs. Similarly, students themselves should be asked to participate in focus groups to harvest their perspectives on what is working and what is not working in these programs. More detailed description of these proposed steps can be found in previous reports prepared for Jobs for the Future by Voorhees Group LLC (Voorhees & Muffo, 2009a; 2009b).
  6. Building local evaluation capacity is ongoing work and JFF could expand its efforts to educate the sites about evaluation and identification of barriers to student completion. Webinars and in-person workshops can set the tone for evaluation while increasing the partnership between JFF and the field necessary to create an ongoing culture of inquiry.

### Potential Alterations to the Unit Record Template

Below we suggest variables that might be eliminated from the unit record template. We also explore the rationale for striking these variables and the likely consequences for understanding the question: which types of students change in which ways given which types of influences. Note that most of the career pathways data block is not a candidate for elimination in Table 5, since outcomes linked to entering student characteristics is likely to be of great interest in the future. Most of the potential candidates for elimination are date-linked variables.

Variable	Rationale	Consequence of Elimination
Family Income	May not be accurate. Difficult for students to estimate	Inability to answer foundation and media questions about low-income status
Source of Family Income Data	Requires sites to verify documentation	Impact on reliability for reported income, but is moot if Family Income variable is eliminated.
Felony Conviction	Not easy for individuals to disclose.	Lack of information that may interest funders and media.
Date Completed Career Pathways Program Retests	Post-test data already reported. Date data was	Not large. Loss of an external verification step, but colleges

Table 5. Potential Variables for Elimination from the Template		
Variable	Rationale	Consequence of Elimination
(Math, Reading, & ESL)	previously required to judge the spread from pre-test to post-test. May not be necessary	may retain this information for their own internal validation.
Date of Enrollment in College-Offered Developmental Courses (Mathematics & Reading)	Date of enrollment can be inferred from successful completion.	Not large.
Credit Hours Earned in College-Offered Developmental Classes (English, Mathematics, & Reading)	Not completely necessary to know credit hours earned as much as successful completion data.	Not large.
Date Completed College-Offered Developmental Sequences (English, Mathematics, Reading, & ESL)	The length and content of developmental sequences vary by individual student, making it difficult to know when a given student has completed.	Not large.
Date Entered First Gateway Class (Mathematics, English)	Same rationale as date of enrollment in college-offered developmental education courses.	Not large.
Total College Credits Earned	This is an alternative measure of retention and program completion. Template already collects these data.	Not large, but could lose midstream data and the ability to calculate a transition point.
Last Recorded Cumulative College GPA	Much like the potential elimination of total credits earned, alternatives exist for determining progress.	Not large, but could lose midstream data and the ability to make limited quality arguments about programs v. comparison group data.
Retention of First Job	Although required by Carl Perkins for CTE programs, this datapoint creates the expectation of a second follow-up survey.	Possible misalignment with Carl Perkins reporting that colleges are already obligated to produce.

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