**Memorandum**

**To: College Forward**

**From: ICF International**

**Date: September 30, 2011**

**Re: Findings from Program Audit of College Forward Outcome Measures: ACT Score Increases and College Acceptance and Enrollment Rates**

**Introduction**

College Forward, a nonprofit organization established in 2003 as Admission Control, provides college access services to academically motivated, economically disadvantaged students. Such services include orientation to the college experience, preparation for college entrance examinations, assistance with college applications, and assistance securing financial aid.

College Forward recently sought a program audit to verify three key program outcome measures. The organization is committed to rigorous monitoring of student outcomes, including scores on college entrance exams, particularly the ACT, and college acceptance and enrollment rates. As College Forward provides assistance to larger numbers of students, its efforts will be increasingly scrutinized and have greater implications. Rigorous, systematic evaluation of program implementation and outcomes, as a result, likewise becomes progressively more important to ensure the organization's credibility and sustainability.

As a component of this emerging evaluation agenda, College Forward requested a proposal from ICF, a consulting firm with extensive experience conducting objective third-party education program evaluation, to lead a program audit of three key outcome measures. This effort was conducted to ensure that data are accurate, complete, and reliable, and to provide assurance to stakeholders that findings are credible. ICF was pleased be selected to conduct the program audit for College Forward in August 2011.

The purpose of the program audit was to verify three key student outcome measures, two from the 2010 cohort and one from the 2011 cohort served by College Forward: 1) growth in ACT scores from pre- to posttest periods (2011 cohort); 2) college acceptance rate (2010 cohort); and 3) college enrollment rate (2010 cohort)[1]. College Forward reported a 18.42% increase in ACT scores from pre- to posttest periods for the 2011 cohort. The organization also reported that 99.0% of students in the 2010 cohort were accepted to at least one two- or four-year college and that 92.0% had enrolled in either a two- or four-year college within one year of graduating from high school.

The purpose of this memorandum is to describe findings from the program audit conducted by ICF for College Forward during August and September 2011.

**Findings**

*ACT Score Increases*

Verification of ACT score increases for the 2011 cohort was conducted in several stages. First, College Forward provided ICF with access to their Naviance database, the software employed by the organization to manage student data and document program activities, and with an Excel spreadsheet of ACT data downloaded from Naviance and used to calculate average ACT score increases.

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[1] A full description of data acquisition, cleaning, and analysis procedures is included in Appendix A.

During the next stage of verification, College Forward staff used ACT website log-in information provided by students to confirm the scores reported by students and entered into Naviance. The final ACT scores of 275 of the 353 students (78%) in the 2011 cohort were verified in this manner. To improve this percentage, College Forward staff then contacted students with unverified scores in an attempt to secure their ACT website log-in information. An additional 31 students shared log-in information, bringing the total scores verified to 306 of the 353 students, or 87%. College Forward staff uploaded documentation of verified ACT scores to the Naviance database, which was then reviewed by ICF staff.

Although verification of all 2011 cohort student scores was not possible, a sample consisting of 87% of the total cohort is adequate for this program audit. With a confidence interval[2] of 2.05, and a confidence level[3] of 95%, we can be 95% certain that sample findings will approximate population findings within plus or minus 2.05 points.

ICF only identified two discrepancies between final ACT scores recorded in Naviance prior to the program audit and verified final ACT scores. One student with a recorded score of 21 had a verified score of 23, and another student with a recorded score of 24 had a verified score of 27.

ICF then replicated the analyses conducted by College Forward staff. Reanalysis of ACT data as recorded in Naviance produced results identical to those attained by the original College Forward analysis of the entire 2011 cohort.

As shown in the first row of Table 1, the mean ACT pre- and posttest composite scores of all College Forward students in the 2011 cohort were calculated. A total of 353 students completed both an ACT pre- and posttest. The mean pretest score for the cohort was 17.00 and the mean posttest score was 19.77. With a mean difference of 2.77 points, cohort ACT scores increased 18.42% from pre- to posttest. These results are identical to those generated by College Forward.

ICF then conducted analysis of verified ACT pre- and posttest composite scores, a total of 306. Both the mean pre- and posttest scores from the verified sample were slightly higher than those of entire cohort; the average pretest score was 17.14 (compared to 17.00 in the total cohort) and the average posttest score was 19.98 (compared to 19.77 in the total cohort). The mean difference between average pre- and posttest scores was also somewhat higher, at 2.83 points (versus 2.77 in the total cohort), as was the percent of growth from pre- to posttest (18.62% compared to 18.42 for the total cohort).

**Table 1:**
**Composite ACT Pre- and Posttest Scores: 2011 Cohort**

|  | N | Mean pretest composite score | Mean posttest composite score | Mean Difference | Percent Difference |
|---|---|---|---|---|---|
| College Forward 2011 cohort | 353 | 17.00 | 19.77 | 2.77 | 18.42% |
| Program Audit sample | 306 | 17.14 | 19.98 | 2.83 | 18.62% |

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[2] A confidence interval, or margin of error, is a measure of how well a sample is likely to estimate the population from which it is drawn. Expressed as an estimated plus-or-minus range of values, a confidence interval communicates by how much sample values might vary from those in the population. For instance, a confidence interval of 2 suggests that the population score might be two points higher or two points lower than the sample score obtained.

[3] A confidence level expresses, usually as a percentage, the likelihood that the true population score will fall within the range specified by the confidence interval.

To explore whether the ACT growth rates of the entire 2011 cohort differed significantly from the ACT growth rates of the sample of verified scores, ICF conducted an unpaired *t* test[4] with an alpha level of .05. No statistically significant differences between the cohort growth rate and the verified sample growth rate were identified. This suggests that the two growth rates do not diverge in a meaningful way and that the cohort analysis is likely a reliable proxy for verification of the ACT growth rate of the entire cohort.

*College Acceptance Rates*

In September 2011, College Forward staff provided data to ICF on the self-reported college acceptance statuses of program students from the 2010 cohort. ICF staff coded self-reports of acceptance and conditional acceptance to at least one of the colleges to which each student had applied as an *acceptance*. Thus, if Student A was accepted to the University of Texas, but not to any of the other colleges to which she had applied, her status would be coded as an acceptance. If Student B received neither an acceptance nor a conditional acceptance from any college to which he applied, his status would **not** be coded as an acceptance.

Following coding procedures, ICF sought to verify self-reported acceptances through several methods: National Student Clearinghouse (which provides an online database for verification of higher education enrollment and degree information) searches, review of acceptance documentation (such as letters of acceptance and financial aid award letters) in the Naviance database, and documentation of acceptance from college admissions offices. Further details about verification activities can be found in Appendix A.

With the assistance of College Forward staff, ICF verified the four-year college acceptance status of 322 of the 326[5] students (98.8%) in the 2010 cohort. Because of privacy concerns, some colleges were unwilling to release acceptance information directly to ICF or to College Forward. As a result, verification of the four-year college acceptance status of 4 students was not possible. For the purposes of the college acceptance rate calculation conducted for the program audit, these 4 students were not included in the analysis.

**Table 2:**
**College Acceptance Rates: 2010 Cohort**

| | N | Number of students accepted to four-year college | Four-year acceptance rate | Number of students accepted to two- or four-year college | Overall acceptance rate |
|---|---|---|---|---|---|
| College Forward | 327 | 219 | 70.1%* | 324 | 99.0%** |
| Program Audit | 322 | 283 | 87.9% | 310 | 96.3% |

\* As calculated using acceptance data provided by College Forward
\*\* As reported by College Forward in an email to ICF, August 23, 2011

As shown in the first row of Table 2, analysis of data provided by College Forward produced a four-year college acceptance rate of 70.1%, or 219 of 327 students. Program audit analysis of the verified

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[4] *T* tests have been shown to be robust tests of statistical significance even when the assumptions of such parametric tests (such as normality of distribution and homogeneity of variances) are violated (see, for example, Glass, G. V, Peckham, P. D., & Sanders, J. R. (1972). Consequences of failure to meet the assumptions underlying the fixed effects analysis of variance and covariance. *Review of Educational Research, 42,* 237-288).

[5] The acceptance rate originally calculated by College Forward was based on a cohort of 327 students. However, during the program audit process, College Forward staff identified two incorrectly included students and one student missing from the dataset, for a total population of 326. ICF program audit analyses are based on the corrected cohort of 326 students.

acceptance statuses generated a higher four-year college acceptance rate of 87.9%, or 283 of 322 students. The disparity between the two rates is likely an artifact of issues associated with self-reporting (e.g., students may not have provided updates to coaches for entry into Naviance) and with timing (e.g., students may have been accepted to college after completing the College Forward high school program, in which case coaches may not have been aware of new acceptances).

College Forward reported an overall college acceptance rate of 99% for the 2010 cohort, excluding acceptance to proprietary institutions from the calculation. ICF analysis of verified acceptances found that 310 students, or 96.3%, were admitted to either a two- or four-year college.

It should be noted that the status of 13 students was coded as *not accepted* because there was no evidence of acceptance to either a two- or four-year institution in Naviance or the National Student Clearinghouse. However, a less conservative analysis than the one conducted here would likely code the status of such students as *accepted* because of the required application and guaranteed acceptance offered to high school students in the Austin Community College feeder area (which includes 57 high schools across 25 districts) via the College Connection program. (Additional information about this program serving schools in the College Forward service area is available online at http://www.austincc.edu/collegeconnection/.) If this coding scheme were employed, the resulting overall acceptance rate would be 100%.

No statistically significant differences between the College Forward and program audit acceptance rates were identified. Thus, the program audit confirms that the College Forward claim that 70.1% of students from the 2010 cohort were accepted to four-year institutions, and in fact improves on this claim through verification of additional acceptances. In addition, the program audit confirms that the College Forward estimate that 99.0% of students were accepted to either a two- or four-year institution is reasonable.

*College Enrollment Rates*

College Forward staff provided data to ICF on the self-reported college enrollment statuses of program students from the 2010 cohort. Program staff calculate several college enrollment rates:

- **Direct four-year college enrollment**: Enrollment in a four-year college during the first full semester following high school graduation
- **Twelve-month four-year college enrollment**: Enrollment in a four-year college within 12 months of high school graduation
- **Direct total college enrollment**: Enrollment in a two- or four-year college during the first full semester following high school graduation
- **Twelve-month total college enrollment**: Enrollment in a two- or four-year college within 12 months of high school graduation

In collaboration with College Forward staff, ICF sought to confirm enrollment through several methods: National Student Clearinghouse searches, review of enrollment documentation in the Naviance database, and written verification of enrollment (such as transcripts) requested from college registrars' offices. In one instance, ICF received direct verbal verification of enrollment from a registrar; the team elected to consider this sufficient confirmation. If at least one such data source documented enrollment for a student, that student's enrollment status was considered verified as *enrolled*. If none of these methods produced evidence of enrollment for a student, ICF considered the enrollment status verified as *not enrolled*. The enrollment status of 100% of students in the 2010 cohort was verified via this process.

Further details about verification activities can be found in Appendix A.

**Table 3:**
**Four-year College Enrollment Rates: 2010 Cohort**

| | N | | Direct enrollment rate | | 12-month enrollment rate |
|---|---|---|---|---|---|
| College Forward | 326 | 229 | 70.2% | 229 | 70.2% |
| Program Audit | 326 | 227 | 69.6% | 231 | 70.9% |

As shown in Table 3, College Forward reported that 70.2% of the 2010 cohort, or 229 of 326 students, were enrolled in a four-year college, both by the first full semester following high school graduation and by 12 months after high graduation. Similarly, the ICF program audit finds that 69.6%, or 227 of the 326 students with verified acceptance statuses, were enrolled in a four-year institution of higher education by the first semester following high school graduation. According to ICF analysis of verified enrollments, the rate increased slightly by a year after high school graduation, with 70.9%, or 231 of 326, students enrolled in a four-year college.

To explore whether the four-year college enrollment rates calculated by College Forward differed significantly from those calculated for the program audit, ICF conducted unpaired *t* tests with an alpha level of .05. Significant differences were not found between the College Forward and ICF results for both direct and 12-month four-year college enrollment rates. These findings suggest that the enrollment rates calculated by College Forward and ICF do not differ in a meaningful way.

**Table 4:**
**Total (Two- and Four-Year) College Enrollment Rates**

| | N | | Direct enrollment rate | | 12-month enrollment rate |
|---|---|---|---|---|---|
| College Forward | 326 | 283 | 86.6% | 300 | 92.0% |
| Program Audit | 326 | 275 | 84.4% | 301 | 92.3% |

As presented in Table 4, College Forward reported that 86.6% of the 2010 cohort, or 283 of 326 students, were enrolled in either a two- or four-year college by the first semester following high school graduation. The ICF program audit finds that 84.4%, or 275 of the 326 students with verified acceptance statuses, were enrolled in either a two- or four-year institution of higher education by the first semester after high school graduation. The 12-month overall enrollment rates calculated by College Forward and by ICF of verified enrollments were nearly identical; College Forward reported a 92.0% overall 12-month enrollment rate, and the program audit produced an overall 12-month enrollment rate of 92.3%

Unpaired *t* tests with an alpha level of .05 did not reveal any statistically significant differences between the College Forward and ICF results for both direct and 12-month overall college enrollment rates. It is therefore unlikely that the enrollment rates calculated by College Forward and ICF diverge in a consequential way.

**Conclusions**

This program audit fully supports College Forward findings about the ACT score growth of students from pre- to posttest periods. The 18.4% score increase for students in the 2011 cohort reported by College Forward was confirmed by ICF reanalysis of verified scores. Only two score discrepancies were identified, and these led to small underestimates of ACT score growth—a far less troublesome issue than overestimation.

In addition, it appears that College Forward conducted analysis of the most appropriate grouping of students to measure ACT score growth—those who had completed both pre- and posttests. This is also known as paired analysis and represents best practice in descriptive statistical analysis of program outcomes, particularly when the outcome of interest is growth[6]. Moreover, paired analysis is the most robust way of grouping data should College Forward be interested in testing the statistical significance of increases in student achievement, and calculating effect sizes to understand the practical significance of statistically significant differences.

This program audit also confirms the College Forward finding that at least 70.1% of students from the 2010 cohort were accepted to four-year institutions. The ICF analysis of verified acceptances, however, indicates that the four-year enrollment rate of students in the cohort is higher than that estimated by program staff. College Forward may want to consider strategies for ensuring that up to date acceptance information is recorded regularly and that the acceptance status of students be investigated and updated in the Naviance database one year following high school graduation.

The College Forward estimate that 99.0% of students in the 2010 cohort were accepted to either a two- or four-year institution is reasonable, according to program audit findings. A more conservative analysis of the overall acceptance rate is not statistically significantly lower than the College Forward estimate.

For the purposes of clarity, and without sacrificing stringent accountability, College Forward might consider also calculating a *college application rate* (the number of students applying to at least one college or university divided by the total number of seniors served) and a college acceptance rate calculated based on the college application rate (the number of students reporting acceptance to at least one college or university divided by the number of students who applied to postsecondary institutions).

Analysis of verified enrollments suggests that College Forward estimates of direct and 12-month enrollment rates, and of enrollment at four-year colleges and at both two- and four-year colleges, are likely reliable and accurate. Discrepancies between College Forward and program audit results are minimal and appear to be the result of changes in student enrollment status not recorded in Naviance.

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[6] Glass, G.V., & Hopkins, K.D. (1984). *Statistical methods in education and psychology* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall; Knoke, D., & Bohrnstedt, G.W. (1994). *Statistics for social data analysis* (3rd ed.). Itasca, IL: F.E. Peacock Publishers.

**Appendix A: Data Cleaning, Verification, and Analysis Procedures**

Cleaning, verification, and analysis of the **ACT data** were conducted as follows.

*Phase I: Data Cleaning.* During the initial phase, ICF obtained, reviewed, and cleaned the ACT data provided by College Forward for the 2011 cohort.

- ICF acquired access from College Forward staff to the Naviance database on August 18, 2011.
- ICF received a spreadsheet of ACT pre- and posttest scores used by College Forward to calculate growth rates on August 25, 2011.
- ICF then conducted data cleaning, searching for
    - invalid or out of range values
    - duplicate cases
    - missing data
- ICF corrected invalid and out of range values by seeking additional information from College Forward.
- No duplicate cases or missing data were identified.

*Phase II: Data Verification.* In this phase, College Forward staff obtained documented verification of final ACT scores, and ICF reviewed verification documents.

- College Forward staff verified final ACT scores by using log-in information provided to coaches to access official records of scores on the ACT website and then uploading documentation of such scores to Naviance during the week of September 5, 2011.
- College Forward staff contacted students missing log-in information to obtain access to their official scores on the ACT website and upload documentation to Naviance, during the week of September 12, 2011.
- A total of 306 official ACT scores were verified in this manner.
- The final ACT scores of 47 students could not be verified, likely because they changed their log-in credentials following participation in the College Forward program and could not be reached to obtain new information, or because their coaches did not update new log-in information in the Naviance database.
- ICF cross-verified ACT scores from the spreadsheet of ACT pre- and posttest scores used by College Forward to calculate growth rates with verified scores uploaded to Naviance.
- Only two discrepancies were identified between the original College Forward ACT spreadsheet and the spreadsheet of verified scores: two students reported lower final ACT scores to College Forward than they had actually earned according to official ACT documentation.

*Phase II: Data Analysis.* ICF conducted analyses of the verified ACT score data. Analyses of ACT data included minimum and maximum scores, means, standard deviations, and mean pre-/post-test score differentials. Findings were then compared to College Forward findings.

Verification of the **college acceptance and enrollment data** was conducted as follows.

*Phase I: Data Cleaning.* During this phase, ICF acquired, reviewed, and cleaned College Forward enrollment and acceptance data.

- ICF obtained from College Forward a spreadsheet with acceptance and enrollment data for the 2010 cohort on August 23, 2011.
- ICF conducted data cleaning, searching for
    - invalid or out of range values
    - duplicate cases
    - missing data
- ICF corrected invalid and out of range values by seeking additional information from College Forward.

- No duplicate cases or missing data were identified.

*Phase II: Data Verification*
- ICF acquired access from College Forward staff to the National Student Clearinghouse in August 2011.
- Using student information from the Naviance database and a spreadsheet provided by College Forward, ICF searched for student acceptance and enrollment information in the National Student Clearinghouse.
- Verification of enrollment also served as verification of acceptance.
- To verify acceptance and enrollment status of students not found in the National Student Clearinghouse, College Forward and ICF contacted relevant admissions and registrars offices. Official documentation (such as letters of acceptance or transcripts) were uploaded to Naviance and reviewed by ICF staff to confirm verification.

*Phase III: Data Analysis.* ICF conducted analyses of the verified acceptance and enrollment data to generate acceptance and enrollment rates. Findings were then compared to College Forward findings.