Graduation Rate Performance (2021 edition)

Overview:

Graduation rate performance compares a school's six year graduation rate of full-time, first-year bachelor's degree-seeking students against its predicted rate for that cohort. The larger the ratio between the former and latter, the better a school performs on the ranking factor. A two year average of schools' actual graduation rate/predicted graduation rate quotients were standardized by ranking category and weighted at 8 percent toward their overall scores in the *2021 Best Colleges Rankings.* The 8 percent weight is unchanged from the 2020 edition.

What was done differently for 2021 model:

The same variables and general approach were used in the 2021 model as the 2020 model, with a few key adjustments:

- Two year averages of schools' actual graduation rate/predicted graduation rate quotients were used in calculating the graduation rate performance indicator. This was done to reduce the potency of a single cohort of students.

- This year the predicted graduation rates of national universities and national liberal arts colleges were deflated by *0.97 before used in the rankings calculations and published. This was done to ensure no schools' predicted graduation rates could be higher than any actual six-year graduation rates reported by a peer institution, and implemented across all schools out of fairness.

- A six-year graduation of full-time, first year students since 2016 became a requirement for colleges and universities to be rank-eligible. In previous editions, a small proportion of new/recently merged institutions and institutions without cohorts of full-time entering students were rank-eligible, and needed independent variables derived from overall six-year graduation rates or predictions from first-year retention rates.

Summary of model:

The dependent variable was six-year graduation rates of schools' fall 2013 entering classes of full-time, first-year bachelor's degree- seeking students. Schools reported these rates directly to U.S. News during spring 2020. For non-responding schools, assigned values were calculated from averages of fall 2010 to fall 2012 six-year graduation rates reported to the U.S. Department of Education; accessible from IPEDS.

The independent variables used in the model are the following:

- The five year non-weighted average of percentages of 2013-2014 through 2017-2018 full-time, first-time undergraduates receiving Pell Grants, sourced from IPEDS.

- The natural log value of the two-year average of expenditures per student using data from fiscal years 2016 and 2017, sourced from U.S. News statistical surveys and IPEDS.

- The weighted percentile distribution of mean ACT and SAT scores from 2013 entering class students (or as a substitute, the midpoint between the 25th and 75th percentile scores). For any institution whose combined percentage of its fall 2013 class submitting ACT and SAT scores was less than 75% of new entrants, its percentile distribution was discounted by *0.85. Likewise, any institution that informed U.S. News it failed to report ACT and SAT scores for athletes, international students, minority students, legacies, those admitted by special arrangement and those who started in summer 2013 had its percentile distribution discounted by *0.85. An institution could be discounted twice. Institutions that did not report fall 2013 standardized test scores to U.S. News had their reported fall 2012 scores incorporated (and discounted, if applicable); else fall 2013 scores from IPEDS.

- The cubed value of the standardized tests value used in the model.

- The proportion of the 2015-2016 federal financial aid receiving undergraduates who were first-generation students; sourced from College Scorecard.

- National Universities and National Liberal Arts Colleges incorporated the percentage of 2013 entering class students placing in the top 10 percent of their high school classes. Regional universities and colleges used percentages placing in the top 25 percent. The data were sourced from U.S. News statistical surveys. Schools that did not report fall 2013 class standing data had their fall 2012 class standing data used, if they reported it to U.S. News.

- National Universities only incorporated the percentage of 2016-2017 graduates awarded degrees in science, technology, engineering and mathematics (STEM) fields – mapped from the U.S. Department of Homeland Security's NCES CIP code STEM designations.

For the regressions, schools were assessed on all inputs available to U.S. News. For example, a national liberal arts college from which U.S. News had data on all variables except high school class standing would be included in a regression using only its five remaining variables; compared only to other national liberal arts colleges that also reported data on the five variables regardless of whether they also reported high school class standing.

To make fullest use of schools' data, approximately nearly twenty regressions were executed to account for the differing combinations of input data available to U.S News. The model's predictive effect is strongest in the national universities and national liberal arts categories in which participation in U.S. News's surveys is more robust.

The following pages provide detail on the calculations:

Total schools ranked and assessed:

Group	Freq.
National Universities	389
National Liberal Arts	223
Regional Universities	589
Regional Colleges	253
Total	1,454

Most common missing variables:

Variable	% Missing
HS Standing	25.7
Std. Tests	11.3
% First Gen	3.7
% Pell	0.7
Spend/Students	0.5

Log of the 2021 rankings of National Universities when no missing variables:

```
      Source |       SS           df       MS      Number of obs   =       341
-------------+----------------------------------   F(7, 333)       =    253.00
       Model |  72115.5017         7  10302.2145   Prob > F        =    0.0000
    Residual |  13559.9705       333   40.720632   R-squared       =    0.8417
-------------+----------------------------------   Adj R-squared   =    0.8384
       Total |  85675.4721       340  251.986683   Root MSE        =    6.3813

------------------------------------------------------------------------------
    gradrate |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hsstand |   .2909942     .02938     9.90   0.000     .2332003    .3487881
     stdtest |    .182835   .1037693     1.76   0.079     -.021291    .3869609
  stdtestcub |  -9.04e-06   7.68e-06    -1.18   0.240    -.0000242    6.07e-06
       spend |   1.235054   1.069288     1.16   0.249    -.8683566    3.338465
        pell |  -.3691808   .0493572    -7.48   0.000    -.4662719   -.2720896
        gen1 |   -.374356   .0634497    -5.90   0.000    -.4991688   -.2495433
        stem |  -.0394696   .0244432    -1.61   0.107    -.0875521     .008613
       _cons |   59.34508   13.16897     4.51   0.000     33.44022    85.24994
------------------------------------------------------------------------------
```

Log of the 2021 rankings of National Liberal Arts Colleges when no missing variables:

```
      Source |       SS           df       MS      Number of obs   =       172
-------------+----------------------------------   F(6, 165)       =    159.98
       Model |  43976.1811         6  7329.36351   Prob > F        =    0.0000
    Residual |  7559.13868       165  45.8129617   R-squared       =    0.8533
-------------+----------------------------------   Adj R-squared   =    0.8480
       Total |  51535.3198       171  301.376139   Root MSE        =    6.7685

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    gradrate |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hsstand |   .2210129   .0618086     3.58   0.000     .0989751    .3430507
     stdtest |   .3108765   .1069054     2.91   0.004     .0997976    .5219554
  stdtestcub |  -.0000121   8.38e-06    -1.45   0.150    -.0000287    4.41e-06
       spend |   5.584199   2.364932     2.36   0.019     .9147701    10.25363
        pell |  -.3239803   .0618614    -5.24   0.000    -.4461224   -.2018383
        gen1 |  -.2375301   .0919706    -2.58   0.011    -.4191211   -.0559392
       _cons |   1.894714   24.94599     0.08   0.940    -47.35979    51.14921
------------------------------------------------------------------------------
```

Log of the 2021 rankings of Regional Universities when no missing variables:

```
      Source |       SS           df       MS      Number of obs   =       425
-------------+----------------------------------   F(6, 418)       =    119.61
       Model |  50155.3186         6  8359.21976   Prob > F        =    0.0000
    Residual |  29212.4838       418  69.8863248   R-squared       =    0.6319
-------------+----------------------------------   Adj R-squared   =    0.6267
       Total |  79367.8024       424  187.188213   Root MSE        =    8.3598

------------------------------------------------------------------------------
    gradrate |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hsstand |   .3117184     .03892     8.01   0.000      .235215    .3882217
     stdtest |  -.1341953   .1099521    -1.22   0.223    -.3503233    .0819326
  stdtestcub |   4.91e-06   .0000105     0.47   0.639    -.0000157    .0000255
       spend |   8.334011   1.508127     5.53   0.000     5.369553    11.29847
        pell |  -.4257187   .0469529    -9.07   0.000     -.518012   -.3334255
        gen1 |  -.2515173   .0637926    -3.94   0.000    -.3769116    -.126123
       _cons |   -6.14469   16.76133    -0.37   0.714    -39.09169    26.80231
------------------------------------------------------------------------------
```

Log of the 2021 rankings of Regional Colleges when no missing variables:

```
      Source |       SS           df       MS      Number of obs   =       137
-------------+----------------------------------   F(6, 130)       =     40.08
       Model |  15713.5652         6  2618.92753   Prob > F        =    0.0000
    Residual |  8494.75596       130  65.3442766   R-squared       =    0.6491
-------------+----------------------------------   Adj R-squared   =    0.6329
       Total |  24208.3212       136  178.002362   Root MSE        =    8.0836

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    gradrate |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hsstand |   .1539508   .0733028     2.10   0.038     .0089299    .2989716
     stdtest |    .205845   .1446588     1.42   0.157    -.0803453    .4920352
  stdtestcub |   6.15e-06   .0000161     0.38   0.702    -.0000256    .0000379
       spend |   6.722591   2.601777     2.58   0.011     1.575285     11.8699
        pell |  -.1915085   .0742874    -2.58   0.011    -.3384772   -.0445399
        gen1 |  -.3355294   .1105032    -3.04   0.003    -.5541468    -.116912
       _cons |  -13.60247   28.19636    -0.48   0.630    -69.38559    42.18066
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```