

Appendix A. Descriptive Summary of Variables

| Variable                                     | All DE Students         |                                    |                          |                                    | College-Attending DE Students |                                    |                          |                                    |  |
|--|-------------------------|------------------------------------|--------------------------|------------------------------------|-------------------------------|------------------------------------|--------------------------|------------------------------------|--|
|  | Sampling weights        |                                    | Propensity score weights |                                    | Sampling weights              |                                    | Propensity score weights |                                    |  |
|  | No DE on College Campus | At least some DE on College Campus | No DE on College Campus  | At least some DE on College Campus | No DE on College Campus       | At least some DE on College Campus | No DE on College Campus  | At least some DE on College Campus |  |
| Race/Ethnicity                               |                         |                                    |                          |                                    |                               |                                    |                          |                                    |  |
| White  | 56.73%                  | 46.51%                             | 49.39%                   | 56.54%                             | 60.24%                        | 49.53%                             | 50.33%                   | 56.62%                             |  |
| African American/Black                       | 11.89%                  | 19.18%                             | 14.30%                   | 9.51%                              | 10.14%                        | 14.36%                             | 13.57%                   | 9.69%                              |  |
| Latinx                                       | 18.34%                  | 20.56%                             | 15.01%                   | 14.10%                             | 18.08%                        | 22.32%                             | 14.97%                   | 13.86%                             |  |
| Asian/Pacific Islander                       | 4.10%                   | 5.81%                              | 12.63%                   | 10.96%                             | 4.76%                         | 5.70%                              | 13.07%                   | 11.08%                             |  |
| Other  | 8.94%                   | 7.94%                              | 8.66%                    | 8.89%                              | 6.77%                         | 8.10%                              | 8.06%                    | 8.75%                              |  |
| Female                                       | 52.45%                  | 58.89%                             | 66.44%                   | 58.58%                             | 54.99%                        | 63.82%                             | 67.19%                   | 61.09%                             |  |
| SES  | 0.038                   | 0.173                              | 0.390                    | 0.335                              | 0.124                         | 0.228                              | 0.437                    | 0.384                              |  |
| High school GPA for academic courses in 2009 | 2.894                   | 3.134                              | 3.241                    | 3.232                              | 3.024                         | 3.218                              | 3.301                    | 3.319                              |  |
| Educational aspiration in 2009               |                         |                                    |                          |                                    |                               |                                    |                          |                                    |  |
| Don't know                                   | 16.71%                  | 12.51%                             | 11.51%                   | 10.91%                             | 16.01%                        | 12.00%                             | 11.06%                   | 10.28%                             |  |
| High School or Below                         | 7.95%                   | 6.71%                              | 4.63%                    | 3.52%                              | 5.58%                         | 3.33%                              | 3.73%                    | 2.24%                              |  |
| Start and/or complete associate degree       | 5.59%                   | 3.12%                              | 2.34%                    | 3.94%                              | 5.05%                         | 2.58%                              | 2.09%                    | 3.21%                              |  |
| Start and/or complete bachelor's degree      | 20.00%                  | 18.10%                             | 13.91%                   | 17.61%                             | 20.13%                        | 19.09%                             | 13.77%                   | 17.56%                             |  |
| Start and/or complete master's degree        | 25.10%                  | 21.37%                             | 23.05%                   | 17.32%                             | 27.15%                        | 23.68%                             | 23.37%                   | 29.20%                             |  |

|   |        |        |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|--------|--------|
| Start and/or complete<br>doctoral or<br>professional degree | 24.65% | 38.19% | 44.55% | 36.70% | 26.09% | 39.32% | 45.98% | 37.51% |
| 9th grader talk to<br>school counselor about<br>courses     | 34.65% | 34.44% | 38.18% | 35.54% | 35.89% | 35.30% | 39.84% | 37.20% |
| Education plan in place                                     | 52.38% | 62.11% | 62.77% | 61.20% | 53.50% | 61.69% | 63.56% | 62.42% |
| Math self-efficacy<br>belief                                | 0.188  | 0.461  | 0.519  | 0.441  | 0.203  | 0.490  | 0.532  | 0.472  |
| Science self-efficacy<br>belief                             | 0.158  | 0.342  | 0.344  | 0.355  | 0.201  | 0.358  | 0.368  | 0.391  |
| Highest math level in 12th grade                            |        |        |        |        |        |        |        |        |
| Algebra 1 or below  | 3.67%  | 5.26%  | 1.44%  | 3.47%  | 1.50%  | 2.15%  | 0.86%  | 2.91%  |
| Geometry  | 6.43%  | 4.02%  | 3.16%  | 4.05%  | 4.52%  | 2.71%  | 2.66%  | 2.93%  |
| Algebra 2   | 20.21% | 17.72% | 13.88% | 17.06% | 18.02% | 15.93% | 12.16% | 15.52% |
| Advanced Algebra/<br>Trigonometry/ other<br>level 3 course  | 23.69% | 30.35% | 19.45% | 22.61% | 23.70% | 29.70% | 18.91% | 21.80% |
| Calculus or<br>Precalculus                                  | 46.00% | 42.65% | 62.07% | 52.82% | 52.27% | 49.51% | 65.40% | 56.83% |
| Number of earned<br>AP/IB credits                           | 1.492  | 1.940  | 2.367  | 1.787  | 1.696  | 2.171  | 2.521  | 1.951  |

NOTE: DE = dual enrollment.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009.  
Selected years 2009, 2012, 2013, and 2016.

Appendix B

*Multiple regression and logistic regression analyses (propensity score weights)*

| Variables  | High School GPA <sup>a</sup> | College Attendance <sup>a</sup> | Taking Developmental Courses <sup>b</sup> | Delayed Enrollment <sup>b</sup> | Full-time Enrollment <sup>b</sup> |
|--|------------------------------|---------------------------------|---|---------------------------------|-----------------------------------|
| DE on college campus                               | 0.024<br>(0.021)             | 0.130<br>(0.194)                | -0.185<br>(0.172)                         | -0.007<br>(0.206)               | -0.222<br>(0.171)                 |
| Race/Ethnicity                                     |                              |                                 |   |                                 |                                   |
| African American/Black                             | -0.042<br>(0.034)            | 0.544<br>(0.279)                | 0.391<br>(0.242)                          | -0.628<br>(0.326)               | 0.223<br>(0.298)                  |
| Hispanic/Latinx                                    | -0.016<br>(0.033)            | 0.370<br>(0.286)                | 0.560*<br>(0.227)                         | 0.179<br>(0.273)                | -0.424<br>(0.234)                 |
| Asian/Pacific Islander                             | -0.026<br>(0.033)            | -0.275<br>(0.410)               | 0.433<br>(0.313)                          | -0.812<br>(0.526)               | 0.075<br>(0.312)                  |
| Other  | -0.053<br>(0.032)            | -0.291<br>(0.305)               | 0.13<br>(0.308)                           | 0.488<br>(0.357)                | -0.467<br>(0.296)                 |
| Female   | 0.077**<br>(0.022)           | 0.314<br>(0.197)                | -0.047<br>(0.170)                         | -0.055<br>(0.249)               | 0.017<br>(0.217)                  |
| SES  | 0.077***<br>(0.015)          | 0.620***<br>(0.131)             | -0.291*<br>(0.119)                        | -0.175<br>(0.132)               | 0.414**<br>(0.145)                |
| High school GPA for academic courses in 2009       | 0.745***<br>(0.028)          | 0.890***<br>(0.130)             | -0.425**<br>(0.130)                       | -0.530**<br>(0.163)             | 0.422**<br>(0.159)                |
| Educational aspiration in 2009                     |                              |                                 |   |                                 |                                   |
| High School or Below                               | 0.014<br>(0.052)             | -0.458<br>(0.409)               | 0.246<br>(0.363)                          | -0.214<br>(0.538)               | 0.103<br>(0.414)                  |
| Start and/or complete associate degree             | -0.039<br>(0.081)            | -0.386<br>(0.476)               | -0.034<br>(0.387)                         | 0.126<br>(0.605)                | 0.059<br>(0.487)                  |
| Start and/or complete bachelor's degree            | 0.051<br>(0.036)             | 0.105<br>(0.314)                | -0.413<br>(0.263)                         | 0.038<br>(0.340)                | -0.351<br>(0.269)                 |
| Start and/or complete master's degree              | 0.051<br>(0.036)             | 0.563<br>(0.291)                | -0.631*<br>(0.256)                        | 0.050<br>(0.295)                | 0.199<br>(0.262)                  |
| Start and/or complete doctoral/professional degree | 0.042<br>(0.037)             | 0.192<br>(0.277)                | -0.752**<br>(0.246)                       | 0.145<br>(0.263)                | 0.573*<br>(0.263)                 |
| Education plan in place                            | -0.011<br>(0.020)            | 0.163<br>(0.195)                | -0.162<br>(0.168)                         | -0.212<br>(0.210)               | -0.120<br>(0.187)                 |

|  |                     |                     |                    |                     |                    |
|--|---------------------|---------------------|--------------------|---------------------|--------------------|
| 9th grader talk to school counselor about courses          | 0.028<br>(0.021)    | 0.688***<br>(0.195) | 0.041<br>(0.184)   | -0.258<br>(0.228)   | -0.052<br>(0.187)  |
| Math self-efficacy belief                                  | -0.001<br>(0.012)   | -0.060<br>(0.111)   | -0.244*<br>(0.112) | 0.048<br>(0.126)    | 0.041<br>(0.113)   |
| Science self-efficacy belief                               | 0.003<br>(0.013)    | -0.001<br>(0.106)   | -0.028<br>(0.100)  | -0.178<br>(0.127)   | 0.188<br>(0.114)   |
| Highest level math course taken in 12th grade              |                     |                     |                    |                     |                    |
| Geometry   | -0.079<br>(0.108)   | -0.921<br>(0.559)   | 0.289<br>(0.515)   | 0.765<br>(0.668)    | -2.162*<br>(0.873) |
| Algebra 2  | -0.060<br>(0.098)   | -0.802*<br>(0.405)  | 0.458<br>(0.438)   | 0.229<br>(0.594)    | -0.922<br>(0.813)  |
| Advanced Algebra/<br>Trigonometry/ other<br>level 3 course | 0.052<br>(0.100)    | -0.436<br>(0.460)   | -0.298<br>(0.461)  | -0.276<br>(0.586)   | -0.961<br>(0.812)  |
| Calculus or<br>Precalculus                                 | 0.189<br>(0.098)    | -0.250<br>(0.458)   | -0.441<br>(0.473)  | -0.488<br>(0.643)   | -0.295<br>(0.864)  |
| Number of earned AP/IB credits                             | 0.046***<br>(0.004) | 0.180**<br>(0.064)  | -0.103*<br>(0.044) | -0.169**<br>(0.064) | 0.032<br>(0.049)   |
| # of observations  | 3,410               | 3,490               | 2,270              | 2,420               | 2,430              |

NOTE: The statistical significance of the estimated coefficients are based on robust standard errors. Please refer to Table 1 for a complete description of the variables. All models were estimated with the robust maximum likelihood estimator (MLR) and weighted by the product of sampling weight and propensity score weight, divided by the mean of the product term; DE = dual enrollment.

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

<sup>a</sup> Based on students who have taken dual enrollment courses

<sup>b</sup> Based on students who have taken dual enrollment courses and attended a postsecondary institution

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009. Selected years 2009, 2012, 2013, and 2016.

Appendix C-1

*Multiple regression and logistic regression analyses for lower SES subgroup (propensity score weights)*

| Variables  | High School GPA <sup>a</sup> | College Attendance <sup>a</sup> | Taking Developmental Courses <sup>b</sup> | Delayed enrollment <sup>b</sup> | Full-time enrollment <sup>b</sup> |
|--|------------------------------|---------------------------------|---|---------------------------------|-----------------------------------|
| DE on college campus                               | -0.021<br>(0.028)            | 0.258<br>(0.250)                | 0.290<br>(0.196)                          | -0.452<br>(0.280)               | -0.470**<br>(0.166)               |
| Race/Ethnicity                                     |                              |                                 |   |                                 |                                   |
| African American/Black                             | -0.030<br>(0.044)            | 0.659*<br>(0.321)               | 0.239<br>(0.290)                          | -0.668*<br>(0.305)              | 1.095***<br>(0.244)               |
| Hispanic/Latinx                                    | 0.022<br>(0.043)             | 0.486<br>(0.256)                | 0.373<br>(0.238)                          | 0.448<br>(0.324)                | -0.263<br>(0.255)                 |
| Asian/Pacific Islander                             | 0.073<br>(0.049)             | 1.506<br>(0.820)                | 0.507<br>(0.340)                          | -1.400***<br>(0.352)            | 0.455<br>(0.425)                  |
| Other  | -0.003<br>(0.045)            | 0.439<br>(0.421)                | -0.256<br>(0.403)                         | 0.302<br>(0.388)                | -0.317<br>(0.347)                 |
| Female   | 0.061*<br>(0.030)            | 0.371<br>(0.219)                | -0.021<br>(0.226)                         | 0.276<br>(0.256)                | -0.082<br>(0.251)                 |
| High school GPA for academic courses in 2009       | 0.763***<br>(0.027)          | 0.940***<br>(0.173)             | -0.554**<br>(0.156)                       | -0.854***<br>(0.182)            | 0.248<br>(0.172)                  |
| Educational aspiration in 2009                     |                              |                                 |   |                                 |                                   |
| High School or Below                               | 0.051<br>(0.069)             | -0.549<br>(0.428)               | 0.180<br>(0.347)                          | -0.774<br>(0.489)               | 0.324<br>(0.330)                  |
| Start and/or complete associate degree             | -0.084<br>(0.097)            | -0.621<br>(0.433)               | 0.002<br>(0.346)                          | -1.358**<br>(0.464)             | 0.428<br>(0.284)                  |
| Start and/or complete bachelor's degree            | -0.005<br>(0.590)            | 0.187<br>(0.363)                | -0.49<br>(0.332)                          | -0.017<br>(0.326)               | -0.085<br>(0.284)                 |
| Start and/or complete master's degree              | 0.012<br>(0.059)             | 0.587<br>(0.330)                | -0.556<br>(0.285)                         | -0.248<br>(0.373)               | 0.523<br>(0.283)                  |
| Start and/or complete doctoral/professional degree | 0.040<br>(0.057)             | -0.392<br>(0.342)               | -0.633*<br>(0.300)                        | 0.107<br>(0.365)                | 0.913**<br>(0.294)                |
| Education plan in place                            | 0.012<br>(0.027)             | -0.100<br>(0.197)               | 0.000<br>(0.200)                          | 0.259<br>(0.229)                | -0.186<br>(0.183)                 |
|  | 0.058                        | 0.818***                        | 0.185                                     | -0.116                          | 0.066                             |

|   |                     |                   |                   |                    |                   |
|---|---------------------|-------------------|-------------------|--------------------|-------------------|
| 9th grader talked to school counselor about courses | (0.034)             | (0.211)           | (0.300)           | (0.237)            | (0.198)           |
| Math self-efficacy belief                           | -0.014<br>(0.018)   | -0.010<br>(0.124) | -0.041<br>(0.146) | 0.202<br>(0.155)   | 0.014<br>(0.119)  |
| Science self-efficacy belief                        | -0.022<br>(0.020)   | -0.141<br>(0.163) | -0.060<br>(0.101) | -0.200<br>(0.149)  | 0.036<br>(0.142)  |
| Highest level math course taken in 12th grade       |                     |                   |                   |                    |                   |
| Geometry  | -0.211<br>(0.133)   | -1.043<br>(0.644) | -0.319<br>(0.633) | 0.387<br>(0.876)   | -1.159<br>(0.913) |
| Algebra 2   | -0.106<br>(0.125)   | -0.879<br>(0.488) | 0.213<br>(0.560)  | 0.176<br>(0.809)   | -0.110<br>(0.863) |
| Advanced Algebra/Trigonometry/ other level 3 course | -0.031<br>(0.125)   | -0.559<br>(0.493) | -0.954<br>(0.585) | 0.033<br>(0.805)   | -0.543<br>(0.875) |
| Calculus or Precalculus                             | 0.110<br>(0.124)    | -0.106<br>(0.549) | -0.910<br>(0.595) | 0.180<br>(0.848)   | 0.500<br>(0.920)  |
| Number of earned AP/IB credits                      | 0.052***<br>(0.006) | 0.219<br>(0.106)  | -0.019<br>(0.054) | -0.268*<br>(0.102) | -0.051<br>(0.055) |

NOTE: The statistical significance of the estimated coefficients are based on robust standard errors. Please refer to Table 1 for a complete description of the variables. All models were estimated with the robust maximum likelihood estimator (MLR) and weighted by the product of sampling weight and propensity score weight, divided by the mean of the product term; DE = dual enrollment.

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

<sup>a</sup> Based on lower SES students who have taken dual enrollment courses

<sup>b</sup> Based on lower SES students who have taken dual enrollment courses and attended a postsecondary institution

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009. Selected years 2009, 2012, 2013, and 2016.

Appendix C-2

*Multiple regression and logistic regression analyses for higher SES subgroup  
(propensity score weights)*

| Variables   | High School GPA <sup>a</sup> | College Attendance <sup>a</sup> | Taking Developmental Courses <sup>b</sup> | Delayed enrollment <sup>b</sup> | Full-time enrollment <sup>b</sup> |
|---|------------------------------|---------------------------------|---|---------------------------------|-----------------------------------|
| DE on college campus                                | 0.058*<br>(0.026)            | 0.181<br>(0.237)                | -0.986**<br>(0.337)                       | 0.422<br>(0.278)                | 0.252<br>(0.264)                  |
| Race/Ethnicity                                      |                              |                                 |   |                                 |                                   |
| African American/Black                              | -0.045<br>(0.046)            | 0.555<br>(0.452)                | 0.569<br>(0.312)                          | -1.036*<br>(0.502)              | -0.504<br>(0.394)                 |
| Hispanic/Latinx                                     | -0.074<br>(0.041)            | -0.447<br>(0.437)               | 0.628*<br>(0.308)                         | 0.11<br>(0.427)                 | -0.577<br>(0.400)                 |
| Asian/Pacific Islander                              | -0.058<br>(0.039)            | -1.390***<br>(0.339)            | -0.147<br>(0.602)                         | -1.128<br>(0.805)               | -0.362<br>(0.403)                 |
| Other   | -0.066<br>(0.037)            | -1.250**<br>(0.363)             | 0.674<br>(0.346)                          | 0.568<br>(0.425)                | -0.877*<br>(0.408)                |
| Female  | 0.087**<br>(0.027)           | 0.203<br>(0.287)                | -0.103<br>(0.211)                         | -0.228<br>(0.366)               | 0.233<br>(0.287)                  |
| High school GPA for academic courses in 2009        | 0.723***<br>(0.048)          | 0.994***<br>(0.186)             | -0.220<br>(0.188)                         | -0.380<br>(0.241)               | 0.747**<br>(0.255)                |
| Educational aspiration in 2009                      |                              |                                 |   |                                 |                                   |
| High School or Below                                | -0.100<br>(0.076)            | -1.064<br>(1.168)               | 0.290<br>(0.522)                          | 2.471***<br>(0.622)             | -0.870<br>(0.483)                 |
| Start and/or complete associate degree              | -0.007<br>(0.117)            | -0.023<br>(0.972)               | 0.060<br>(0.618)                          | 0.774<br>(0.862)                | -0.391<br>(0.796)                 |
| Start and/or complete bachelor's degree             | 0.100*<br>(0.043)            | 0.061<br>(0.464)                | -0.314<br>(0.376)                         | 0.356<br>(0.801)                | -0.747*<br>(0.351)                |
| Start and/or complete master's degree               | 0.096*<br>(0.038)            | 0.331<br>(0.493)                | -0.790<br>(0.420)                         | 0.740<br>(0.421)                | -0.382<br>(0.337)                 |
| Start and/or complete doctoral/professional degree  | 0.066<br>(0.036)             | 0.214<br>(0.425)                | -0.768*<br>(0.360)                        | 0.732<br>(0.405)                | 0.034<br>(0.390)                  |
| Education plan in place                             | -0.037<br>(0.027)            | 0.277<br>(0.274)                | -0.207<br>(0.222)                         | -0.845**<br>(0.292)             | -0.263<br>(0.279)                 |
| 9th grader talked to school counselor about courses | 0.007<br>(0.025)             | 0.369<br>(0.276)                | -0.152<br>(0.262)                         | -0.446<br>(0.263)               | -0.197<br>(0.268)                 |

|  |                     |                   |                      |                   |                     |
|--|---------------------|-------------------|----------------------|-------------------|---------------------|
| Math self-efficacy belief                                  | 0.009<br>(0.015)    | -0.156<br>(0.183) | -0.579***<br>(0.106) | -0.135<br>(0.216) | 0.044<br>(0.173)    |
| Science self-efficacy belief                               | 0.022<br>(0.015)    | 0.110<br>(0.146)  | 0.093<br>(0.153)     | -0.071<br>(0.167) | 0.372*<br>(0.171)   |
| Highest level math course taken in 12th grade              |                     |                   |                      |                   |                     |
| Geometry   | 0.181<br>(0.133)    | -1.019<br>(1.067) | 4.254***<br>(1.073)  | 1.001<br>(1.007)  | -2.057**<br>(0.624) |
| Algebra 2  | 0.067<br>(0.126)    | -0.751<br>(0.601) | 3.802***<br>(1.058)  | 0.404<br>(0.197)  | -0.511<br>(0.292)   |
| Advanced Algebra/<br>Trigonometry/ other<br>level 3 course | 0.203<br>(0.127)    | -0.364<br>(0.640) | 3.520**<br>(1.056)   | -0.52<br>(0.910)  | -0.235<br>(0.331)   |
| Calculus or<br>Precalculus                                 | 0.358*<br>(0.132)   | -0.285<br>(0.644) | 2.902*<br>(1.125)    | -0.926<br>(1.019) | -                   |
| Number of earned AP/IB credits                             | 0.050***<br>(0.004) | 0.185*<br>(0.078) | -0.176**<br>(0.064)  | -0.123<br>(0.071) | 0.230**<br>(0.067)  |

NOTE: The statistical significance of the estimated coefficients are based on robust standard errors. Please refer to Table 1 for a complete description of the variables. All models were estimated with the robust maximum likelihood estimator (MLR) and weighted by the product of sampling weight and propensity score weight, divided by the mean of the product term; DE = dual enrollment.

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

<sup>a</sup> Based on higher SES students who have taken dual enrollment courses

<sup>b</sup> Based on higher SES students who have taken dual enrollment courses and attended a postsecondary institution

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009. Selected years 2009, 2012, 2013, and 2016.



Appendix C-3

*Multiple regression and logistic regression analyses for students of color subgroup  
(propensity score weights)*

| Variables   | High School GPA <sup>a</sup> | College Attendance <sup>a</sup> | Taking Developmental Courses <sup>b</sup> | Delayed enrollment <sup>b</sup> | Full-time enrollment <sup>b</sup> |
|---|------------------------------|---------------------------------|---|---------------------------------|-----------------------------------|
| DE on college campus                                | 0.055<br>(0.031)             | 0.152<br>(0.287)                | -0.185<br>(0.208)                         | -0.181<br>(0.297)               | -0.259<br>(0.215)                 |
| Female  | 0.035<br>(0.030)             | 0.307<br>(0.226)                | 0.078<br>(0.185)                          | 0.491<br>(0.290)                | -0.031<br>(0.195)                 |
| SES   | 0.053**<br>(0.016)           | 0.252<br>(0.163)                | -0.148<br>(0.112)                         | -0.209<br>(0.178)               | 0.179<br>(0.152)                  |
| High school GPA for academic courses in 2009        | 0.728***<br>(0.027)          | 0.713***<br>(0.195)             | -0.261*<br>(0.124)                        | -0.374*<br>(0.176)              | 0.401*<br>(0.165)                 |
| Educational aspiration in 2009                      |                              |                                 |   |                                 |                                   |
| High School or Below                                | -0.041<br>(0.066)            | -0.813<br>(0.471)               | 0.994**<br>(0.347)                        | -0.328<br>(0.359)               | 0.131<br>(0.374)                  |
| Start and/or complete associate degree              | -0.03<br>(0.105)             | -0.022<br>(0.628)               | 0.022<br>(0.403)                          | -1.953***<br>(0.490)            | 1.261***<br>(0.186)               |
| Start and/or complete bachelor's degree             | 0.035<br>(0.041)             | -0.368<br>(0.320)               | -0.611*<br>(0.297)                        | -0.186<br>(0.368)               | -0.300<br>(0.290)                 |
| Start and/or complete master's degree               | 0.086<br>(0.046)             | 0.291<br>(0.351)                | -.417<br>(0.310)                          | 1.273**<br>(0.384)              | 0.186<br>(0.295)                  |
| Start and/or complete doctoral/professional degree  | 0.043<br>(0.042)             | 0.066<br>(0.317)                | -0.845**<br>(0.305)                       | -0.358<br>(0.303)               | 0.514<br>(0.311)                  |
| Education plan in place                             | -0.046<br>(0.024)            | 0.301<br>(0.287)                | -0.180<br>(0.199)                         | 0.048<br>(0.253)                | -0.022<br>(0.194)                 |
| 9th grader talked to school counselor about courses | 0.060*<br>(0.030)            | 0.544<br>(0.283)                | -0.053<br>(0.207)                         | -0.38<br>(0.246)                | 0.134<br>(0.222)                  |
| Math self-efficacy belief                           | 0.009<br>(0.017)             | -0.141<br>(0.154)               | -0.182<br>(0.121)                         | -0.108<br>(0.149)               | 0.029<br>(0.130)                  |
| Science self-efficacy belief                        | -0.018<br>(0.016)            | -0.108<br>(0.140)               | -0.115<br>(0.093)                         | -0.163<br>(0.171)               | 0.115<br>(0.131)                  |
| Highest level math course taken in 12th grade       |                              |                                 |   |                                 |                                   |

|  |                     |                   |                     |                      |                     |
|--|---------------------|-------------------|---------------------|----------------------|---------------------|
| Geometry   | -0.162<br>(0.129)   | -0.521<br>(0.682) | 0.410<br>(0.661)    | 1.756*<br>(0.804)    | -2.734**<br>(0.992) |
| Algebra 2  | -0.107<br>(0.128)   | -.755<br>(0.564)  | 0.615<br>(0.565)    | 0.814<br>(0.780)     | -1.422<br>(0.976)   |
| Advanced Algebra/<br>Trigonometry/<br>other level 3 course | -0.010<br>(0.129)   | -0.089<br>(0.635) | -0.160<br>(0.564)   | 0.749<br>(0.805)     | -1.422<br>(0.964)   |
| Calculus or<br>Precalculus                                 | 0.140<br>(0.122)    | -0.015<br>(0.609) | -0.390<br>(0.560)   | 0.22<br>(0.819)      | -0.954<br>(1.002)   |
| Number of earned<br>AP/IB credits                          | 0.048***<br>(0.006) | 0.128<br>(0.068)  | -0.138**<br>(0.047) | -0.356***<br>(0.085) | 0.052<br>(0.054)    |

NOTE: The statistical significance of the estimated coefficients are based on robust standard errors. Please refer to Table 1 for a complete description of the variables. All models were estimated with the robust maximum likelihood estimator (MLR) and weighted by the product of sampling weight and propensity score weight, divided by the mean of the product term; DE = dual enrollment.

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

<sup>a</sup> Based on students of color who have taken dual enrollment courses

<sup>b</sup> Based on students of color who have taken dual enrollment courses and attended a postsecondary institution

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009. Selected years 2009, 2012, 2013, and 2016.

Appendix C-4

*Multiple regression and logistic regression analyses for White student subgroup  
(propensity score weights)*

| Variables   | High School GPA <sup>a</sup> | College Attendance <sup>a</sup> | Taking Developmental Courses <sup>b</sup> | Delayed enrollment <sup>b</sup> | Full-time enrollment <sup>b</sup> |
|---|------------------------------|---------------------------------|---|---------------------------------|-----------------------------------|
| DE on college campus                                | -0.011<br>(0.026)            | 0.023<br>(0.215)                | -0.180<br>(0.246)                         | 0.179<br>(0.264)                | -0.256<br>(0.210)                 |
| Female  | 0.107***<br>(0.027)          | 0.493<br>(0.315)                | -0.161<br>(0.203)                         | -0.375<br>(0.299)               | 0.046<br>(0.284)                  |
| SES   | 0.106***<br>(0.020)          | 1.138***<br>(0.202)             | -0.549**<br>(0.166)                       | -0.332<br>(0.185)               | 0.946***<br>(0.160)               |
| High school GPA for academic courses in 2009        | 0.761***<br>(0.040)          | 1.001***<br>(0.190)             | -0.660**<br>(0.208)                       | -0.652**<br>(0.225)             | 0.348<br>(0.263)                  |
| Educational aspiration in 2009                      |                              |                                 |   |                                 |                                   |
| High School or Below                                | 0.095<br>(0.056)             | 0.204<br>(0.531)                | -1.252**<br>(0.417)                       | -1.102<br>(0.735)               | 0.345<br>(0.742)                  |
| Start and/or complete associate degree              | -0.039<br>(0.072)            | -0.721<br>(0.565)               | -0.09<br>(0.552)                          | 1.199*<br>(0.591)               | -0.603<br>(0.380)                 |
| Start and/or complete bachelor's degree             | 0.062<br>(0.043)             | 0.598<br>(0.420)                | -0.274<br>(0.343)                         | 0.206<br>(0.460)                | -0.296<br>(0.277)                 |
| Start and/or complete master's degree               | 0.021<br>(0.041)             | 0.815*<br>(0.348)               | -0.799*<br>(0.339)                        | 1.033**<br>(0.336)              | 0.341<br>(0.328)                  |
| Start and/or complete doctoral/professional degree  | 0.037<br>(0.044)             | 0.327<br>(0.379)                | -0.712<br>(0.365)                         | 0.601<br>(0.359)                | 1.019**<br>(0.330)                |
| Education plan in place                             | 0.0012<br>(0.029)            | -0.057<br>(0.267)               | -0.135<br>(0.214)                         | -0.308<br>(0.285)               | -0.492<br>(0.257)                 |
| 9th grader talked to school counselor about courses | 0.003<br>(0.025)             | 0.779**<br>(0.268)              | 0.082<br>(0.229)                          | -0.374<br>(0.259)               | -0.245<br>(0.229)                 |
| Math self-efficacy belief                           | -0.012<br>(0.014)            | 0.006<br>(0.166)                | -0.309**<br>(0.104)                       | 0.144<br>(0.170)                | 0.007<br>(0.169)                  |
| Science self-efficacy belief                        | 0.027<br>(0.018)             | 0.131<br>(0.180)                | 0.095<br>(0.159)                          | -0.069<br>(0.144)               | 0.252<br>(0.196)                  |

Highest level math course taken in 12th grade

|   |                     |                   |                   |                   |                   |
|---|---------------------|-------------------|-------------------|-------------------|-------------------|
| Geometry  | -0.011<br>(0.150)   | -1.498<br>(0.796) | 0.073<br>(0.610)  | -0.262<br>(0.864) | -1.371<br>(1.231) |
| Algebra 2   | 0.015<br>(0.117)    | -.455<br>(0.600)  | 0.286<br>(0.652)  | -0.442<br>(0.829) | 0.054<br>(1.153)  |
| Advanced Algebra/<br>Trigonometry/<br>other level 3<br>course | 0.11<br>(0.115)     | -0.727<br>(0.594) | -0.323<br>(0.665) | -1.007<br>(0.829) | -0.376<br>1.197   |
| Calculus or<br>Precalculus                                    | 0.237<br>(0.119)    | -0.331<br>(0.569) | -0.463<br>(0.675) | -1.064<br>(0.864) | 0.653<br>(1.204)  |
| Number of earned<br>AP/IB credits                             | 0.043***<br>(0.005) | 0.256*<br>(0.102) | -0.033<br>(0.053) | -0.053<br>(0.064) | 0.010<br>(0.050)  |

NOTE: The statistical significance of the estimated coefficients are based on robust standard errors. Please refer to Table 1 for a complete description of the variables. All models were estimated with the robust maximum likelihood estimator (MLR) and weighted by the product of sampling weight and propensity score weight, divided by the mean of the product term; DE = dual enrollment.

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

<sup>a</sup> Based on White students who have taken dual enrollment courses

<sup>b</sup> Based on White students who have taken dual enrollment courses and attended a postsecondary institution

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009. Selected years 2009, 2012, 2013, and 2016.