L.A. Unified Students' Pathways to College: Methods Appendix

Carrie Miller,[1] Meredith Phillips,[1] Kyo Yamashiro[2]

This appendix describes the data sources, sample, and measures used in the analyses described in the "L.A. Unified Students' Pathways to College: Four-Year College Application Patterns" brief. Table 1 describes the data used in these analyses, Table 2 describes how our analytic sample of twelfth graders differs from all of the twelfth graders who were enrolled in L.A. Unified and affiliated charter high schools in 2016-17, and Tables 3, 4, 5, and 6 describe how we constructed the college-related outcomes and the predictors used in the analyses.

Data Sources

We conducted this research using de-identified individual level data from L.A. Unified's annual School Experience Surveys (SES) and district administrative records, as well as institution-level data from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). To provide additional context for our analyses, when possible, we compared our data to a nationally representative sample of students using the public-use version of the National Center for Education Statistics' High School Longitudinal Study (HSLS).

Table 1. Data Source

L.A. Unified School Experience Surveys (SES)	The brief draws primarily on L.A. Unified's 2016-17 secondary student School Experience Survey (SES), which was administered online from January 17 through February 7, 2017. In collaboration with L.A. Unified's Office of Data and Accountability (ODA), LAERI designed a set of college-related survey items for the 2016-17 administration for twelfth-grade students about where they had applied to college[3] as well as a set of items for all high school students about the types of support they received with the college planning and application process. For more detail about the outcome measures we constructed from SES survey items, see Tables 3 and 5.
L.A. Unified Administrative Data	To better understand how students' college application behaviors differ by students' background characteristics and academic achievement, we linked students' 2016-17 SES responses to district

	administrative data files that describe their demographic characteristics, academic achievement, and behavior. For more detail about the predictors we constructed using administrative data, see Table 4.
Integrated Postsecondary Education Data System (IPEDS)	To characterize the colleges to which students reported they had applied, we linked IPEDs public use data from the "Institutional Characteristics" data file to each college students reported on the SES. IPEDS includes data such as the institution level (i.e., less than two-year, less than four-year, four-year), institutional control (i.e., public, private), and the characteristics of currently enrolled students. For more detail about the outcome measures we constructed using IPEDS data, see Table 3.
High School Longitudinal Study (HSLS)	To provide context for our findings, we compare our sample, when possible, to a nationally representative sample of high school students using the HSLS. The HSLS, a longitudinal study conducted by the NCES, followed a cohort of over 23,000 students from 2009 through 2016. The students were surveyed in 9th grade (2009) and again in 2012, 2013, and 2016. The study included questions about students' postsecondary plans as well as their college application and enrollment behaviors. For additional information about the HSLS sample and survey methodology, see the HSLS (2016) survey documentation.[4]

Analytic Samples

L.A. Unified Analyses
The brief series examines the college application and enrollment behaviors of L.A. Unified students who were enrolled in the 12th grade during the 2016-17 academic year. Our analytic sample includes students who were enrolled in the 12th grade in either the fall or spring term, per the L.A. Unified "Demographics" or "Course Marks" data files, and who attended traditional L.A. Unified and affiliated charter high schools. We define a traditional high school as a high school that was not a special education center, community day school, options school, or continuation school. We exclude students who attended independent charter schools from our analyses because independent charter schools do not typically participate in the district's School Experience Survey, which is the source of our outcome measures. We further restrict our analytic sample to students who responded to the 2016-17

School Experience Survey and who answered all of the college-related survey items (see Table 5) and had non-missing demographic, program, and academic achievement data (for more details on the predictors included in the analyses, see Table 4). Our sample includes sixty percent of all twelfth-graders who attended traditional high schools and affiliated charter high schools during the 2016-17 academic year.

Table 2 shows how our analytic sample differs from all 12th graders who attended traditional L.A. Unified high schools and affiliated-charter high schools during the 2016-17 academic year. Students in our analytic sample were more likely to be Latino (79% vs. 76%) and less likely to be African American (6% vs. 9%) than all twelfth graders who attended traditional L.A. Unified high schools and affiliated charter high schools. Students in the sample were more likely to be reclassified fluent English proficient (50% vs. 46%) and less likely to be native English speakers (26% vs. 29%) or limited English proficient (7% vs. 9%). The students in our sample had slightly higher 10th and 11th grade point averages (2.69 vs. 2.65) and 11th grade ELA and Math SBAC scores (approximately one twentieth of a standard deviation in ELA and in math) and were more likely to have been on track to complete the A-G requirements with a "C" or better at the end of 11th grade (49% vs. 46%) and to have taken the PSAT (88% vs. 85%) or SAT or ACT (67% vs. 63%).

HSLS Analyses
We restrict the HSLS public use sample to students whose last known high school enrollment was a public school and who had non-missing data for all of the variables included in our analyses (for more detail about how the variables used in the analyses were constructed, see Table 6). We then weight the data using the "W3STUDENT" weight, which weights the sample from the 2013 update so that it is nationally representative. We use the 2013 update weight because we use data exclusively from that wave of data collection.

Table 2. Comparison of Analytic Sample with All 12th Graders† Attending L.A. Unified and Affiliated-Charter High Schools* in 2016-17

	All 12th Graders who Attended L.A. Unified and Affiliated-Charter High Schools		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools who Responded+ to the 2016-17 SES		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools who Responded to the 2016-17 SES and Answered All College-Related Items‡		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools who Responded to the 2016-17 SES, Answered All College-Related Items, and Had Demographic, Program, and Academic Achievement Data	
	N	% / Mean	N	% / Mean	N	% / Mean	N	% / Mean	N	% / Mean
Demographic Characteristics										
Female	32,704	49%	28,950	50%	19,871	50%	17,442	51%	17,243	51%
American Indian/Alaskan Native	32,699	.003%	28,947	.003%	19,869	.002%	17,441	.002%	17,243	.002%
Asian American	32,699	4%	28,947	4%	19,869	4%	17,441	4%	17,243	4%
African American	32,699	9%	28,947	9%	19,869	7%	17,441	6%	17,243	6%
Latino	32,699	76%	28,947	76%	19,869	79%	17,441	79%	17,243	79%
Pacific Islander	32,699	.004%	28,947	.004%	19,869	.004%	17,441	.004%	17,243	.004%
White	32,699	7%	28,947	7%	19,869	6%	17,441	6%	17,243	6%
Filipino	32,699	3%	28,947	3%	19,869	3%	17,441	3%	17,243	3%
Parent Education: Less than High School	29,781	24%	26,320	24%	18,296	25%	16,100	25%	15,931	25%
Parent Education: High School Graduate	29,781	20%	26,320	20%	18,296	21%	16,100	21%	15,931	21%
Parent Education: Some College	29,781	11%	26,320	11%	18,296	11%	16,100	11%	15,931	11%
Parent Education: College Degree	29,781	8%	26,320	8%	18,296	8%	16,100	8%	15,931	8%
Parent Education: Graduate Degree	29,781	3%	26,320	3%	18,296	3%	16,100	3%	15,931	3%
Parent Education: Decline to Answer	29,781	34%	26,320	33%	18,296	33%	16,100	33%	15,931	33%
Subsidized Meal Eligible	25,041	87%	22,126	87%	15,116	87%	13,267	87%	13,134	87%
Foster Youth	30,957	2%	28,377	1%	19,672	1%	17,276	1%	17,084	1%

Source: Los Angeles Unified School District administrative data.
Note: For more detail on how we constructed the measures in Table 2, see Table 4.
†We considered a student a 12th grader if s/he was enrolled in the 12th grade during the fall or spring term of the 2016-17 academic year (N=32,704). Our reported N of 12th graders is slightly higher than the N of students who were 12th graders during the SES survey administration window (N=32,080).
+We define responding to the SES survey as having answered at least one survey item.
*We exclude independent charter schools because the School Experience Survey is only administered to students attending L.A. Unified and affiliated-charter high schools.
**We defined a "traditional high school" as a school that served high school grades and was not a special education center or options, continuation, or opportunity school.
‡For a list of the college-related survey items see Table 5.

Table 2 Cont'd. Comparison of Analytic Sample with All 12th Graders† Attending Non-Charter and Affiliated-Charter High Schools* in 2016-17

	All 12th Graders who Attended L.A. Unified and Affiliated-Charter High Schools		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools who Responded+ to the 2016-17 SES		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools who Responded to the 2016-17 SES and Answered All College-Related Items‡		All 12th Graders who Attended Traditional L.A. Unified and Affiliated-Charter High Schools who Responded to the 2016-17 SES, Answered All College-Related Items, and Had Demographic, Program, and Academic Achievement Data	
	N	% / Mean	N	% / Mean	N	% / Mean	N	% / Mean	N	% / Mean
Student Program Participation										
English Only	32,656	29%	28,923	29%	19,860	27%	17,432	27%	17,243	26%
Initial Fluent English Proficient	32,656	15%	28,923	16%	19,860	17%	17,432	17%	17,243	17%
Limited English Proficient	32,656	11%	28,923	9%	19,860	7%	17,432	7%	17,243	7%
Reclassified Fluent English Proficient	32,656	44%	28,923	46%	19,860	50%	17,432	50%	17,243	50%
Students with Disabilities	32,712	16%	28,954	12%	19,872	10%	17,442	10%	17,243	10%
Gifted and Talented	32,712	16%	28,954	18%	19,872	18%	17,443	18%	17,243	18%
Academic Achievement										
Overall 10th and 11th Grade GPA	32,238	2.61	28,589	2.65	19,662	2.68	17,255	2.69	17,243	2.69
A-G On-Track at the End of 11th Grade	30,444	43%	27,982	46%	19,410	48%	17,039	49%	17,030	49%
ELA SBAC Score in 11th Grade	25,540	2595	24,632	2598	17,468	2601	15,380	2604	15,371	2604
Math SBAC Score in 11th Grade	25,461	2556	24,557	2560	17,423	2564	15,352	2566	15,344	2566
Took the PSAT	32,712	79%	28,954	85%	19,872	87%	17,442	87%	17,243	88%
Highest PSAT Score	25,280	863	24,308	867	17,139	869	15,064	871	15,029	871
Took the SAT or ACT	32,712	57%	28,954	63%	19,872	67%	17,442	67%	17,243	67%
Highest SAT/ACT Composite Score	18,491	985	18,384	985	13,246	983	11,694	985	11,607	985

Source: Los Angeles Unified School District administrative data.
Note: For more detail on how we constructed the measures in Table 2, see Table 4.
†We considered a student a 12th grader if s/he was enrolled in the 12th grade during the fall or spring term of the 2016-17 academic year (N=32,704). Our reported N of 12th graders is slightly higher than the N of students who were 12th graders during the SES survey administration window (N=32,080).
+We define responding to the SES survey as having answered at least one survey item.
*We exclude independent charter schools because the School Experience Survey is only administered to students attending L.A. Unified and affiliated-charter high schools.
**We defined a "traditional high school" as a school that served high school grades and was not a special education center or options, continuation, or opportunity school.
‡For a list of the college-related survey items see Table 5.

Measures

Tables 3 and 4 describe how we constructed the outcomes and predictors we used for our analyses.

Table 3. Measures of College-Related Outcomes

Applied to a Four-Year College	We coded a student as having applied to a four-year college if the student reported that s/he had applied to at least one four-year college, i.e., the value in the "q91" field of the L.A. Unified "2016-17 Secondary School Experience Survey" data file was greater than zero. Approximately 2% of students (N=310) reported that they applied to a four-year college but did not select any four-year colleges for three follow up items comprised of lists of four-year college names (L.A. Unified "2016-17 Secondary School Experience Survey" data file fields "q92", "q93", and "q94") and wrote in the name of a community college in follow up open response items (L.A. Unified "2016-17 Secondary School Experience Survey" data file field "q95"). (We determined whether the college was a community college using the "ICLEVEL" field of the IPEDS "Institutional Characteristics" data file.) We recoded these students as not having applied to a four-year college.
Registered for a Community College	We coded a student as having registered for community college if the student reported that s/he had registered for a community college, i.e., the student was coded as "yes" in the "q97" field of the L.A. Unified "2016-17 Secondary School Experience Survey" data file. A small number of students (1%; N=142) reported that they did not register for a community college but wrote the name of a community college in the "q95" field of the L.A. Unified "2016-17 Secondary School Experience Survey" data file. (We determined whether the college was a community college using the "ICLEVEL" field of the IPEDS "Institutional Characteristics" data file.) We recoded these students as having registered for a community college.
Applied to or Registered for Any College	We coded a student as having applied to or registered for any college if the student was coded as "yes" on the "applied to a four-year college" or "registered for a community college" outcomes described above.

Applied Only to Four-Year Colleges	We coded a student as having applied only to four-year colleges if s/he indicated s/he applied to at least one four-year college and that s/he did not register for any community colleges.
Registered Only to Two-Year Colleges	We coded a student as having registered only for community colleges if s/he indicated s/he registered for community college but did not apply to any four-year colleges.
Applied to a Four-Year College and Registered for a Community College	We coded a student as having applied to four-year colleges and registered for community college if s/he indicated s/he applied to at least one four-year college **and** that s/he registered for community college.
Planned to Register Only for a Community College	We coded a student as having planned to register only for a community college if s/he indicated s/he planned to register for community college (L.A. Unified "2016-17 Secondary School Experience Survey" data file "q98" field) and if s/he did **not** indicate that s/he had applied to a four-year college or registered for community college.
Did not Apply and did not Plan to Enroll in College	We coded a student as not having applied to or registered for college and not planning to register for community college if s/he indicated that s/he did not apply to, register for, or plan to register for college.
Number of Four-Year Colleges Applied to	We coded the number of four-year colleges a student applied to based on the number of colleges the student reported applying to, i.e., the value in the "q91" field of the L.A. Unified "2016-17 Secondary School Experience Survey" data file. Approximately 2% of students (N=310) reported that they applied to a four-year college but did not select any four-year colleges from three follow up items (L.A. Unified "2016-17 Secondary School Experience Survey" data file fields "q92", "q93", and "q94") and wrote in the name of a community college in follow up open response items (L.A. Unified "2016-17 Secondary School Experience Survey" data file field "q95"). (We determined whether the college was a community college using the "ICLEVEL" field of the IPEDS "Institutional Characteristics" data file.) We

	recoded these students as not having applied to any four-year colleges.
Specific Colleges Applied to	We coded a student as having applied to a particular college if the student either selected that college from the list of four-year colleges included on the 2016-17 SES (L.A. Unified "2016-17 Secondary School Experience Survey" data file fields "q92", "q93", and "q94") or wrote the name of that college into the open response field (L.A. Unified "2016-17 Secondary School Experience Survey" data file field "q95").

Table 4. Measures of College-Related Predictors

Gender	We coded each student's gender according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "gender code" field in the L.A. Unified "Demographics" data file. If a student's gender was missing at the end of fall 2016, we imputed his/her gender from the last non-missing classification in the student's administrative records.
Race/Ethnicity	We coded each student's race/ethnicity according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "ethnicity desc" field in the L.A. Unified "Demographics" data file. If a student's race/ethnicity was missing at the end of fall 2016, we imputed his/her race/ethnicity from the last non-missing classification in the student's administrative records.
Parent Education	We coded each student's parents' educational attainment according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "parent edu level name" field in the L.A. Unified "Demographics" data file. If a student's parents' educational attainment was missing at the end of fall 2016, we imputed their educational attainment from the last non-missing classification in the student's administrative records.

Foster Youth	We coded each student's foster youth status according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "foster youth" field in the L.A. Unified "Demographics" data file.
English Learner Status	We coded each student's English Learner status according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "lang cls code" field in the L.A. Unified "Demographics" data file.
Special Education Program Participation	We coded each student's special education program status according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "sped eligibility descr" field in the L.A. Unified "Student Program" data file.
Gifted and Talented Program Participation	We coded each student's gifted and talented program status according to his/her classification at the end of fall 2016, the last marking period before the 2016-17 SES survey administration, per the "gifted" field in the L.A. Unified "Demographics" data file.
Overall 10th and 11th Grade GPA	We constructed a student's 10th and 11th grade GPA by computing his/her unweighted grade point average for all of the courses s/he took during the fall, spring, or summer terms of his/her normative 10th and 11th grade years (i.e., 2014-15 and 2015-16), excluding courses flagged as enrichment courses in the "L.A. Unified GPA Exclusion" field of the L.A. Unified "Course Map" data file. Specifically, we computed the number of grade points a student was awarded for each course by finding the product of the mark for achievement (from the "mark of achievement field"; secondary course marks for achievement range from 0-4, where A=4, B=3, C=2, D=1, and F=0) and the number of course credits (from the "credits worth" field) and then finding the sum of all of the grade points a student earned in normative 10th or 11th grade. We then divided the student's total number of grade points by the total number of credits s/he attempted.

	10th and 11th grade GPA $= \Sigma(mark\ for\ achievement *$ $course\ credits)/\Sigma(course\ credits\ attempted)$
	We based this calculation on the L.A. Unified "Outbound GPA to IOD Interface" GPA calculation documentation.[5]
A-G On Track at the End of 11th Grade	We coded a student as on track to complete the A-G requirements[6] with a "C" or better at the end of normative 11th grade (2015-16) if the value of the "semester courses off track" field of the L.A. Unified "A-G On Track with a C" data file was equal to zero.
ELA SBAC Score in 11th Grade	A student's 11th grade ELA SBAC scores corresponds to his/her scaled score on the ELA SBAC administered during the 2015-16 academic year (the "overall scaled score" field in the L.A. Unified "SBAC" data file).
Math SBAC Score in 11th Grade	A student's 11th grade Math SBAC scores corresponds to his/her scaled score on the math SBAC administered during the 2015-16 academic year (the "overall scaled score" field in the L.A. Unified "SBAC" data file).
Took the PSAT	We coded a student as having taken the PSAT if s/he had a non-missing PSAT score during any year s/he was enrolled in the district per the L.A. Unified "PSAT" data files.
Highest PSAT Score	We determined a student's highest composite PSAT score from the "raw index" field of the L.A. Unified "PSAT" data file. We selected the highest PSAT composite score the student earned while enrolled in the district per the L.A. Unified "PSAT" data files.
Took the SAT or ACT	We coded a student as having taken the SAT or ACT if s/he had a non-missing SAT or ACT score during any year s/he was enrolled in the district per the L.A. Unified "SAT" and "ACT" data files.
Highest SAT/ACT Composite Score	We computed a student's highest composite SAT score from the "total" and "raw index" fields of the L.A. Unified "SAT" data file and the "composite" field of the L.A. Unified "ACT" data file. We used the

College Board's SAT concordance[7] table to convert students' SAT scores to the most recent version of the SAT and the SAT-ACT concordance table[8] to convert ACT composite scores to their SAT equivalents. We then selected each student's highest SAT/ACT-equivalent score.

Table 5 shows the survey items that were either used to construct the outcome measures in or to restrict the sample. We only included students in the analytic sample if they were non-missing on the items included in the table, unless otherwise noted.

Table 5. Survey Items Used in the Analyses or to Restrict the Sample

Survey Item	Field Name(s) in the L.A. Unified "2016-17 Secondary School Experience Survey" Data File
Do you plan to attend college next year?	q90
This year (2016-2017), how many four-year colleges did you apply to?	q91
*Did you apply to any of the following University of California campuses?	q92_v1-q92_v10
*Did you apply to any of the following California State University campuses?	q93_v1-q93_v24
*Did you apply to any of these other colleges?	q94_v1-q94_v26
If you applied to any colleges that weren't on the lists above, please write them here. Please use one text box for each and write the name as specifically as possible.	q95_v1-q95_v19
Have you applied to or registered for any community colleges or vocational/technical programs?	q97
*Do you plan to apply to or register for any community colleges or vocational/technical programs?	q98
Do you currently participate in any of the following college-related programs?	q89_v1-q89_v7
Adults at my school have helped me learn how to get fee waivers for college applications.	q69
Adults at my school have helped me learn about the types of colleges that are the best fit for me.	q70

Adults at my school have given me feedback on my college or scholarship application essays.	q71
Adults at my school have helped me fill out my college applications.	q72
Adults at my school have helped me learn the steps I need to take to apply for financial aid.	q73
What is the highest level of education that you PLAN to complete?	q74

[*]These items were follow up items seen by a subset of respondents. We did not require that students answer these items to be included in the analytic sample.

Table 6. HSLS Items Used in the Analyses

Last School Attended was a Public School	We coded a student as having last attended a public school based on the school type listed for the "X3CONTROL" variable.
Number of Colleges Applied to or Registered for	We coded the number of colleges to which a student applied based on the value of the "S3CLGAPPNUM" variable.
Applied to or Registered for Three or Fewer Colleges	We coded a student as having applied to or registered for three or fewer colleges if the value of the "S3CLGAPPNUM" variable was equal to or less than 3.
Applied to or Registered for Six or Fewer Colleges	We coded a student as having applied to or registered for six or fewer colleges if the value of the "S3CLGAPPNUM" variable was equal to or less than 6.
Applied to a Four-Year College	We coded a student as having applied to a four-year college if the "S3CLGAPPLVL1" or "S3CLGAPPLVL2" variables indicated that the student applied to a four-year college. This variable may understate whether students applied to a four-year college because the survey item asked students to list the names of the colleges s/he "most seriously considered." It is possible that a student applied to a four-year college but did not list it in either of the open response items associated with "S3CLGAPPLVL1" or "S3CLGAPPLVL2".

[1] UCLA and the Los Angeles Education Research Institute

[2] Claremont Graduate University and the Los Angeles Education Research Institute

[3] The timing of the 2016-17 SES administration was such that a majority of students had completed the college application process before the survey administration, as the University of California and California State University first-year student fall admissions deadlines were November 30, 2016. (California State University (n.d.). *Application dates and deadlines.* Retrieved from: https://www2.calstate.edu/apply/Pages/application-dates-deadlines.aspx; University of California (n.d.). *Admissions dates and deadlines*. Retrieved from: http://admission.universityofcalifornia.edu/how-to-apply/dates-deadlines/index.html)

[4] National Center for Education Statistics (2018). *High school longitudinal study of 2009 (HSLS:09) base-year to second follow up: Data file documentation.* Retrieved from: https://nces.ed.gov/pubs2018/2018140.pdf

[5] Los Angeles Unified School District (2017). *Outbound GPA to IOD Interface: Interface Development Specifications Document.* Provided by the Los Angeles Unified School District on July 12, 2018.

[6] In order to be eligible to attend the California State or University of California campuses, students must complete each course in a college preparatory course sequence, the "A-G" courses, with a "C" or better. Students are considered on-track at the end of 11th grade if they have completed two semesters each of world history and US history ("A" coursework), six semesters of English ("B" coursework), six semesters of math ("C" coursework), four semesters of science ("D" coursework), and two semesters of a language other than English ("E" coursework). (Los Angeles Unified School District (2017). *Graduation Requirements for the Classes of 2016-2019: Policy Bulletin 6656.1*. Retrieved from: https://achieve.lausd.net/cms/lib/CA01000043/Centricity/Domain/577/forms/BUL-6566.1.pdf)

[7] The College Board (2016). *Concordance Tables.* Retrieved from: https://collegereadiness.collegeboard.org/pdf/higher-ed-brief-sat-concordance.pdf

[8] The College Board (2017). *Guide to the 2017 ACT/SAT Concordance.* Retrieved from: https://collegereadiness.collegeboard.org/pdf/guide-2017-act-sat-concordance.pdf