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"Non-Submitters:" Evidence on Students Who Start but Don't Complete a College Application

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Abstract
Not all students who could benefit from college apply. With novel data on over 1.2 million high schoolers, we show that nearly 25% start but never complete a college application. We use descriptive techniques, data visualizations, and fixed effects models to explore this population of college-interested "non-submitters" to observe application behaviors; document differences across individual, school, and community contexts; and identify factors most predictive of non-submission. We find large gaps by race/ethnicity, socioeconomic status, and education-career plans, as well as by school type and community features. We also find that early application tasks and engagement strongly predict non-submission. This study breaks ground for future research into this unexplored group and informs strategies to support those at risk of non-submission.
Keywords: college applications, Common App, education policy, higher education, inequality

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INTRODUCTION

College access in the U.S. is best characterized as an "unequal opportunity" (Kipp et al., 2002), where wide gaps in enrollment by income, race, and place have persisted for much of the 21st century (Baker et al., 2018; Deming & Dynarski, 2009; Hillman, 2016). One contributor to these unequal access rates is the college application process itself (Dynarski et al., 2021; Hoxby & Avery, 2012; Odle & Delaney, 2022, 2023). To explore postsecondary options and apply to college, students face a "gauntlet" consisting of unclear and uneven information points, multiple steps toward preparation, application fees, postsecondary institutions with varying application and admission requirements, and many other administrative hurdles (Klasik, 2012). Successfully navigating these steps requires students to rely heavily on unevenly distributed financial, social, and cultural capital, leading many to abandon college aspirations altogether (Dynarski et al., 2022a, 2022b; Hoxby & Turner, 2013; Perna & Titus, 2005). Conceptually, a simplification of the application process benefits students by removing barriers to college search and choice (DesJardins et al., 2006; Toutkoushian & Paulsen, 2016), and previous interventions seeking to reduce "frictions" in the application process by streamlining or combining application steps have been shown to increase the likelihood of college application and enrollment (Bettinger et al., 2012; Knight & Schiff, 2022; Oreopoulos & Ford, 2019; Perna et al., 2008; Smith, 2013).

The Common Application ("Common App") represents a significant simplification of the college application process. By allowing students to freely search for colleges, manage recommendation letters and transcript requests, and submit one application to multiple institutions, the Common App is intended to systematically reduce students' application burdens, streamline information channels, and reduce complexity in the college application process. This benefit is

augmented by a fee-waiver program that awards nearly $100 million annually to help students cover application fees charged by colleges (Common App, 2020). While the positive benefits of the Common App and similar systems for students and participating institutions have been well documented (e.g., Delaney & Odle, 2023; Knight & Schiff, 2022; Liu et al., 2007; Murphy, 2010), many students served by the Common App still fail to complete their application and apply. That is, while nearly 1.2 million students accessed the Common App during the 2018-19 application cycle, created a student profile, and began working on at least one application, almost 300,000 (25%) ultimately did not complete and submit any application. This phenomenon suggests that, even with a simplified application and financial support, other barriers still negatively impact students' college-going journeys. While prior works have examined predictors of students' college application behaviors—comparing students who submitted applications to students who did not (e.g., Bryers González & DesJardins, 2002)—no work to date has defined, quantified, and characterized this important subset of students who *began* an application but ultimately did not complete it. These "non-submitters" represent a rich pool of college-interested students worthy of careful research and targeted support.

This study defines college application non-submission and observes the overall prevalence and extent of students' non-submission behaviors. We leverage rich profile information from the Common App supplemented by community indicators from the American Community Survey and school features from the Common Core of Data to document how non-submission rates vary across student, parent, K-12 school, community, and other contexts while also identifying what factors are most predictive of non-submission behaviors. Using a complementary set of sophisticated descriptive techniques, data visualizations, and fixed effects regression analyses, we find that non-submission rates vary widely by students' race/ethnicity, educational plans, and career aspirations;

parental educational attainment; school type and Title-I status; and community educational attainment and household income. We also find that these behaviors are strongly predicted by students' application tasks, including their completion of a college essay and indicators of their previous engagement with the Common App platform. These features account for over 44% of the variance in students' application behaviors.

This study not only breaks important ground for future research by defining, observing, and describing "non-submitters" but also provides actionable insights for the Common App and others—like states, institutions, K-12 schools, and educational organizations—seeking to increase college-going behaviors by describing specific factors related to non-submission and identifying what students, schools, and communities are most likely to experience higher incidence of non-submission. Equipped with this knowledge, researchers, policymakers, and practitioners alike can consider developing predictive tools and targeted interventions to proactively engage and support students along their college-application journey.

In what follows, we briefly describe the Common App, provide a conceptual framework for investigating non-submitters, and discuss prior work on students' application behaviors. Next, we explicitly define the non-submitter population of interest and discuss the study's guiding research questions. We then describe our data, sample, and analytic approach. We then present results documenting the overall prevalence of application non-submission across the Common App universe; inequalities in non-submission rates across student, parent, school, and community contexts; and features most predictive of non-submission status. We conclude with a discussion of these results and draw implications for policy, practice, and future research.

The Common App

The Common App is a non-profit membership organization that, during the 2019-20 college application cycle, facilitated the submission of 5.6 million applications and 25 million recommendation letters to over 900 colleges and universities across all 50 states and 20 countries (Common App, 2021). While 72% of Common App member colleges are private (22% are public and 6% are international), Common App users overwhelmingly come from public high schools (75%), and, among those students, approximately one third are first-generation, and 43% are from racial and ethnic groups traditionally underrepresented in American higher education (Common App, 2020, 2021).[1] As the nation's largest college application provider supporting over 1.1 million students per year, the Common App allows students to freely and seamlessly submit both first-year and transfer admission applications to multiple institutions by completing one common form in one place that is then submitted to any college a student identifies (unless colleges require additional or unique data points, though the main application is still simplified). Students can also request and manage letters of recommendation and pay college application fees (if required, though many colleges do not charge fees). The organization also supports a host of college access and equity initiatives, including Common App Ready, a counselor support tool; Better Make Room, a college-going campaign; College Signing Days, celebratory events for admitted students; Reach Higher initiatives, former First Lady Michelle Obama's college access initiative; and UpNext, a student-support texting platform (Common App, n.d.).

[1] These include students who self-identified as American Indian or Alaska Native, Black or African American, Hispanic/Latino, International, Native Hawaiian or Other Pacific Islander, or as having two or more races. Approximately 2% of Common App users' race/ethnicity is unknown.

LITERATURE REVIEW AND GUIDING FRAMEWORKS

Human capital theory suggests that students, as rational actors, will apply to and enroll in college when the benefits of the investment in a postsecondary credential exceed its direct and indirect costs across the lifetime (Becker, 1962; Perna, 2006; Toutkoushian & Paulsen, 2016). However, students are seldom rational actors when it comes to postsecondary choices (Cabrera & La Nasa, 2002; DesJardins & Toutkoushian, 2005; Tavares & Cardoso, 2013), due, in part, to incomplete information and unequal contexts, which combine to systematically limit opportunities for low-income, racially minoritized, and would-be first-generation students (Manski & Wise, 1983; McDonough & Calderone, 2006; Rochat & Demeulemeester, 2001; St. John et al., 2005). Given the fact that the average college graduate earns well beyond the average costs associated with a credential (Ma & Pender, 2023), the average student would be expected to apply to and enroll in college. Yet not all students who could benefit from higher education even apply to college. While prior studies have documented how a host of individual, school, and community features contribute to inequalities in students' ultimate enrollment behaviors (e.g., Davis & Otto, 2016; Perna & Titus, 2004; Rowan-Kenyon, 2007; Sanchez Gonzalez et al., 2019; Zarate & Gallimore, 2005), few have examined the prerequisite decision to apply.

While recent works document predictors of enrollment, the most robust body of work on students' application behaviors occurred more than two decades ago, and this area of inquiry has yet to reemerge. These prior works documented how parents were an influential source of information for students throughout the college application process (Chapman, 1981), particularly if at least one parent had some form of higher education, and observed how various forms of social capital (e.g., having a two-earner household) supported students' overall application behaviors (Goyette, 1999; McLanahan & Sandefur, 1994). These prior works also revealed how students'

demographic characteristics, including race/ethnicity, strongly predicted application behaviors, and found that students with higher levels of socioeconomic status and academic achievement were more likely to apply to college overall and to apply to more colleges (McDonough, 1994; Powell, 1996; Stanton-Salazar & Dornbusch, 1995). Among the most recent studies, Bryers González and DesJardins (2002) found that students' ACT scores and course grades, school type, family income, race/ethnicity, gender, and distance to college were important inputs when predicting the applications of nearly 40,000 high school students in Iowa.

Since these works, a host of studies have sought to quantify how access to financial aid or college coaching, for example, may influence students' aspirations or application rates (e.g., Bryan et al., 2011; Dynarski et al., 2022a; Odle, 2022; Page & Scott-Clayton, 2016), but none have necessarily identified the students that could particularly benefit from these services (i.e., a defined target population), documented the contexts under which those students would be best served (i.e., what types of groups, schools, or communities), or quantified the incidence rates these services attempt to raise (i.e., how wide are gaps in application rates and where are the greatest sources of inequality), including students who start but ultimately do not complete a college application.

The present study extends these prior works by documenting application non-submission behaviors, characterizing non-submitters, identifying inequalities in non-submission rates across groups, and identifying important predictors of non-submission. In doing so, we not only contribute to knowledge on how unequal contexts may combine to reduce equality in college applications, but this investigation also represents the only in recent history to document these relationships for more modern cohorts of students at a national level.

RESEARCH QUESTIONS

This study first seeks to observe and document students' application non-submission behavior. Here, we explicitly define "non-submission" as the phenomenon when a student began at least one college application with the Common App (i.e., added the institution to their profile and completed at least one field within the application) but never submitted any application through the Common App by the end of the application cycle. Second, we also seek to describe the student, parent, community, school, and other characteristics of students who begin but do not complete or submit a college application. Specifically, we are guided by the following exploratory research questions:

1. What is the prevalence of application non-submission among the universe of Common App users?
2. Do non-submission rates vary across students' academic, demographic, or economic contexts; features of their parent(s); K-12 school types, locales, or resources; or across regional features like economic prosperity or educational attainment?
3. What student, parent, school, community, or other factors predict non-submission?

Answers to these questions will not only document an unexplored dimension of students' college-going journeys but will also extend prior works identifying barriers to college entry across a host of individual, familial, and community contexts. These findings should also provide actionable evidence for policymakers and practitioners seeking to target interventions and supports that more recent works have found to be effective at increasing college application and enrollment rates (e.g., application assistance and college coaching, fee waivers, or targeted application completion supports; Avery et al., 2014; Gurantz et al., 2021; Oreopoulos & Ford, 2019) by identifying the student populations and school and community contexts most likely to experience high rates of

application non-submission. Furthermore, this work should also lay an important foundation for future studies documenting inequalities along students' journeys to college and invigorate additional descriptive and causal investigations into non-submission behaviors and effective mechanisms to reduce their incidence.

DATA

The study draws upon administrative records from the Common App on the universe of its users during the 2018-19 application cycle. This year, when students would apply to colleges in fall 2018 and spring 2019 to matriculate in summer or fall 2019, represents the most recent application cycle and academic year free of influence of the COVID-19 pandemic, which prior works have shown strongly influenced students' college-going behaviors (Bulman & Fairlie, 2021; National Student Clearinghouse, 2021). These records include profile information and application submissions covering nearly 1.22 million unique students across all 50 states and the District of Columbia. User profiles include a rich array of information on students' self-reported features, including age, demographics, educational aspirations, intended cluster of work/intended career field, and self-reported GPA[2] and ACT/SAT test scores;[3] parental indicators, including parent(s) educational attainment and marital status; and directory information with students' high school codes linked to National Center for Education Statistics school identification numbers and the zip codes associated with a student's primary home address. Common App records also capture administrative information on students' application behaviors, including whether the student ever started or submitted any application through the Common App, completed the essay component

[2] Students' GPA scores are reported on a standardized rank scale to allow for comparability across high school GPA schemes, where cumulative GPA points are divided by the GPA scale (e.g., 4.00 on a 4.00 scale = 1.00).

[3] Nearly 70% of students reported an ACT or SAT test score in their Common App profile (or on an application) during the 2018-19 application cycle. Most students reported SAT scores. For this analysis, ACT scores were converted to SAT equivalents using ACT/SAT concordance tables for the respective test year.

of any application, had a profile in a prior application cycle (i.e., in 2017-18 or earlier, a "returning" user), and whether the student was ever eligible for a Common App application fee waiver.[4]

While student and parent features are important factors in the college-going process (Garcia & Mireles-Rios, 2020; Kiyama, 2010), college application and enrollment behaviors are also influenced by features of students' schools and communities (Duncheon & Relles, 2019; Holzman et al., 2020; Noll, 2022; Park, 2012; Roderick, 2011). Given information on students' high school and area of residence, we supplement these administrative records with school-level indicators from the U.S. Department of Education's Common Core of Data and Private School Universe Survey, including information on schools' regional locale, type, 12th-grade enrollment levels, full-time-equivalent (FTE) teacher counts, student-teacher ratio, and schools' eligibility for Title I funds. We also derive community indicators from the U.S. Census Bureau's American Community Survey using students' home zip codes and collect a host of regional demographic features, including population shares by race/ethnicity, indicators of community economic and social inequality (i.e., Gini index on income inequality and the share of children in poverty), and predictors of college participation, including area-level educational attainment rates, unemployment, and median family income (Hillman & Orians, 2013; Pennington et al., 2002). These features are merged with student records at the school and zip-code level.

Common App records contain a minimal amount of missingness given required directory information. There is no missingness for indicators of application submission, the primary outcome of interest. For other indicators from the Common App, U.S. Department of Education,

[4] Fee waivers are meant to reduce barriers to application for students from economically disadvantaged backgrounds. Over 25% of Common App users in the 2018-19 application cycle were eligible for a fee waiver. More information on Common App fee waivers, including eligibility criteria, can be found here: https://appsupport.commonapp.org/applicantsupport/s/article/What-do-I-need-to-know-about-the-Common-App-fee-waiver.

or U.S. Census Bureau, any missing data for categorical values is captured as an "Unknown" or "No Data" value and fully included in all analyses. For any missingness of continuous student (GPA rank or ACT/SAT score), school (12th-grade enrollment, FTE teachers, or student-teacher ratio), or community (educational attainment, Gini, median household income, racial/ethnic population proportions, or percent of children in poverty) features, missing values were mean-imputed and, consistent with What Works Clearinghouse standards, a corresponding missingness indicator is included in any regression models where imputed values are used (Institute of Education Sciences, 2020; Jackson & Makarin, 2018).[5]

Sample

Common App records allow us to isolate many subpopulations of students based on their application behaviors. Among the 1.22 million unique users in 2018-19, 73% (nearly 887,900) ultimately submitted at least one application through the Common App. The remaining population of nearly 330,300 students represent the primary population of interest: non-submitters. This subpopulation, however, can be further partitioned into two mutually exclusive groups: (a) students who began *at least one* application with the Common App but ultimately never submitted any application through the Common App (referred to as application "suspects" by the organization) and (b) students who created a Common App user profile and populated their profile directory information but never actually began *any* college application with the Common App ("account creators"). Given that this investigation focuses on recording the prevalence of college application non-submission and the characteristics of these non-submitters, we focus on this first

[5] There is a small amount of missingness across these continuous values: GPA (19% missing), ACT/SAT (32%), enrollment (5%), teachers (13%), student-teacher ratio (13%), and less than 1% of values for community educational attainment, Gini, median household income, racial/ethnic population proportions, or percent of children in poverty. Because missingness could be an important predictor of application non-submission, each missing value is grand-mean imputed so as to not influence descriptive means and a corresponding missingness indicator is generated to be included in all regression analyses.

subpopulation: students who began at least one college application with the Common App but never submitted it (i.e., "suspects," hereafter "non-submitters"). Over 297,400 students fall into this category, representing 24% of the overall population. Removing those nearly 33,900 "account creators" who represent 3% of the overall population allows us to focus on students who showed some college application or college-going intention by starting at least one application with the Common App rather than examining students who may have simply created a profile as recommended or required by their high school.[6]

METHODS

To document the prevalence of application non-submission, describe the characteristics of non-submitters, and identify what features relate to non-submission behaviors, we leverage a variety of sophisticated descriptive techniques. Following the widespread proliferation of experimental and quasi-experimental methods seeking to identify causal mechanisms and estimate impacts of policies or interventions, descriptive works have begun to reemerge as preferred techniques for exploratory analyses seeking to "identify phenomena or patterns in data that have not previously been recognized," particularly when applied to new or underutilized datasets (Loeb et al., 2017, p. 1; Odle et al., 2022). Among other techniques, these descriptive methods include documenting averages, counts, proportions, and correlations, as well as data visualization, regression analyses to explore relationships, and more modern data mining techniques like classification and prediction (James et al., 2013). Indeed, effectively leveraging these techniques in descriptive work can "identify the characteristics of a population, help researchers understand a phenomenon of interest, generate hypotheses and intervention strategies, diagnose problems for practitioners and policymakers to address, and identify new issues to study" (Loeb et al., 2017, p.

[6] Many schools encourage or require all students to create a Common App profile to explore colleges, regardless of whether students indicate college-application or college-going intentions.

1). In this way, prior descriptive works have laid important foundations for future causal studies and policy action (see Arnold et al., 2009 and subsequently Castleman et al., 2012).

Equipped with a host of descriptive tools, we first document the incidence of application non-submission across the entire sample by separating students into the four primary populations noted above: applicants, non-applicants, non-applicant/non-submitters, and non-applicant/account creators. We then record what proportion are categorized as non-submitters and describe the student, parent, school, community, and application features of students within each group. We achieve this by computing overall mean values for each continuous feature x and overall relative proportions for each categorical feature j within each subpopulation of n members such that

(1) $\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$ and

(2) $Q_{j=1} = \frac{\sum_{i=1}^{n} \mathbf{I}_{j=1_i}}{n}$.

These allow us to answer our first research question by quantifying the overall prevalence of application non-submission among the universe of N Common App users and also allow us to compare these non-submitters to their peers who ultimately did submit an application through the Common App across a host of continuous and categorical characteristics.

Second, to explore how non-submission rates vary across student, parent, school, community, and application features, we estimate a series of similar conditional means given by

(3) $\mathbf{E}(\text{Nonsubmitter} \mid j = 1)$,

where $j \in \{\text{student}, \text{parent}, \text{school}, \text{region}, \text{application}\}$ categorical features. These conditional means identify the proportion of students within a particular feature subgroup of interest j who were non-submitters. We compute these conditional non-submission rates across indicators of students' educational aspirations, fee-waiver eligibility, and race/ethnicity; parents' educational attainment and marital status; schools' type, locale, and Title I status; community educational

attainment and median household income quintiles; and application essay completion and profile status. These conditional proportions allow us to observe whether application non-submission rates descriptively vary across groups and to estimate the level of any such inequality.

In addition to reporting these conditional proportions, we leverage these values to generate a series of visualizations exploring non-submission across dimensions of student race/ethnicity, academic ability, degree aspirations, and career intentions; parental education; school characteristics; community features; and geographic location to further contextualize these mean values and examine how each within-group non-submission rate compares to the overall population rate. Here, we rely upon a combination of bar charts, histograms, pie charts, and maps.

Third, to further understand what student, parent, school, community, or application factors predict non-submission, we estimate a series of linear probability models given by

$$\text{Nonsubmitter}_{ijcsk} = \text{Student}_i'\beta_n + \text{Parent}_i'\Lambda_n + \text{School}_j'\theta_n + \text{Community}_c'\gamma_n + \text{Application}_i'\Gamma_n + \phi_s + \delta_k + \varepsilon_{ijcsk}\,, \tag{4}$$

where Nonsubmitter identifies that student i in school j and community c began at least one application but never submitted any application through the Common App. Student, Parent, School, Community, and Application represent vectors of n respective predictors. We enter these factors in a stepwise fashion (i.e., each vector independently and separately), observing how each set of predictors relates to students' non-submission status before fully specifying a model with all covariates. The estimation is also conditioned on state (ϕ_s) and career cluster (δ_k) fixed effects, allowing the model to also account for features unique to students within a given state (e.g., college-going campaigns or supports) and among students within a given intended career cluster (e.g., students motivated to be a physician or students with an undecided path). We estimate robust standard errors clustered at the high school level (Abadie et al., 2017).

The coefficients from Equation (4) will allow us to observe factors correlated with application non-submission, and estimates across separate student, parent, school, community, and application variable groupings also allow us to observe how (or if) these relationships change after accounting for other important features.

Finally, to further explore how these features relate to Common App non-submission, we also leverage a modern data mining technique—classification and regression trees (CART)—to identify the most efficient predictors of non-submission status and observe how conditional non-submission rates vary across a series of constructed subpopulations. CART models leverage a data-driven algorithm with recursive partitioning that first selects an optimal predictor (e.g., SAT score) for a given binary outcome (e.g., application non-submission) and then constructs conditional outcome distributions by searching for optimal splits of that predictor (e.g., SAT below 1200 or SAT above 1200) to separate, in this setting, non-submitters from applicants (Berk, 2016). The algorithm then moves to a lower-level and searches all available predictors for additional splits. Functionally, we leverage CART to separate our Common App population into as many buckets as necessary until (if possible) we have only applicants in some buckets and only non-submitters in other buckets. We can then identify what sequential buckets (e.g., SAT score of x, parent education of y, and community income level of z) were associated with higher (or lower) application submission or non-submission rates. CART models identify the optimal number of predictors, interactions among predictors, and population splits by minimizing classification error (e.g., reducing the number of times when a "non-submitter" would be split into an "applicant" bucket) via cross-validation. Perhaps most importantly, CART also allows for effective

visualization of these important predictors and how each variable split changes the conditional distribution of the outcome by printing a resulting regression tree.[7]

RESULTS

Results are presented in Tables 1-3 and through a series of visualizations in Figures 1-9. Given the study's primary research questions, the presentation of results below is separated into three areas: prevalence and characteristics of non-submitters, non-submission rates across subgroups, and predictors of non-submission.

Prevalence of application non-submission and characteristics of non-submitters

Table 1 presents descriptive statistics summarizing the student, parent, school, community, and application features of each population in the Common App universe: applicants, non-applicants, non-submitters, and account creators. This table also shows the overall prevalence of application non-submission among Common App users was 24% during the 2018-19 application cycle (column 3), where 297,407 students began completing at least one application but never submitted any application through the Common App. Descriptively, non-submitters are, on average, slightly older than applicants but share similar educational aspirations, GPAs, and SAT scores. White students are also less represented among non-submitters (38% compared to 52% among applicants) whereas more non-submitters failed to report a race/ethnicity (15% Unknown compared to 3% Unknown among applicants). Approximately 23% of non-submitters were eligible for a Common App fee waiver compared to 27% of applicants, though eligibility for a fee waiver could be strongly related to application *submission* insofar as students may not seek a fee waiver until they have completed an application and require (or request) a fee waiver to submit.[8]

[7] For an intensive overview and discussion of CART models, see Berk (2016).

[8] We caution interpretation of fee-waiver status as synonymous with students' socioeconomic status and instead rely upon parents' educational attainment, school Title I status, and community indicators (i.e., median household income, poverty, unemployment, and educational attainment) as better proxies.

Common App applicants and non-submitters appear to vary significantly on dimensions of parents' educational attainment and marital status. Approximately 52% of applicants reported having parents who both earned a college degree (and 75% have at least one parent with a college degree) compared to 43% (and 67%) of non-submitters, respectively. 68% of applicants' parents are married or partnered compared to 61% of non-submitters. At the school level, however, the composition of applicants and non-submitters appear to be relatively similar with the exception that 48% of non-submitters attended a Title I-eligible school compared to only 40% of applicants. At the community level, non-submitters, on average, live in areas with lower educational attainment (where 37% of the adult population holds a bachelor's degree or higher compared to 43% among applicants), lower median household income ($79,100 compared to $87,500 for applicants), higher incidence of childhood poverty (15% compared to 12%), and higher representations of Hispanics and Blacks or African Americans.

Perhaps the most striking differences between applicants and non-submitters are found among their application progress and profile status. 94% of students who ultimately applied provided a valid essay response on their Common App application (i.e., wrote 100 characters or more) compared to only 43% of non-submitters, suggesting that completing an application essay may strongly predict the likelihood of eventual submission. Similarly, approximately 38% of non-submitters had created their Common App profile during a prior application cycle (i.e., in 2017-18 or earlier, a "returning" user) compared to only 28% of applicants, which may suggest that a portion of non-submitters are students who were non-submitters in a prior application cycle or are students who have been considering applying to college for some time but have yet to submit an application with the Common App.

Application non-submission rates across subgroups

Student factors

Table 2 presents Common App non-submission rates across a variety of student, parent, school, community, and application subgroups. Students' non-submission rates vary widely by students' reported educational plans, where only 20% of students who started an application and reported aspiring to complete a doctoral degree (and 19% of students aspiring to complete a master's degree) ultimately did not submit their Common App compared to 41% of students who reported aspiring to attain an associate degree and 85% of students who never selected any aspirational level. These statistics are also presented in Figure 1 alongside the population non-submission rate of 24%. As suggested by the descriptive statistics in Table 1, the non-submission rate is lower among students eligible for Common App fee waivers. Students' non-submission rates also vary widely across dimensions of race/ethnicity, where non-submission rates are highest among American Indian/Alaskan Native, Native Hawaiian, and students who never reported a race/ethnicity and lowest among Asian and White students. Figure 2 visualizes these differences by race/ethnicity. As shown, while Black/African American and Latinx students only represent 12% and 17%, respectively, of all Common App users in 2018-19, they are overrepresented among non-submitters (14% and 18%, respectively), and each group's non-submission rate (27% and 26% respectively) exceeds the population average of 24%. This is contrasted to Asian and White students who are underrepresented among non-submitters and have lower non-submission rates.

Figures 3 and 4 explore additional student-level features of non-submitters. Figure 3 shows the distribution of applicants' and non-submitters' GPA and SAT scores, and, as suggested by the descriptive statistics in Table 1, applicants and non-submitters do not vary significantly on either measure of students' academic ability. This further suggests that academic qualifications are not a

key determinant of students' application behaviors. Figure 4 shows non-submission rates across students' intended cluster of work/intended career field. Students who reported aspiring to work in occupations like engineers, scientific researchers, policymakers, physicians, and computer programmers (i.e., fields, on average, requiring advanced levels of education) had the lowest non-submission rates. Conversely, students who reported aspiring to work in fields common not requiring a postsecondary credential (e.g., homemaker, chef, clergy, farmer, and lab technician) had the highest non-submission rates. Students who did not report a career aspiration again had the highest non-submission rate (85%).

Parent factors

Table 2 also shows how non-submission rates vary across dimensions of parents' educational attainment and marital status. Among students who reported their primary (or first-reported or only) parent had earned any college credential, only 18% did not submit their in-progress application compared to 29% of students with a primary parent who had earned less than a high school diploma. Similarly, students who reported that their parents were married or partnered had non-submission rates of 20% compared to 26% among students whose parents were single, divorced, or unmarried. These figures are also depicted in Figure 5, which additionally shows that 68% of all non-submitters had neither or only one parent with a college degree; only 33% of non-submitters had parents who both held a college degree. Across all dimensions, students who did not report any data on parental education or marital status were the most likely to be a non-submitter, with non-submission rates reaching 88% and 94%, respectively.

School factors

Students' non-submission rates also vary across characteristics of the high school they attend. Student at home schools and charter schools had the highest non-submission rates (34%

and 27%, respectively), compared to students at independent/private (20%) and religious (19%) schools. Similarly, students at schools in towns (30%) and rural (27%) areas had higher non-submission rates than students in cities (25%) and suburban (23%) areas. As alluded to by the descriptive statistics in Table 1, students at Title I schools were more likely to be non-submitters than students at non-Title I schools, where non-submission rates varied from 28% to 22%. These differences in students' application submission behaviors across school type, local, and Title I status are also shown in Figure 6.

Community factors (zip code)

Table 2 also shows how non-submission rates vary across dimensions of students' home communities. For students in areas with relatively high levels of educational attainment (e.g., 50% or more of the adult population holds a bachelor's degree or higher), only 24% did not submit their Common App compared to 32% of students in areas were 25-50% of the population held a bachelor's degree or higher. Students in communities with the lowest educational attainment rates, however, also had the lowest non-submission rates (19%). This could be due to the possibility that, if a student in a community with lower levels of educational attainment engaged with any college-going activities, they are *already* increasingly likely to complete those college search, application, and enrollment steps given their initial engagement (in contrast to their community profile). Students' non-submission rates also vary almost linearly with their community's income profile, where students in communities with the highest median household incomes had the lowest non-submission rates (21%) compared to students in communities with the lowest median household incomes (32%). Figure 7 shows the distribution of community educational attainment and median household income for applicants and non-submitters.

Figure 8 also shows non-submission rates by state, revealing that students in states with low overall educational attainment and higher, on average, numbers of education deserts (e.g., Mississippi, West Virginia, and the upper Great Plains; Hillman & Weichman, 2016) have the highest non-submission rates compared to students in relatively highly-educated and higher-income states with particularly strong public systems of higher education (e.g., California, Florida, and New York). It is also important to note that the map strongly resembles a map of states who are home to institutions that participate in the Common App.[9] It is likely that students in states with higher numbers of institutions that accept the Common App are more likely to complete their Common App compared to students in states where only one or two institutions participate.

Application factors

As discussed with the sample's overall population descriptives in Table 1, non-submission rates are substantially higher among students who did not complete the essay portion of the Common App (68%) compared to students who did (13%). Students who created a Common App in a prior application cycle were also more likely to be non-submitters (31%) compared to students who created their profile during the 2018-19 cycle (22%).

Predictors of Common App non-submission

Table 3 presents results of the series of linear probability models predicting students' non-submitter status. Each set of student, parent, school, and community predictors individually accounted for over 20% of the variance in non-submission behavior, and the two application characteristics (i.e., essay completion and profile status) collectively accounted for 40% of the variance in non-submission status. Taken together, many of these features are associated with a higher likelihood of a student starting but not submitting an application with the Common App.

[9] See https://ordercommonapp.com/product/common-app-map/#:~:text=The%20Common%20App%20map%20is,your%20request%20to%20be%20processed.

Holding all other observed factors constant, eligibility for a Common App fee waiver is associated with an 11 percentage point lower likelihood of becoming a non-submitter whereas being a self-reported nonresident, American Indian/Alaskan Native, or Native Hawaiian/Other Pacific Islander is associated with a 5.5-6.3 point higher likelihood of being a non-submitter than their White peers. Furthermore, older students and students with lower GPAs were, on average, 3-4 points more likely to be Common App non-submitters. Finally, students with neither parent holding any college degree were 3.8 points more likely to not submit their in-progress Common App compared to students with just one parent holding a college degree.

At the school and community level, students attending independent/private high schools had an, on average, 5.3 percentage point lower likelihood of not submitting their Common App compared to students enrolled at public high schools. Students at religious schools also had a 4.3-point lower likelihood of non-submission. Students attending Title I-eligible schools were, on average, 1.2 points more likely to be non-submitters than students at non-Title I schools. At the community level, each additional percentage point increase in the educational attainment rate of the zip code's adult population was associated with a 6.1-point reduction in the likelihood a student was a non-submitter. Conversely, each percentage point increase in the unemployment rate within a community was associated with a 7.3-point higher likelihood of Common App non-submission. Regarding community demographics, this final model suggests that increases in the proportion of the population that is White, Black/African American, and Asian are each associated with a 10–11-point reduction in the likelihood of non-submission.

As expected, students' essay completion and their prior engagement with the Common App were strongly associated with their non-submitter status. Students who provided a valid essay response (i.e., greater than 100 characters) were 50 percentage points less likely to be a non-

submitter than non-respondents, and students whose profile was created in a prior academic cycle were 20 points more likely to begin but not submit their Common App during the 2018-19 application cycle.

Finally, Figure 9 presents the classification and regression tree produced from the CART analysis seeking to identify (a) predictors most effective at classifying students' as either applicants or non-submitters and (b) the levels or partitions of these predictors that aided students' classification. Beginning with the first node, the overall non-submission rate was 18% among the entire analytic sample of students with complete case information, and 100% of the population was captured in this node. The first split identified by the CART model was student' age, where the 92% of students had an age under 19 and 8% were age 19 or over. Among those younger students, the conditional non-submission rate was only 13% compared to 71% among the population of older students. Following each stem, students' fee waiver eligibility, SAT score, and race; parental educational attainment; school student-teacher ratio; and community educational attainment and racial/ethnic composition were identified as important predictors. The sub-population of students with the lowest non-submission rate are students in the far-right terminal node; below age 18 with an SAT score $\geq$ 1237. These students represent 19% of the analytic sample and had only a 4% non-submission rate. The sub-population of students with the highest non-submission rate (89%) were students age 19 and over who were not eligible for a fee waiver and had an SAT $\geq$ 1295, representing 3% of the analytic sample. Across Figure 9, nodes colored in blue are predicted to be "applicants," whereas nodes in red are predicted to be "non-submitters;" a function of the conditional non-submission rate within each node, also shown by color intensity. In all, the CART partitioning model suggest that students' fee waiver eligibility, SAT score,

parental educational attainment, and community features (e.g., educational attainment and racial demographics) are important predictors of students' non-submission status.

Limitations

While this study breaks important ground, it is not without notable limitations. First, this work relies exclusively upon descriptive tools that can appropriately estimate overall and conditional averages, rates, and correlations but cannot isolate causal relationships. Even though this is a population dataset of Common App users, no findings should be considered causal or interpreted as such. These activities are left for future studies equipped with experimental and quasi-experimental tools to seek such associations.

Second, and importantly, our data provide powerful insights given coverage of over 1.22 million unique users—the equivalent of roughly one third of all graduating high school students in 2018-19 (U.S. Department of Education, 2020)—but they are blind to application activities outside of the Common App universe. While we can observe all behaviors of students across the Common App platform, we cannot see students' application behaviors if students apply through state-level, system, or institutional application platforms (e.g., Apply Texas for all public and some private institutions in Texas, Cal State Apply for all California State University campuses, and directly to institution via a web or paper application). This limitation means that all incidents of Common App non-submission should not be equated to students' abandoning all college application or college-going plans. Nevertheless, these non-submitters did begin at least one Common App and ultimately did not submit it, allowing us to still identify non-submission behaviors within the Common App universe. While it is possible a Common App non-submitter applied through another platform, they would still lose important benefits that the Common App can confer to applicants, including fee waivers and efficient exposure to more institutions that are,

on average, better resourced to provide generous financial aid packages and, once enrolled, a host of retention and completion supports (Bound et al., 2010).[10] Such Common App non-submission behaviors could therefore have meaningful impacts on students' college-going patterns and subsequent educational attainment. Furthermore, internal Common App analyses that are equipped with National Student Clearinghouse records on students' postsecondary enrollment outcomes suggest that, while the average Common App non-submitter is likely to enroll in college after high school (meaning they applied through another avenue), their enrollment rates remain significantly below those who submit a Common App. They also show that enrollment inequalities persist between submitters and non-submitters by gender, race/ethnicity, and socioeconomic status, suggesting that Common App non-submission itself has a meaningful association on students' outcomes and may represent a source of inequality in college-going outcomes.

DISCUSSION

By observing the universe of Common App users in the 2018-19 cycle and their ultimate application behaviors, this study defined the understudied phenomenon of application non-submission and documented the prevalence and extent of non-submission among 1.22 million students. We found that, among a population equivalent to one third of the U.S. high school senior population, 25% began but ultimately did not submit a college application. We also described the student, parent, K-12 school, and other characteristics of non-submitters and document inequalities in non-submission rates across important groups—particularly those traditionally underrepresented in higher education. Using complementary descriptive techniques, data visualizations, and regression analyses, we found that non-submission rates vary widely by students' race/ethnicity, educational plans, and career aspirations; parental educational attainment;

[10] In 2018-19, the Common App awarded nearly 100 million in application fee waivers, and the average applicant submitted nearly five applications (Common App, 2020).

school type and Title-I status; and community educational attainment and household income and that these behaviors are strongly predicted by students' application tasks, including their completion of a college essay and indicators of their previous engagement with the Common App platform. These features accounted for over 44% of the variance in students' application behaviors.

Our findings not only contribute to existing literature documenting how unequally distributed "frictions" contribute to the college application "gauntlet" but also documented how the results of their incidence by way of application non-submission is unequally distributed (Klasik, 2012; Knight & Schiff, 2022; Oreopoulos & Ford, 2019). This work is among the only in modern history to explore application behaviors among cohorts of students at a national level.

Implications for policy, practice, and future research

These findings should provide actionable evidence for policymakers and practitioners seeking to target interventions and supports that more recent works have found to be effective at increasing college application and enrollment rates (e.g., college coaching by Avery et al., 2014; application assistance by Oreopoulos & Ford, 2019; and application simplification by Delaney & Odle, 2023 and Odle & Delaney, 2023) by identifying the student populations and school and community contexts most likely to experience high rates of application non-submission. Our findings suggest that efforts to simply get students *to* the college application stage are insufficient; the form itself and the actions required to apply still represent a significant and unequal barrier that still a sizeable population of college-interested students to not apply. Such insights should prove useful to the Common App and others—like states, institutions, K-12 schools, and educational organizations—seeking to increase college-going behaviors by describing specific factors related to non-submission and identifying what students, schools, and communities are most likely to experience higher incidence of non-submission. Equipped with this knowledge, researchers,

policymakers, and practitioners alike can consider developing predictive tools and targeted interventions to proactively engage and support students along their college-application journey.

This work should lay the foundation for future studies to explore causal determinants and outcomes of non-submission behaviors and work to identify potentially effective mechanisms to reduce the incidence of application non-submission. This work may be particularly useful to future researchers seeking to test the effectiveness of novel interventions by providing documented rates of non-submission across a host of student, parent, school, community, or application factors that can be directly leveraged for sampling strategies, power analyses, and more.

References

Abadie, A., Athey, S., Imbens, G.W., Wooldridge, J. (2017). *When should you adjust standard errors for clustering?* (Working Paper No. 24003). National Bureau of Economic Research. https://www.nber.org/papers/w24003

Arnold, K., Fleming, S., DeAnda, M., Castleman, B.L., & Wartman, K.L. (2009). The summer flood: The invisible gap among low-income students. *Thought and Action*, Fall: 23-34.

Avery, C., Howell, J.S., & Page, L. (2014). *A review of the role of college counseling, coaching, and mentoring on students' postsecondary outcomes*. College Board. https://files.eric.ed.gov/fulltext/ED556468.pdf

Baker, R., Klasik, D., & Reardon, S. (2018). Race and stratification in college enrollment over time. *AERA Open*, *4*(1), 1-28.

Becker, G.S. (1962). Investment in human capital: A theoretical analysis. *The Journal of Political Economy*, *70*(5), 9-49.

Berk, R.A. (2016). *Statistical learning from a regression perspective (2nd Ed.)*. Springer.

Bettinger, E.P., Long, B.T., Oreopoulos, P., & Sanbonmatsu, L. (2012). The role of application assistance and information in college decisions: Results from the H&R Block FAFSA experiment. *The Quarterly Journal of Economics*, *127*(3), 1205-1242.

Bound, J., Lovenheim, M.F., & Turner, S. (2010). Why have college completion rates declined? An analysis of changing student preparation and collegiate resources. *American Economic Journal: Applied Economics*, *2*(3), 129-157.

Bryan, J., Moore-Thomas, C., Day-Vines, N.L., & Holcomb-McCoy, C. (2011). School counselors as social capital: The effects of high school college counseling on college application rates. *Journal of Counseling and Development*, *89*(2), 190-199.

Bryers González, J.M., & DesJardins, S.L. (2002). Artificial neural networks: A new approach to predicting application behavior. *Research in Higher Education*, *43*(2), 235-258.

Bulman, G., & Fairlie, R.W. (2021). *The impact of COVID-19 on community college enrollment and student success: Evidence from California administrative data* (Working Paper No. 28715). National Bureau of Economic Research. https://www.nber.org/papers/w28715

Cabrera, A.F., & La Nasa, S.M. (2002). Understanding the college-choice process. *New Directions for Institutional Research*, *2000*(107), 5-22.

Castleman, B.L., Arnold, K.D., & Wartman, K.L. (2012). Stemming the tide of summer melt: An experimental study of the effects of post-high-school summer intervention on college enrollment. *Journal of Research on Educational Effectiveness*, *5*(1), 1-18.

Chapman, D.W. (1981). A model of student college choice. *The Journal of Higher Education*, *52*(5), 490-505.

Common App. (2020). *2018-19 Common App impact and trends*. Author. https://mcusercontent.com/1436e2ab2417019e4ccbb5ac1/files/32d156ee-b153-462a-933d-7a862e296aeb/Common_App_2018_2019_Impact_Report.pdf

Common App. (2021). *Impact and trends 2019-2020*. Author. https://mcusercontent.com/1436e2ab2417019e4ccbb5ac1/files/44fb2ff0-bfc5-4d82-bc31-1f41fdfbad42/ImpactReport_2019_20_v4.01.pdf

Common App. (n.d.). *Common App*. Author. https://www.commonapp.org/

Davis, T., & Otto, B. (2016). Juxtaposing the Black and White gender gap: Race and gender differentiation in college enrollment predictors. *Social Science Quarterly*, *97*(5), 1245-1266.

Delaney, J.A., & Odle, T.K. (2023). *State-level common application policies and college enrollment* (Working Paper).

Deming, D., & Dynarski, S. (2009). *Into college, out of poverty? Policies to increase the postsecondary attainment of the poor* (Working Paper No. 15387). National Bureau of Economic Research. https://www.nber.org/papers/w15387

DesJardins, S.L., Ahlburg, D.A., & McCall, B.P. (2006). An integrated model of application, admission, enrollment and financial aid. *The Journal of Higher Education*, *77*(3), 381-429.

DesJardins, S.M., & Toutkoushian, R.K. (2005). Are students really rational? The development of rational thought and its application to student choice. In J.C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 20, pp. 191-240). Springer.

Duncheon, J. C., & Relles, S. R. (2019). Brokering college opportunity for first-generationl youth: The role of the Urban high school. *American Educational Research Journal*, *56*(1), 146-177.

Dynarski, S., Nurshatayeva, A., Page, L. C., & Scott-Clayton, J. (2022a). *Addressing non-financial barriers to college access and success: Evidence and policy implications* (Working Paper No. 30054). National Bureau of Economic Research. https://www.nber.org/papers/w30054

Dynarski, S., Page, L. C., & Scott-Clayton, J. (2022b). *College costs, financial aid, and student decisions* (Working Paper No. 30275). National Bureau of Economic Research. https://www.nber.org/papers/w30275

Dynarski, S.M., Libassi, C., Michelmore, K., & Owen, S. (2021). Closing the gap: The effect of reducing complexity and uncertainty in college pricing on the choices of low-income students. *The American Economic Review*, *111*(6), 1721-56.

Garcia, N. M., & Mireles-Rios, R. (2020). "You were going to go to college": The role of Chicano fathers' involvement in Chicana daughters' college choice. *American Educational Research Journal*, *57*(5), 2059-2088.

Goyette, K. (1999). *Application to college: A comparison of Asian American and White high school students*. Paper presented at the annual meeting of the American Educational Research Association, Montreal. https://files.eric.ed.gov/fulltext/ED432623.pdf

Gurantz, O., Howell, J., Hurwitz, M., Larson, C., Pender, M., White, B. (2021). A national-level informational experiment to promote enrollment in selective colleges. *Journal of Policy Analysis and Management, 40*(2), 453-479.

Hillman, N., & Weichman, T. (2016). *Education deserts: The continued significance of "place" in the twenty-first century*. American Council on Education. https://www.acenet.edu/Documents/Education-Deserts-The-Continued-Significance-of-Place-in-the-Twenty-First-Century.pdf

Hillman, N.W. (2016). Geography of college opportunity: The case of education deserts. *American Educational Research Journal*, *53*(4), 987-1021.

Hillman, N.W., Orians, E.L. (2013). Community colleges and labor market conditions: How does enrollment demand change relative to local unemployment rates. *Research in Higher Education*, *54*, 765-780.

Holzman, B., Klasik, D., & Baker, R. (2020). Gaps in the college application gauntlet. *Research in Higher Education*, *61*, 795-822.

Hoxby, C., & Avery, C. (2012). *The missing 'one-offs:' The hidden supply of high achieving, low income students* (Working Paper No. 18586). National Bureau of Economic Research. https://www.nber.org/papers/w18586

Hoxby, C., & Turner, S. (2013). *Expanding college opportunities for high-achieving, low-income students* (Working Paper No. 12-014). Stanford Institute for Economic Policy Research, Stanford University. https://siepr.stanford.edu/publications/working-paper/expanding-college-opportunities-high-achieving-low-income-students

Institute of Education Sciences. (2020). *What Works Clearinghouse standards handbook, version 4.1*. What Works Clearinghouse. https://ies.ed.gov/ncee/wwc/handbooks

Jackson, K., & Makarin, A. (2018). Can online off-the-shelf lessons improve student outcomes? Evidence from a field experiment. *American Economic Journal: Economic Policy*, *10*(3), 226-254.

James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An introduction to statistical learning with applications in R*. Springer.

Kipp, S.M., Price, D.V., & Wohlford, J.K. (2002). *Unequal opportunity: Disparities in college access among the 50 states*. Lumina Foundation for Education. https://files.eric.ed.gov/fulltext/ED459670.pdf

Kiyama, J. M. (2010). College aspirations and limitations: The role of educational ideologies and funds of knowledge in Mexican American families. *American Educational Research Journal*, *47*(2), 330-356.

Klasik, D. (2012). The college application gauntlet: A systematic analysis of the steps to four-year college enrollment. *Research in Higher Education*, *53*, 506-549.

Knight, B.G., & Schiff, N.M. (2022). Reducing frictions in college admissions: Evidence from the Common Application. *American Economic Journal: Economic Policy*, *14*(1), 179-206.

Liu, A.Y.H., Ehrenberg, R.G., & Mrdjenovic, J. (2007). *Diffusion of common application membership and admissions outcomes at American colleges and universities* (Working Paper No. 13175). National Bureau of Economic Research. https://www.nber.org/papers/w13175

Loeb, S., Dynarski, S., McFarland, D., Morris, P., Reardon, S., & Reber, S. (2017). *Descriptive analysis in education: A guide for researchers* (NCEE 2017–4023). National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. https://files.eric.ed.gov/fulltext/ED573325.pdf

Ma, J., & Pender, M. (2023). *Education pays 2023: The benefits of higher education for individuals and society*. The College Board. https://research.collegeboard.org/media/pdf/education-pays-2023.pdf

Manski, C.F., & Wise, D.A. (1983). *College choice in America*. Harvard University Press.

McDonough, P.M. (1994). Buying and selling in higher education: the social construction of the college applicant. *The Journal of Higher Education*, 65(4), 427-446.

McDonough, P.M., & Calderone, S. (2006). The meaning of money: Perceptual differences between college counselors and low-income families about college costs and financial aid. *American Behavioral Scientist*, *49*(12), 1703-1718.

McLanahan, S., & Sandefur, G. (1994). *Growing up with a single parent: What hurts, what helps*. Harvard University Press.

Murphy, A. L. (2010). *The prediction of performance, progress, and persistence of first-time in college students with the Texas common application* [Dissertation]. Texas Tech University. https://ttu-ir.tdl.org/handle/2346/ETD-TTU-2010-12-1054

National Student Clearinghouse. (2021). *COVID-19: Stay informed with the latest enrollment information*. National Student Clearinghouse Research Center. https://nscresearchcenter.org/stay-informed/

Noll, L. A. (2022). Accountability and (in)congruence in a no-excuses school college-going culture. *American Educational Research Journal*, *59*(1), 112-145.

Odle, T. K. (2022). *The power of 'free' college: Reducing racial and socioeconomic inequalities in college expectations* (EdWorkingPapers No. 22-565). Annenberg Institute, Brown University. https://www.edworkingpapers.com/ai22-565

Odle, T. K., & Delaney, J. A. (2022). You are admitted! Early evidence on enrollment from Idaho's direct admissions system. *Research in Higher Education*, *63*, 899-932.

Odle, T. K., & Delaney, J. A. (2023). *Experimental evidence on "direct admissions" from four states: Impacts on college application and enrollment* (EdWorkingPapers). Annenberg Institute, Brown University.

Odle, T.K., Gottfried, M.A., Miller, T., & Andrews, R. (2022). *Who's matched up? Access to same-race instructors in higher education* (EdWorkingPapers No. 22-681). Annenberg Institute, Brown University. https://edworkingpapers.com/ai22-681

Oreopoulos, P., & Ford, R. (2019). Keeping college options open: A field experiment to help all high school seniors through the college application process. *Journal of Policy Analysis and Management*, 38(2), 426-454.

Page, L. C., & Scott-Clayton, J. (2016). Improving college access in the United States: Barriers and policy responses. *Economics of Education Review*, *51*, 4-22.

Park, J. J. (2012). It takes a village (or an ethnic economy): The varying roles of socioeconomic status, religion, and social capital in SAT preparation for Chinese and Korean American students. *American Educational Research Journal*, *49*(4), 624-650.

Pennington, K.L., McGinty, D., Williams, M.R (2002). Community college enrollment as a function of economic indicators. *Community College Journal of Research and Practice*, *26*(5), 431-437.

Perna, L.W. (2006). Studying college choice: A proposed conceptual model. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 21) (pp. 99-157). Springer.

Perna, L.W., & Titus, M.A. (2004). Understanding differences in the choice of college attended: The role of state public policies. *The Review of Higher Education*, *27*(4), 501-525.

Perna, L.W., & Titus, M.A. (2005). The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *The Journal of Higher Education*, *76*(5), 485-518.

Perna, L.W., Rowan-Kenyon, H., Bell, A., Thomas, S. L., & Li, C. (2008). A typology of federal and state programs designed to promote college enrollment. *The Journal of Higher Education*, *79*(3), 243-267.

Powell, A.G. (1996). *Lessons from privilege: The American prep school tradition*. Harvard University Press.

Rochat, D., & Demeulemeester, J. (2001). Rational choice under unequal constraints: The example of Belgian higher education. *Economics of Education Review*, *20*(1), 15-26.

Roderick, M., Coca, V., & Nagaoka, J. (2011). Potholes on the road to college: High school effects in shaping urban students' participation in college application, four-year college enrollment, and college match. *Sociology of Education*, *84*(3), 178-211.

Rowan-Kenyon, H.T. (2007). Predictors of delayed college enrollment and the impact of socioeconomic status. *The Journal of Higher Education*, *78*(2), 188-214.

Sanchez Gonzalez, M.L., Castillo, L.G., Montague, M.L., & Lynch, P.S. (2019). Predictors of college enrollment among Latinx high school students. *Journal of Hispanic Higher Education*, *18*(4), 410-421.

Smith, J. (2013). The effect of college applications on enrollment. *The B.E. Journal of Economic Analysis & Policy*, *14*(1), 151-188.

St. John, E.P., Paulsen, M.B., & Carter, D.F. (2005). Diversity, college costs, and postsecondary opportunities: An examination of the financial nexus between college choice and persistence for African Americans and Whites. *The Journal of Higher Education*, *76*(5), 545-569.

Stanton-Salazar, R.D., & Dornbusch, S.M. (1995). Social capital in the reproduction of inequality: Information networks among Mexican-origin high school students. *Sociology of Education*, *68*, 116-135.

Tavares, O. & Cardoso, S. (2013). Enrolment choices in Portuguese higher education: Do students behave as rational consumers? *Higher Education*, *66*, 297-309.

Toutkoushian, R.K., & Paulsen, M.B. (2016). *Economics of higher education: Background, concepts, and applications*. Springer.

U.S. Department of Education. (2020). *Digest of education statistics* (Table 219.10: High school graduates, by sex and control of school; public high school averaged freshman graduation rate [AFGR]; and total graduates as a ratio of 17-year-old population: Selected years, 1869-70 through 2029-30). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/programs/digest/d20/tables/dt20_219.10.asp

Zarate, M.E., & Gallimore, R. (2005). Gender differences in factors leading to college enrollment: A longitudinal analysis of Latina and Latino students. *Harvard Educational Review*, *75*(4), 383-408.

Table 1: Descriptive statistics.	**Applicant**		**Non-Applicant**		**Non-Submitter**		**Account Creator**	
N=1,218,174 (Proportion of Total)	887,877 (0.73)		330,297 (0.27)		297,407 (0.24)		32,890 (0.03)	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Student Characteristics								
Age	17.57	0.90	18.33	2.60	18.35	2.62	18.10	2.42
Aspire for BA+	0.93	0.26	0.92	0.24	0.92	0.24	0.90	0.26
Fee Waiver	0.27	0.44	0.23	0.42	0.23	0.42	0.30	0.46
GPA (Rank)	0.88	0.17	0.86	0.16	0.86	0.16	0.85	0.15
Am. Indian/AK Native	0.00	0.05	0.00	0.07	0.00	0.06	0.00	0.07
Asian	0.10	0.30	0.08	0.27	0.08	0.27	0.08	0.27
Black/African American	0.12	0.32	0.13	0.34	0.14	0.34	0.12	0.32
Latinx	0.16	0.37	0.19	0.39	0.18	0.39	0.23	0.42
Nat. Hawaiian/Other PI	0.00	0.03	0.00	0.05	0.00	0.04	0.00	0.05
Nonresident	0.01	0.12	0.02	0.13	0.02	0.13	0.02	0.14
Two or More Races	0.05	0.22	0.05	0.21	0.05	0.21	0.05	0.21
Race Unknown	0.03	0.17	0.15	0.36	0.15	0.36	0.10	0.30
White	0.52	0.50	0.38	0.49	0.38	0.49	0.40	0.49
SAT Equivalent	1,238	160	1,227	137	1,228	139	1,218	112
Parent Characteristics								
Both Parents College Degree	0.52	0.48	0.43	0.41	0.43	0.41	0.37	0.39
Either Parent College Degree	0.75	0.41	0.67	0.40	0.67	0.40	0.61	0.42
Neither Parent College Degree	0.25	0.41	0.33	0.40	0.33	0.40	0.39	0.42
Married or Partnered	0.68	0.47	0.61	0.46	0.61	0.46	0.58	0.47
School Characteristics								
12th Grade Enrollment	354.43	223.15	354.00	225.90	354.06	226.05	353.48	224.57
FTE Teachers	94.54	48.31	91.75	48.09	91.93	48.18	90.12	47.15
City	0.30	0.46	0.31	0.46	0.31	0.46	0.33	0.47
Rural	0.12	0.33	0.14	0.34	0.14	0.34	0.14	0.34
Suburb	0.49	0.50	0.45	0.50	0.45	0.50	0.43	0.49
Town	0.05	0.21	0.06	0.24	0.06	0.24	0.07	0.25
Locale Unknown	0.05	0.21	0.04	0.20	0.04	0.20	0.04	0.20
Student-Teacher Ratio	15.87	11.03	16.26	11.40	16.25	11.67	16.30	8.60
Title I School	0.40	0.48	0.48	0.49	0.48	0.49	0.52	0.49
Charter	0.03	0.18	0.04	0.19	0.04	0.19	0.05	0.21
Home School	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Independent	0.05	0.23	0.04	0.19	0.04	0.20	0.03	0.16
Public	0.80	0.40	0.84	0.36	0.84	0.37	0.86	0.35
Religious	0.11	0.32	0.08	0.27	0.08	0.27	0.07	0.25
School Type Unknown	0.00	0.04	0.00	0.05	0.00	0.05	0.00	0.06
Community Characteristics								
Ed. Attainment (BA+)	0.43	0.19	0.37	0.19	0.37	0.19	0.35	0.18
Gini	0.44	0.05	0.44	0.05	0.44	0.05	0.43	0.05
Median HH Income ($)	87,494	36,833	78,739	34,245	79,124	34,539	75,267	31,247
Median HH Income (Quintile)	4.08	1.26	3.77	1.38	3.78	1.38	3.68	1.39
Pct. Children in Poverty	0.12	0.11	0.15	0.13	0.15	0.13	0.16	0.13
Pct. Unemployed	0.05	0.03	0.05	0.03	0.05	0.03	0.05	0.03
Pct. Am. Indian/AK Native	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.03
Pct. Asian	0.08	0.10	0.07	0.10	0.07	0.10	0.07	0.11
Pct. Black/African American	0.11	0.17	0.13	0.19	0.13	0.19	0.13	0.17
Pct. Hispanic	0.14	0.17	0.17	0.20	0.17	0.20	0.20	0.21
Pct. Nat. Hawaiian/Other PI	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Pct. Other Race	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Pct. Three or More Races	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Pct. Two or More Races	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pct. White	0.63	0.26	0.59	0.28	0.59	0.28	0.57	0.29
Application Characteristics								
Completed Essay	0.94	0.24	0.41	0.49	0.43	0.50	0.19	0.39
Rolled Over from Prior Year	0.28	0.25	0.36	0.48	0.38	0.48	0.19	0.39

Sources: Common App, Common Core of Data (US ED), American Community Survey (US Census Bureau). Notes: Table shows means and standard deviations for students in 2019 Common App universe. Proportional figures may not total due to rounding. Applicants are students who submitted at least one application through the Common App. Non-applicants did not submit any application through the Common App. Within Non-applicants, Non-submitters began at least one college application with the Common App but did not submit any application through the Common App, and Account creators only generated a Common App profile but never started a college application with the Common App.

Table 2: Common App non-submission rate by group.

Student Factors	
Educational Plans	
Associate	0.414
Bachelor's	0.216
Masters	0.185
PhD/JD/MD	0.199
Other	0.262
Undecided	0.195
No Data	0.846
Fee Waiver	
Yes	0.213
No	0.255
Race	
Am. Indian/AK Native	0.369
Asian	0.207
Black/African American	0.271
Latinx	0.261
Nat. Hawaiian/Other PI	0.341
Nonresident	0.288
Two or More Races	0.231
Race Unknown	0.593
White	0.192
Parent Factors	
Educational Attainment	
Less than High School	0.288
High School Graduate	0.262
Some College	0.243
College Graduate	0.181
No Data	0.875
Marital Status	
Yes	0.199
No	0.258
Unknown	0.939
School Factors	
Type	
Charter	0.266
Home School	0.338
Independent	0.196
Public	0.253
Religious	0.186
Locale	
City	0.250
Rural	0.267
Suburb	0.230
Town	0.299
Title I	
Yes	0.280
No	0.219
Community Factors (Zip)	
Educational Attainment	
Less than 25% with B.A. or Higher	0.193
25-50% with B.A. or Higher	0.317
Greater than 50% with B.A. or Higher	0.243
Median Household Income	
First Quintile	0.324
Second Quintile	0.307
Third Quintile	0.283
Fourth Quintile	0.256
Fifth Quintile	0.209
Application Factors	
Essay Completed	
Yes	0.132
No	0.680
New Application	
Yes	0.218
No (Profile Rolled Over from Prior Year)	0.306

Sources: Common App, Common Core of Data, American Community Survey. Notes: Table shows non-submission rate for students in 2019 Common App universe by select groups. Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Overall non-submitter rate is 0.24.

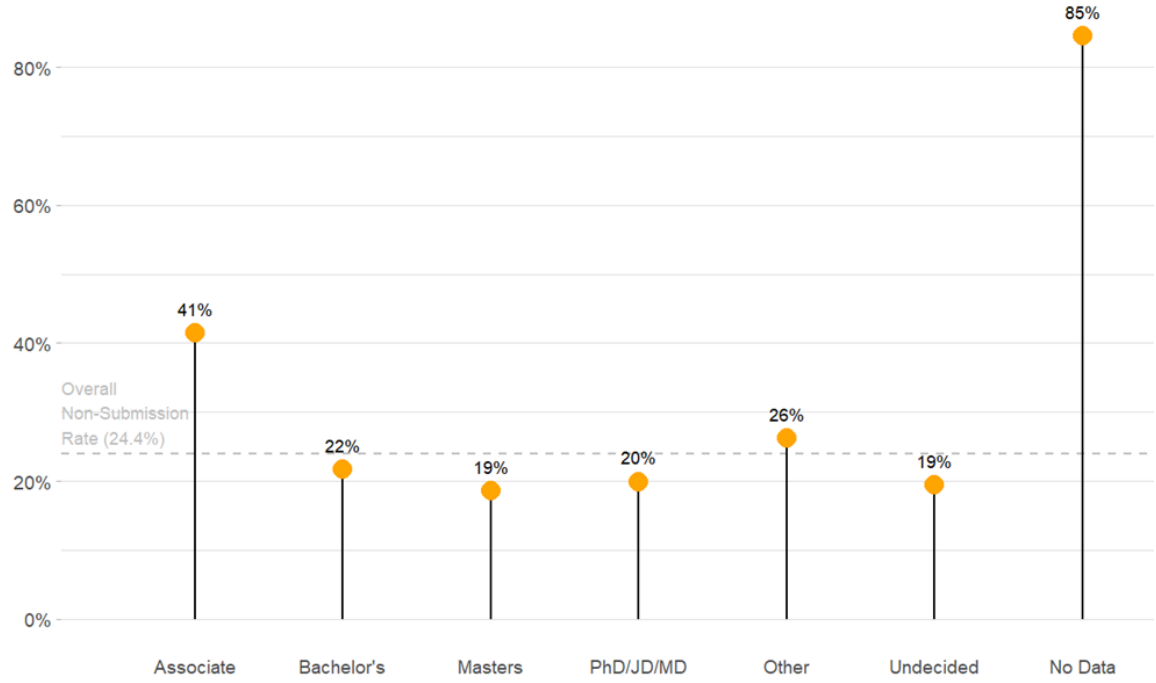
Table 3: Predictors of Common App non-submission.

Model 1: Student Features		**Model 6: All Features**
Age	0.045 (0.001)***	0.033 (0.001)***
GPA (Rank)	-0.064 (0.003)***	-0.038 (0.002)***
Fee Waiver	-0.085 (0.002)***	-0.111 (0.001)***
SAT Equivalent (100 points)	-0.007 (0.000)***	0.001 (0.000)***
Aspire for BA+	-0.017 (0.002)***	-0.010 (0.001)***
Latinx	0.068 (0.001)***	0.034 (0.001)***
Nonresident	0.079 (0.003)***	0.060 (0.003)***
Asian	0.045 (0.002)***	0.026 (0.001)***
Black/African American	0.066 (0.002)***	0.033 (0.001)***
Race Unknown	0.131 (0.002)***	0.026 (0.002)***
Two or More Races	0.035 (0.002)***	0.019 (0.001)***
Am. Indian/AK Native	0.103 (0.008)***	0.063 (0.007)***
Nat. Hawaiian/Other PI	0.081 (0.010)***	0.055 (0.009)***
R^2	0.262	
Model 2: Parent Features		
Both Parents College Degree	-0.038 (0.001)***	-0.023 (0.001)***
Neither Parent College Degree	0.047 (0.001)***	0.038 (0.001)***
Married or Partnered	0.005 (0.001)***	-0.006 (0.001)***
R^2	0.225	
Model 3: School Features		
Religious	-0.051 (0.002)***	-0.043 (0.002)***
Charter	-0.029 (0.005)***	-0.014 (0.004)***
Independent	-0.038 (0.003)***	-0.053 (0.003)***
School Type Unknown	0.018 (0.015)	-0.005 (0.013)
Home School	0.024 (0.050)	-0.035 (0.036)
Suburb	0.0002 (0.002)	-0.001 (0.001)
Town	0.024 (0.003)***	-0.001 (0.002)
Rural	0.012 (0.002)***	0.001 (0.002)
Locale Unknown	0.011 (0.006)+	-0.001 (0.005)
Title I School	0.033 (0.002)***	0.012 (0.001)***
12th Grade Enrollment (ln)	-0.011 (0.002)***	-0.006 (0.001)***
FTE Teachers (ln)	-0.004 (0.002)+	0.002 (0.002)
Student-Teacher Ratio	-0.0000 (0.0000)	-0.0000 (0.0000)
R^2	0.199	
Model 4: Application Features		
Pct. White	-0.028 (0.064)	-0.098 (0.055)+
Pct. Black/African American	-0.016 (0.064)	-0.112 (0.055)*
Pct. Asian	-0.016 (0.064)	-0.103 (0.055)+
Pct. Am. Indian/AK Native	0.082 (0.067)	-0.021 (0.058)
Pct. Nat. Hawaiian/Other PI	0.219 (0.118)+	0.051 (0.092)
Pct. Other Race	-0.166 (0.091)+	-0.107 (0.077)
Pct. Two or More Races	0.091 (0.188)	-0.032 (0.176)
Pct. Three or More Races	0.135 (0.074)+	-0.051 (0.063)
Pct. Hispanic	-0.021 (0.064)	-0.080 (0.055)
Pct. Children in Poverty	0.023 (0.009)**	0.010 (0.007)
Ed. Attainment (BA+)	-0.126 (0.006)***	-0.061 (0.006)***
Median HH Income ($ln)	0.018 (0.004)***	-0.005 (0.004)
Median HH Income (Quintile)	-0.010 (0.001)***	-0.003 (0.001)***
Pct. Unemployed	0.017 (0.036)	0.073 (0.026)**
Gini	-0.056 (0.013)***	-0.043 (0.012)***
R^2	0.200	
Model 5: Application Features		
Completed Essay	-0.566 (0.002)***	-0.500 (0.002)***
Rolled Over from Prior Year	0.194 (0.002)***	0.197 (0.002)***
R^2	0.399	0.441
State and Career-Interest Fixed Effects	Yes	Yes
N	1,185,284	1,185,284

Sources: Common App, Common Core of Data, American Community Survey.

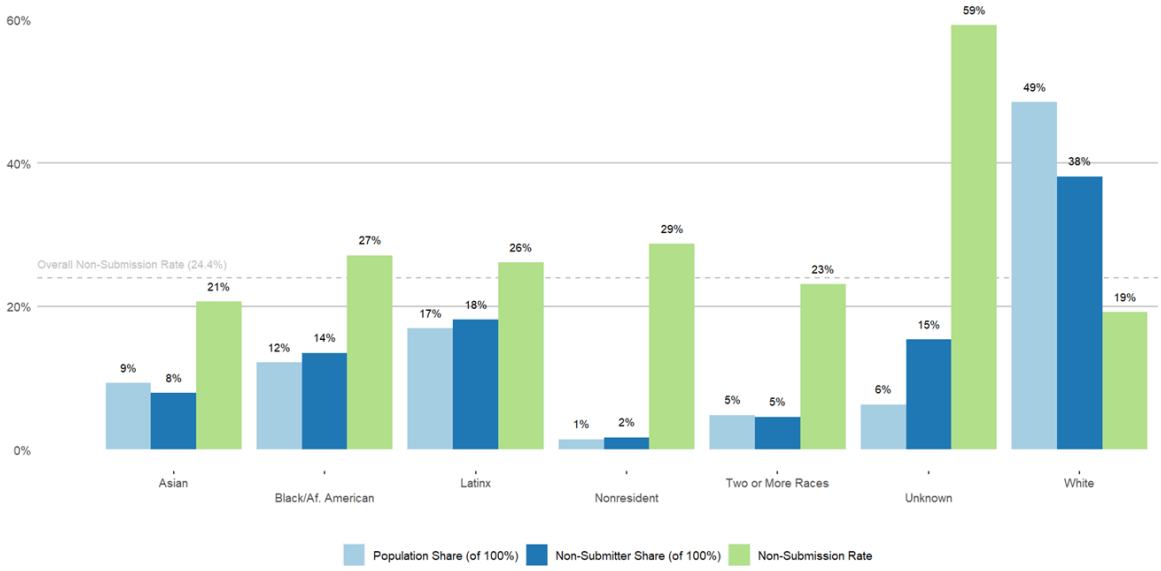
Notes: + p < .10, * p < .05, ** p < .01, *** p < .001. Table reports coefficients and robust standard errors (in parentheses) clustered at the school level. Outcome is Non-submitter status (i.e., beginning at least one college application with the Common App but ultimately not submitting any application through the Common App), compared to being an Applicant. All models include state and career-interest fixed effects and indicators for any values mean-imputed for missingness. Reference categories are: Race-White, Parent-Either, Type-Public, Locale-City.

Figure 1: Common App non-submission rate by students' reported degree aspirations.



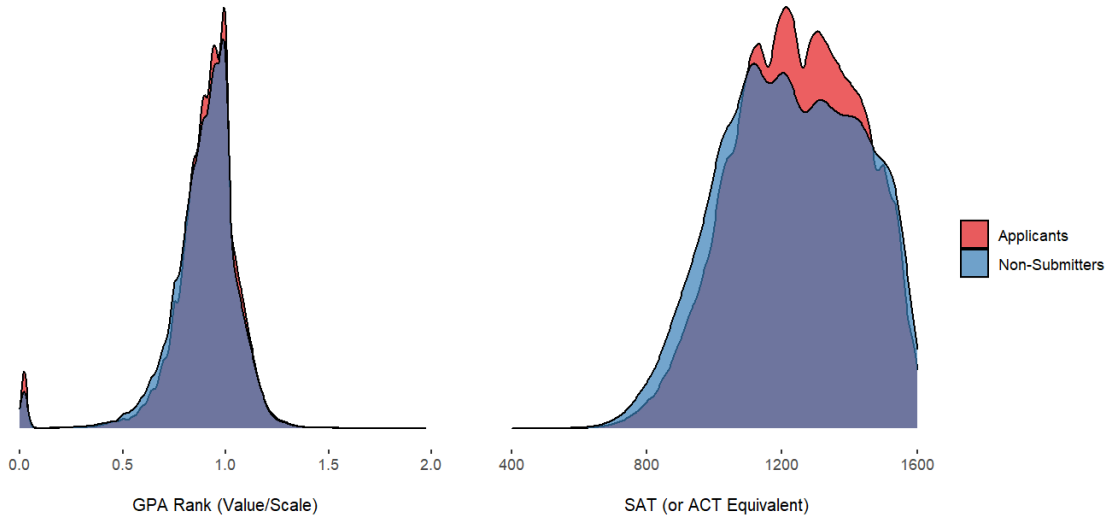
Source: Common App.
Notes: Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Non-submission rate is defined as: Among all students in degree-level category, what percent were non-submitters. Overall non-submitter rate is 24%.

Figure 2: Racial profile of Common App population and non-submitters, Non-submission rate by race.



Source: Common App.
Notes: Figure shows share of Common App overall population for each racial group, as well as each racial group's share of the non-submitter population. Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Non-submission rate is defined as: Among all students in racial group, what percent were non-submitters. Overall non-submitter rate is 24%. Numbers may not add due to rounding.

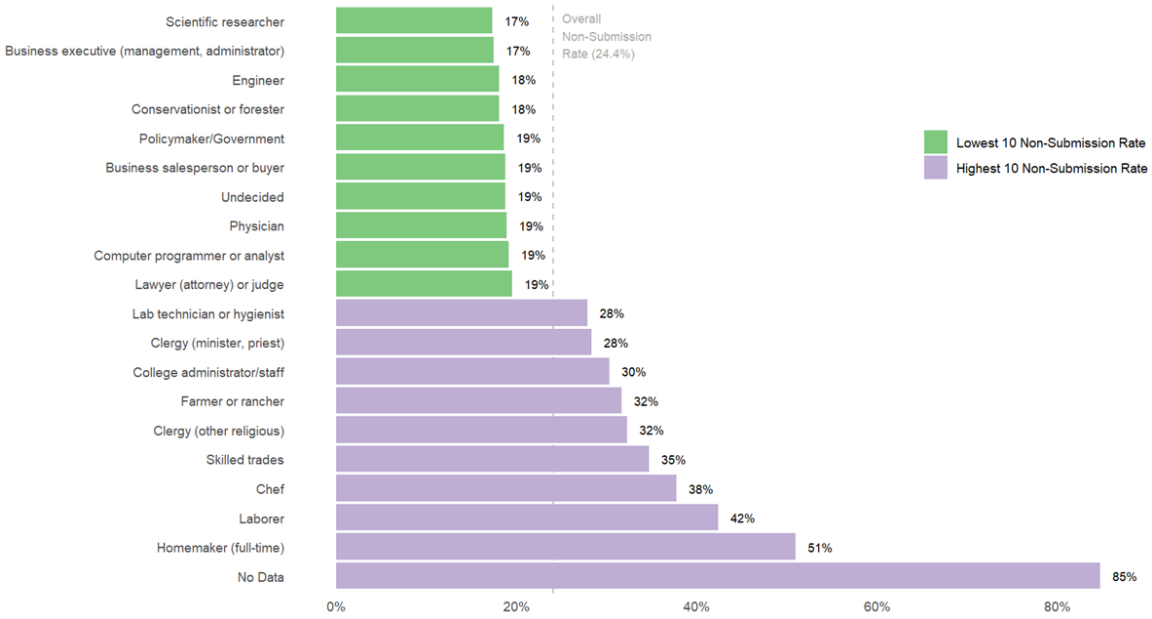
Figure 3: Academic ability of Common App submitters and non-submitters: GPA and SAT.



Source: Common App.

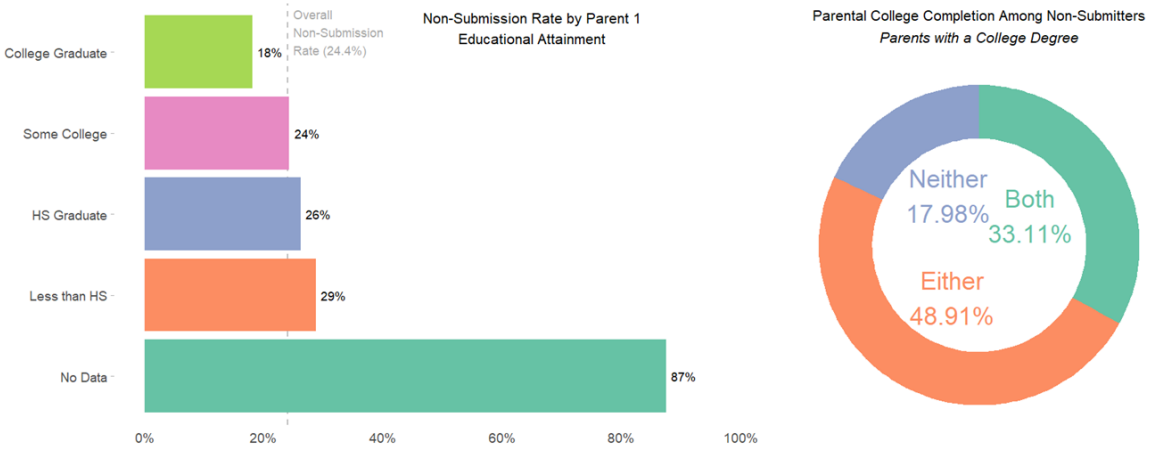
Notes: Figure shows distribution of Common App submitters (applicants) and non-submitters' GPA rank and SAT scores. Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. GPA rank is a students' cumulative GPA score divided by their GPA scale (e.g., 4.00 on 4.00 scale = 1.00), allowing for comparisons of students with different high school GPA schemes. SAT is students' combined SAT composite score. For students who reported ACT scores, ACT scores were converted using current equivalency tables.

Figure 4: Common App non-submission rate by students' reported career aspirations.



Source: Common App.
Notes: Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Non-submission rate is defined as: Among all students in a given career category, what percent were non-submitters. There are 48 distinct career categories; only top and bottom ten are shown. Overall non-submitter rate is 24%.

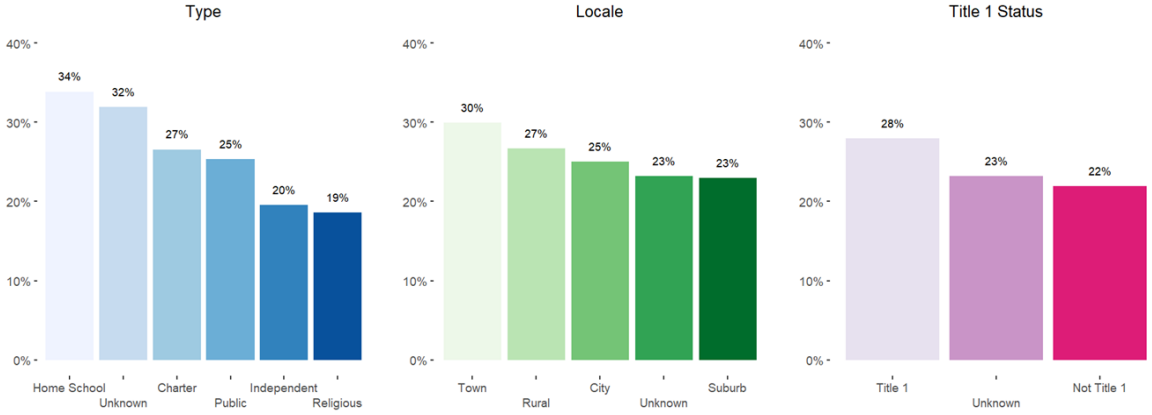
Figure 5: Common App non-submission rate by parent(s) educational attainment.



Source: Common App.

Notes: Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Left panel shows non-submission rate by parent's educational attainment. Non-submission rate is defined as: Among all students in a given parental education category, what percent were non-submitters. Reported educational attainment levels are for student's first parent. Overall non-submitter rate is 24%. Right panel shows proportion of non-submitters by parents' educational attainment: Both parents earned a college degree, either parent earned a college degree, or neither parent earned a college degree.

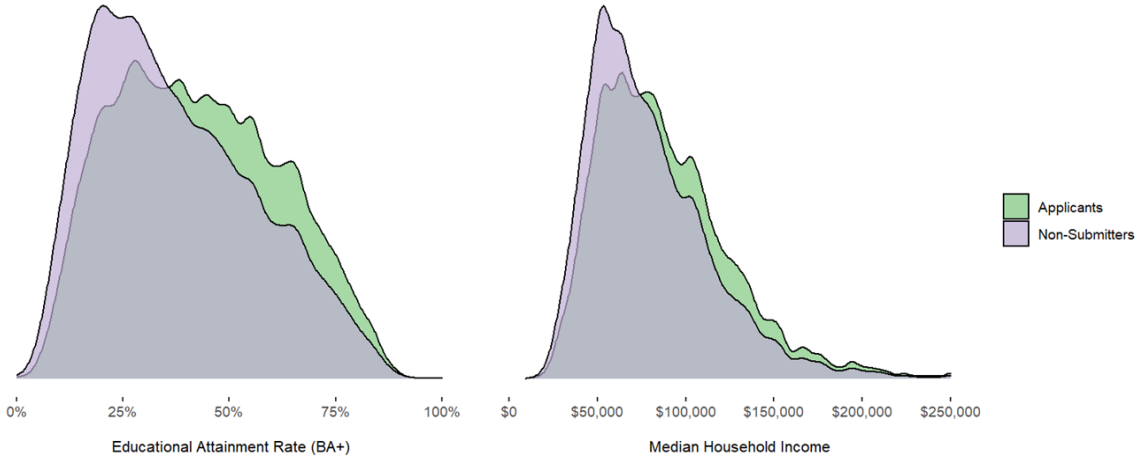
Figure 6: Common App non-submission rate by school characteristics.



Source: Common App, Common Core of Data (US ED).

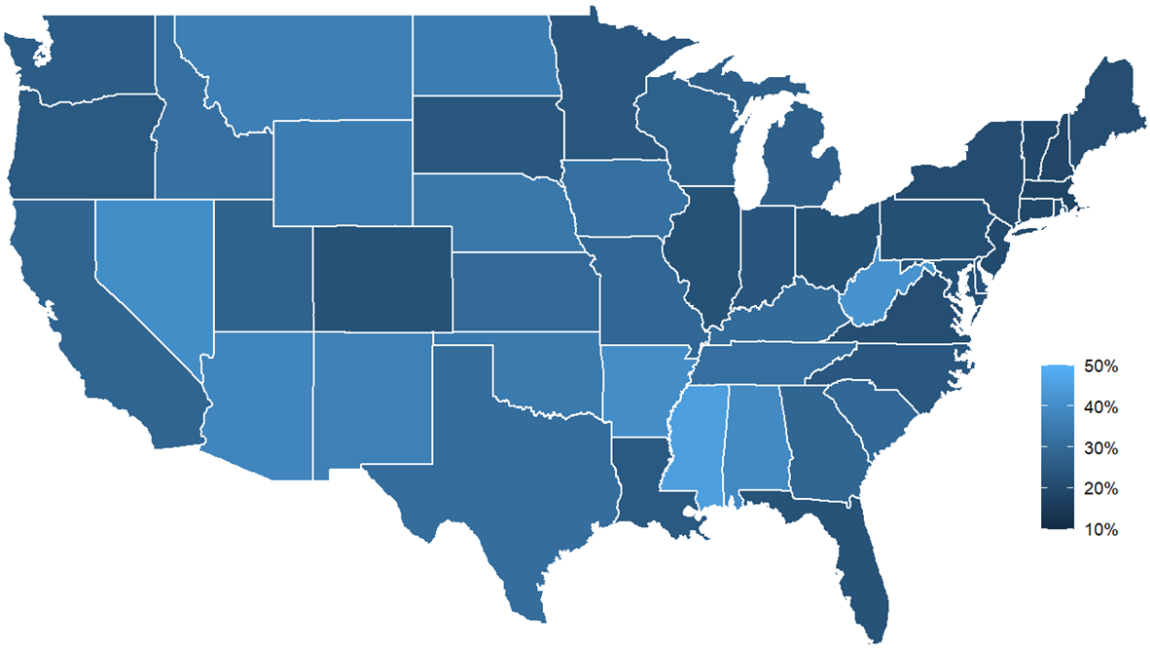
Notes: Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Non-submission rate is defined as: Among all students in a given school category, what percent were non-submitters. Overall non-submitter rate is 24%. School type, locale, and Title 1 status are merged to Common Core of Data indicators by students' high school code.

Figure 7: Community features of Common App submitters and non-submitters: Educational attainment rate and median household income.



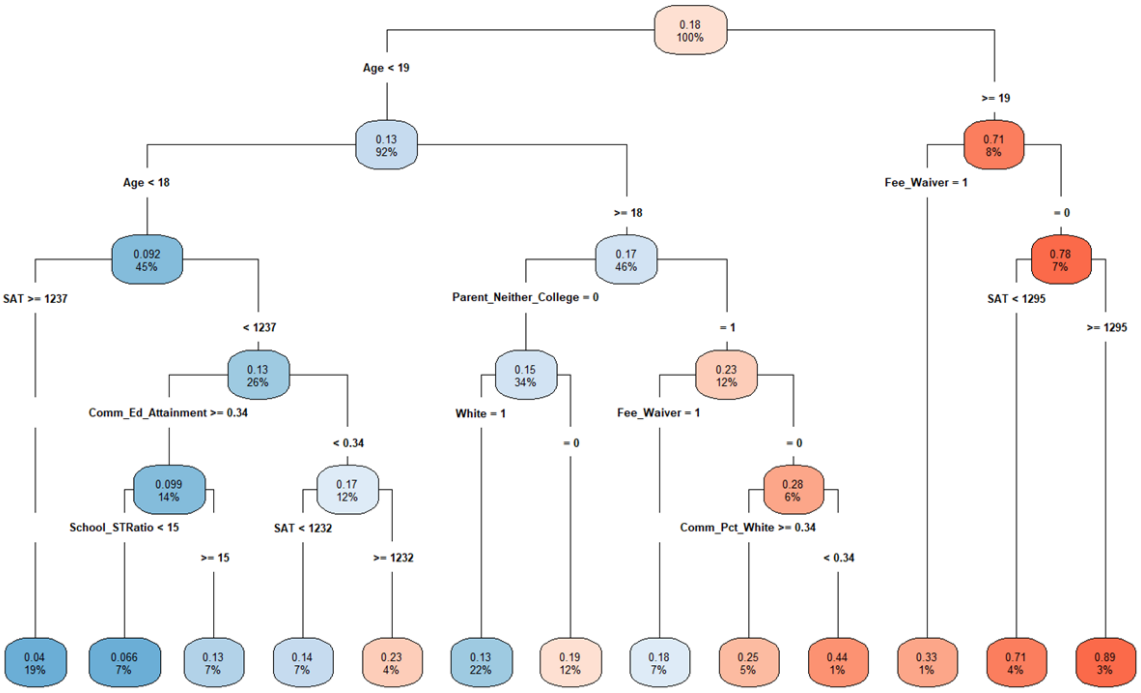
Source: Common App, American Community Survey (US Census Bureau).
Notes: Figure shows distribution of Common App submitters (applicants) and non-submitters' community educational attainment rate (i.e., percent in zip code with a Bachelor's degree or higher) and zip code level median household income. Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Community educational attainment and median household income are merged to American Community Survey indicators by students' zip code.

Figure 8: Common App non-submission rate by state.



Source: Common App.
Notes: Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Non-submission rate is defined as: Among all students in a state, what percent were non-submitters. Overall non-submitter rate is 24%.

Figure 9: Classification and regression tree (CART) identifying most important predictors of non-submitter status.



Source: Common App, Common Core of Data (US ED), American Community Survey (US Census Bureau).
Notes: Figure shows pruned classification and regression tree predicting non-submitter status compared to applicant (i.e., submitter) status among students with complete case information. Non-submitters are students who began at least one college application with the Common App but ultimately did not submit any application through the Common App. Each node identifies the incidence of non-submission and the proportion of the total population captured within the node. For example, among this subsample of applicants and non-submitters (top node), the overall non-submission rate is 18%, and 100% of the population is captured in the first node. Each stem then identifies the most important predictor following the previous node. For example, students' age was the first most important predictor of non-submission status, and age 19 was the optimal partition to separate the population. Students under age 19 (92% of the population) had a non-submission rate of 13% compared to students age 19 and over (8% of the population; non-submission rate of 71%). Tree was pruned to reduce overfitting by selecting optimal parameters to minimize cross-validated error. Blue nodes identify sub-populations predicted to be "applicants," and nodes in red are predicted to be "non-submitters," where shading for each corresponds to the conditional non-submission rate within the node.