

ADVI THE VIRTUAL ADVISOR: A MIXED METHODS INVESTIGATION OF PERCEPTION AND ENGAGEMENT AMONG STAKEHOLDERS IN TEXAS

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EXECUTIVE SUMMARY

Improving access to higher education has long been a paramount goal in the state of Texas. Recognizing the increasing importance of postsecondary education in shaping students' future roles in the workforce and contributing to the state's economy, Texans united around the goals that elevate citizens' higher education prospects, and the state responded by launching bold initiatives, known as "Closing the Gaps by 2015" and "60 x 30 TX" in the past decades, which focused on assisting low-income students in attending college, augmenting funding for critical field programs, and equipping citizens with marketable skills.

Indeed, Texas has witnessed a positive trend in college enrollment from 2015 to 2019. However, the advent of the COVID-19 pandemic brought about unprecedented challenges for college enrollment. In response to these challenges, the Texas Higher Education Coordinating Board (THECB) embarked on a mission to support students in their postsecondary education, striving to mitigate the disruptions caused by the pandemic. Amid these efforts, the THECB initiated various projects, with one standout endeavor being the Virtual Advising Project, aptly abbreviated as ADVi. In the face of a rapidly changing educational landscape, ADVi emerged as an innovative solution—a technologically advanced chatbot designed to provide information about the college application process, offer actionable steps, and address user queries.

This study represents the inaugural effort to assess the effectiveness of the ADVi program in students' postsecondary success. As a pioneer in this research endeavor, we employ a mixed-methods research design to explore overarching questions related to the extent of ADVi utilization and understanding the perspectives and experiences of various stakeholders with the ADVi tool.

Our quantitative analysis focuses on examining the demographics of ADVi users that included students with an interest in higher education upon high school graduation. Utilizing restricted-use state's longitudinal education datasets, we aim to investigate the existence of socioeconomic (SES) disparities—across gender, racial and ethnic minority status, and poverty—in ADVi participation for the three most recent cohorts graduating from public high schools in Texas between 2020 and 2022.

We also utilized qualitative methods to investigate the perspectives and experiences of ADVi student users, college advisors, and program developers/staff at THECB. Our focus is on understanding their views regarding the content, usability, and impact of ADVi on students' comprehension of the college-going process, as well as their perceptions of the tool's perceived needs and future implementation.

KEY FINDINGS

Quantitative Analysis

Our analysis of the 2020 cohort data reveals that, in general, male students were more likely to participate in ADVi than female students, with a difference of 4.7 percentage points. This gender gap persisted even after accounting for other factors that may influence participation. We also find that the gender gap varied across the STAAR achievement distribution, with the disparities being greater in the top third of the achievement distribution. Similarly, we observed a larger poverty gap in ADVi participation, with students receiving free or reduced-price lunches being more likely to participate than those who were not. Lastly, we find that students from racial and ethnic minority backgrounds, particularly those in the lower third of the achievement distribution, were more likely to participate in ADVi than their White and other race peers. However, these gaps became less significant in subsequent years.

In summary, students with lower socioeconomic status (SES) were more likely to participate in ADVi, especially those in the bottom tertile of STAAR achievement. However, these gaps were not substantial and gradually decreased over the years. Thus, we conclude that SES disparities in ADVi participation are not a pronounced issue among college-aspiring students.

Qualitative Analysis

Our conversations with Texas high school students who received messages from ADVi revealed that most of them thought the college application process was easy or that it became easier over time. We also learned that students believed ADVi was helpful because of the constant reminders and tips about the application process and the fact that they were getting help without undue effort or work. Half of the students felt their application process would have taken longer without ADVi and all of them said they would recommend ADVi to other students because it is free and useful.

Our conversations with Texas high school counselors helped us to understand their perceived roles and responsibilities with students' post-secondary success. In addition to learning what they perceive as students' struggles and successes in the college application process, they also shared their knowledge of ADVi. Most counselors did not know about ADVi, except for what they heard from students. However, at least one counselor understood the goal of ADVi and the ability to chat with a human advisor. They suggested that ADVi target younger students starting in the 9th grade and that they send students institution-specific information.

Finally, our conversations with THECB team members revealed the additional student-focused resources that they offer, the main goal of those resources, which is to ensure equitable support for students pursuing post-secondary credentials, and how they utilize user feedback. They shared the history of ADVi as a response to the need for virtual support for high school seniors during the COVID-19 pandemic.

Recommendations

One significant challenge identified in the qualitative analysis is student distrust in ADVi. Addressing this issue requires improving awareness among high school staff, advertising the program's safety, and implementing additional security and marketing measures. Emphasizing trustworthiness through multiple channels, such as the ADVi website and ApplyTexas, can help alleviate concerns about information security and phishing.

Furthermore, ADVi's "alarming" services underscore the importance of personalized and encouraging messages. There is a particular emphasis on tailoring messages to specific colleges that students have applied to, especially in relation to general college application documents and financial aid applications. By tailoring messages to specific colleges and facilitating communication between counselors and students, ADVi can better cater to students' needs, making the overall college application process more seamless and supportive.

The ADVi program has shown promise in bridging gaps in postsecondary education access, particularly for students with from lower SES backgrounds. Continuous improvement based on qualitative feedback and targeted marketing strategies is necessary to address remaining disparities. As we move forward, future studies should explore broader perspectives to ensure equitable access and success for all high school graduates, regardless of socioeconomic background. Moreover, policy discussions and initiatives should prioritize systemic changes that foster inclusivity and address the root causes of educational disparities. Through collaborative efforts, we can build a more accessible and equitable educational landscape for the benefit of all students.

INTRODUCTION

Improving access to higher education has always been a goal in Texas, a state with a highly diverse population. As postsecondary education becomes increasingly critical for students' future roles in the workforce and the state's economy, Texas faces the challenge of aligning educational opportunities with the demands of the evolving job market. Recent projections indicate that between 2021 and 2031, an average of 1,683,000 jobs will be created annually in Texas, and 63% (or 1,062,000 jobs) require some form of postsecondary education (Carnevale et al., 2023).

Recognizing the pivotal role of higher education, Texans united around the goals outlined in the previous statewide plan, "Closing the Gaps by 2015" (Texas Higher Education Coordinating Board [THECB], 2015). Over 15 years, starting in 2000, the Legislature invested in new higher education institutions by allocating \$3.3 billion for Texas grants to help low-income students attend college and increase funding for critical field programs. In addition, building upon the state's commitment to realizing the objectives of the preceding plan, the new initiative, "60x30TX" was initiated in 2015. This plan outlines four key objects: (a) at least 60 percent of Texans ages 25-34 will have a certificate or degree; (b) at least 550,000 students in 2030 will complete a certificate, associate, bachelor's, or master's from an institution of higher education in Texas; (c) all graduates from Texas public institutions of higher education will have completed programs with identified marketable skills; and (d) undergraduate student loan debt will not exceed 60 percent of first-year wages for graduates of Texas public institutions (THECB, 2015).

Texas has witnessed a positive trend in college enrollment from 2015 to 2019, with a notable 8% increase in four-year college enrollment and a significant 12% rise in two-year college enrollment during the same period (THECB, n.d.). However, the advent of the Covid-19 pandemic brought about unprecedented challenges for college enrollment. During his 2020 State of Higher Education address, Commissioner Harrison Keller of THECB stated that the COVID-19 pandemic was the most significant disruption to higher education institutions since the end of the Second World War. The impact was particularly evident in two-year colleges, which experienced a substantial 10.6% decline from Fall 2019 to Fall 2020, followed by a further 2.4% decrease by Fall 2022. Moreover, although not depicted in the figure, there was a 3.6% decrease in freshman enrollment in four-year public institutions between Fall 2019 and 2020 (THECB, n.d.). Such significant disruptions in college education prompted urgent efforts to facilitate college applications for students during the pandemic.

When the COVID-19 pandemic struck, the THECB endeavored to support students in their postsecondary education, mitigating the disruptions caused by the pandemic. As part of these efforts, the board initiated various projects, one notable undertaking being the Virtual Advising Project or ADVi. Amidst national and state-level endeavors, substantial resources and grants have been directed toward specific institutions and organizations dedicated to exploring and developing Artificial Intelligence-driven educational platforms. These platforms hold significant potential to enhance students' academic performance and address educational disparities, particularly among individuals from minority and economically disadvantaged backgrounds (Xia et al., 2022).

The ADVi initiative is designed to provide students with critical and timely information to support their postsecondary journey. The primary objective of ADVi is to assist more Texans in "accessing higher education and completing their credentials at Texas colleges and universities" (THECB, 2023). ADVi, an abbreviation for "advisor," is an artificially intelligent chatbot that communicates through text messages that deliver information about the college application process, suggest actionable steps for students, and address queries from users. The ADVi chatbot is capable of automatically responding to numerous questions posed by students. If a query exceeds the bot's capabilities, it will connect students to a team of professional college advisors at ADVi.

This study represents the inaugural effort to assess the effectiveness of the ADVi program in students' postsecondary success. In the initial phase of this research endeavor, we employ a mixed-methods research design to explore overarching questions related to the extent of ADVi utilization and understanding the perspectives and experiences of various stakeholders with the ADVi tool.

Our quantitative analysis focuses on the demographic characteristics of those who participated in the ADVi program (and among those students who have expressed an interest in higher education upon high school graduation). Utilizing restricted-use state's longitudinal education datasets, we aim to investigate the existence of socioeconomic (SES) disparities—across gender, racial and ethnic minority status, and poverty—in ADVi participation for the three most recent cohorts graduating from public high schools in Texas between 2020 and 2022.

We also utilized qualitative methods to investigate the perspectives and experiences of ADVi student users, college advisors, and program developers/staff at THECB. Our focus is on understanding their views regarding the content, usability, and impact of ADVi on students' comprehension of the college-going process, as well as their perceptions of the tool's perceived needs and future implementation.

LITERATURE REVIEW

Over recent decades, the landscape of postsecondary education has undergone significant transformations. Although historically, the traditional path for students was to enroll in a two-year or four-year college upon high school, recent trends suggest students are opting for alternative paths post high school. For example, vocational training and online education have emerged as viable alternatives, providing diverse options that cater to a broader range of students. However, despite these diversifying pathways, disparities across SES persist in enrollment patterns, degree attainment, and the types of institutions attended (e.g., Aleman et al., 2022; An, 2013; Xu et al., 2021).

Lower SES students are less likely to apply to college, and among those who do pursue postsecondary education, there is a higher likelihood of applying to 2-year colleges (Roderick et al., 2011; Smith et al., 2013). Various factors contribute to social class differences in college enrollment and aspirations, with one key factor being the possession of “social and cultural” capital. More specifically, higher SES students tend to have parents who have gone to college and who, therefore, can share their knowledge of the application and college-going experience. By contrast, low-income, first-generation, and racial/ethnic minority students and their families are more likely to have limited or inaccurate knowledge that would help them apply for college and, as a result, often must navigate the college application experience alone (Ceja, 2006; Lareau & Weininger, 2008; Perez & McDonough, 2008).

Moreover, financial barriers may disproportionately impede the success of postsecondary education for students from lower-income families. For instance, financial constraints limit access to resources such as test preparation and college application assistance, hindering admission to higher education. Similarly, low-income families are less likely to reside in communities with effective schools offering advanced coursework opportunities, impacting college success (Reardon & Bischoff, 2011; Roderick et al., 2009; Sansone, 2023). Even if admitted, students from low-income families may lack knowledge and resources, contributing to challenges in pursuing higher education. The pandemic has further complicated college enrollment, exacerbating existing barriers with economic uncertainties, shifts in learning modalities, and health and safety concerns disproportionately impacting marginalized communities.

These factors contributing to disparities in postsecondary education are evident across gender and race. According to the Pew Research Center (PRC), young women exhibit a higher likelihood of enrolling in and graduating from college compared to men, particularly among adults aged 25 to 34. This education gap is due to financial constraints and family obligations, with men facing more obstacles to college attendance and completion (Parker, 2021). The survey indicates that 42% of adults without a bachelor’s degree cite college affordability, and 36% mention family support as reasons for non-completion, while approximately 29% express a lack of interest in pursuing a four-year degree. Racial and ethnic groups also show various reasons for not completing college. Financial constraints were the primary concern for Hispanic adults, whereas White adults were more likely to cite personal choice factors. Additional findings from Simpson-Scarborough (2020) reveal that Latino students, more than any other racial/ethnic group, were likely to alter their postsecondary plans due to the COVID-19 pandemic. Nearly one-third of Latino high school seniors indicated they would not enroll in a postsecondary institution in the fall due to the pandemic. This suggests that the unequal economic impact of COVID-19 on students of color may exacerbate existing postsecondary enrollment disparities persisting for decades (Baker, 2020).

Furthermore, disparities in access are exacerbated by inadequate guidance and counseling services in schools, where students from lower SES backgrounds may not receive the necessary support to navigate the complex college application process. Robinson and Roksa (2016) examined the extent to which seeing a counselor for college information would increase the likelihood of applying for college and whether those connections vary by social class background and high school context (one that has more college-going emphasis versus one that does not). They found that seeing a counselor, even after controlling for other relevant variables, does have a small

effect on increasing college application. Oreopoulos and Ford (2019) did an analysis of school-based intervention in which the college application process was integrated into the curriculum through a series of workshops and one-on-one support. They found that the number of applications increased significantly in treatment schools. Specifically, among all graduating seniors, application rates increased by 15 percent, and college-going rates increased by 5 percent. Importantly, most of this increase came from applications and enrollment to two-year colleges (a 10.4 percentage point increase compared to only a 3.6 percentage point increase in four-year program applications). Thus, the lack of guidance can result in missed opportunities for higher education, perpetuating social and economic inequalities.

ADVI: BACKGROUND

ARTIFICIAL INTELLIGENCE

The advent of Artificial Intelligence (AI) has ushered in a new era, transforming the landscape of various industries, and education stands at the forefront of this technological revolution. AI has rapidly progressed, introducing innovative applications reshaping the way students learn and teach. Notably, AI-driven chatbots and virtual assistants are now essential elements in numerous educational institutions, delivering immediate support and guidance to students (e.g., Chiu et al., 2023).

We found one example in the literature where an AI chatbot was used to help improved college enrollment and specifically address the issue of “summer melt” in college enrollment patterns. In a study by Page and Gehlbach (2017) at Georgia State University, an AI chatbot named “Pounce” was designed to encourage students to complete all enrollment requirements after being accepted. “Summer melt” refers to the phenomenon where a percentage of students who intend to enroll in college fail to do so due to challenges in completing necessary tasks before enrollment, such as providing immunization documents or completing FAFSA forms. This issue particularly affects lower-income and first-generation students, impacting roughly 10-20% of college-intending students each year.

The AI chatbot system sent text-based outreach messages throughout the summer of 2016 to students who had applied and been admitted to Georgia State University, including those who had committed and those still considering other options. The results suggested that GSU-committed students who received messages from the chatbot were 3.3% more likely to enroll compared to the control group. This resulted in a significant 21% reduction in the occurrence of “summer melt,” demonstrating the potential impact of AI chatbot systems in addressing enrollment challenges and increasing college enrollment rates.

ADVI: THE VIRTUAL ADVISING PROJECT

THECB initiated the Virtual Advising Project (ADVi) to aid Texas students in their postsecondary journeys, aiming to provide crucial information for accessing higher education and obtaining credentials at Texas colleges and universities. The project aligns with the strategic plan, “Building a Talent Strong Texas,” offering a critical and cost-effective means to deliver timely information essential for students to achieve key college and career milestones.

Originally a collaboration with Advise Texas and The University of Texas at Austin in 2018, the project initially focused on high school seniors and adult learners in specific Texas regions. Fully integrated into THECB in 2020, it has expanded statewide, serving over 850,000 Texans seeking higher education opportunities. ADVi, an AI-driven chatbot, facilitates on-demand support via text messages, engaging high school seniors through ApplyTexas.

ADVi provides students the ability to inquire about higher education 24/7, with backup support from virtual advisors for additional needs. In specific, ADVi sends text messages about college-going information, common questions, and action steps, offering information and tips for applications, planning, and financial aid. It can automatically answer many questions texted by students and connect them with human advisors when questions cannot be addressed by the bot.

QUANTITATIVE ANALYSIS DATA AND METHODS

DATA

The quantitative part of this study utilizes restricted-use, student-level administrative records, obtained from the Texas Education Research Center (ERC) at the University of Houston. The ERC maintains longitudinal student- and school-level data from pre-kindergarten to 12 grade, along with postsecondary education records and workforce information, provided by the Texas Education Agency (TEA), Texas Higher Education Coordinating Board (THECB), and Texas Workforce Commission (TWC), respectively. Specifically, TEA data contribute a rich set of educational records for students who attended public high schools, and THECB provides an identifier that flags students who opted for ADVi among those expressing their intent for higher education by initiating college applications through the ApplyTexas website.

The analysis includes high school graduates from public schools in Texas between 2020 and 2022, specifically those initiating their college applications through the ApplyTexas website (hereafter referred to as college-aspiring students).¹ In addition, as our explanatory variables encompass students' educational progress in high school, we narrow our study population to those who entered public high school in the 9th grade.

The data show that the analysis examines 246,243 college-aspiring students from 2020 to 2022, with those choosing ADVi constituting 75.3% of the overall study population. Breaking down these figures by year, the 2020 cohort comprises 55,113 aspiring students, of which 60.3% participated in ADVi. The 2021 cohort, consisting of 122,131 aspiring students, 78.3% opted for ADVi, and the 2022 cohort encompasses 68,999 aspiring students, with 82% choosing the program. Two notable trends are observed from this data: (a) there was a substantial surge in the number of college-aspiring students, doubling from 2020 to 2021 but decreasing by 43.4% from 2021 to 2022; and (b) the ADVi program's adoption rates increased rapidly by 22 percentage points by 2022. These trends suggest significant shifts in personal factors (such as academic performance, college aspirations, motivation, financial capacity, and doubts about returning to higher education) and contextual factors (such as labor market conditions, the surge of the COVID-19 virus, and the college's remote education environment) all potentially influencing students' decisions over the years. Due to the high heterogeneity in trends and confounding characteristics across years, we conduct separate analyses for each year's data to explore the dynamics in ADVi participation with respect to student and contextual characteristics.

VARIABLES

The dependent variable is participation in ADVi, denoted as 1 if a student opted for ADVi and 0 otherwise. Key independent variables comprise three indicators representing lower socioeconomic status, including gender, racial and ethnic minority background, and belonging to a low-income family. Racial and ethnic minority background consists of non-Hispanic African American or Hispanic students, and low-income family status is measured by whether a student receives free- or reduced-price lunch (FRPL) or the family is eligible for public assistance (hereafter referred to simply as FRPL). We construct the FRPL variable based on their senior year to

¹ Our analysis of the TEA data only includes public high school students enrolled in Texas. Therefore, individuals who graduated from private high schools or attended high schools outside the state are excluded from our study. Additionally, students who transferred from private schools or schools outside the state during high school are also excluded as the independent variables in our study are generated from students' high school records from 9th to 12th grades. It's important to note that our study findings are applicable only to the sampled individuals and not representative of all students in Texas interested in pursuing higher education. Our analysis of the TEA data only includes public high school students enrolled in Texas. Therefore, individuals who graduated from private high schools or attended high schools outside the state are excluded from our study. Additionally, students who transferred from private schools or schools outside the state during high school are also excluded as the independent variables in our study are generated from students' high school records from 9th to 12th grades. Furthermore, high school graduates who have an invalid social security number (SSN) are excluded. Hence, it's important to note that our study findings are applicable only to the sampled individuals and not representative of all students in Texas interested in pursuing higher education.

closely capture their effects at the time of higher education application.

It may be controversial to generalize broadly about males in higher education being considered as lower SES since the gender gap is notably intricate and varies across academic disciplines and occupational choices. For instance, Cimpian et al. (2020) concluded that significant gender gaps exist in majoring in physics, engineering, and computer science (PECS), indicating that males tend to major in PECS at higher rates than women across all science, technology, engineering, and mathematics (STEM) achievement distributions. Some studies suggest that gender disparities in STEM majors are not uniform across all disciplines (e.g., Ceci et al., 2014; Cheryan et al., 2017). On the other hand, multiple survey datasets consistently reveal a significant shift, indicating that women currently outnumber men in college enrollment. As discussed earlier in this report, the PRC analysis findings supported this trend. Furthermore, a trend analysis conducted by the Federal Reserve Bank of St. Louis highlighted a shift from the 1970s, when men dominated college enrollment (Leukhina & Smaldone, 2022). By 1980, gender parity was attained in four-year colleges, and women exceeded men in two-year institutions, comprising 55% of enrollment. The female-to-male ratio in two-year colleges peaked at 1.4 in 1995 and stabilized, while in four-year colleges, it steadily increased, reaching 1.3 in the fall of 2019. According to these recent data illustrating a gender gap in college enrollment, we go beyond the discussion of gender as an SES factor and incorporate it as a key independent variable. Analyzing the gender gap is critical for designing effective outreach strategies for the ADVi program, ensuring broader participation, and influencing the program's future trajectory toward gender equity.

Academic achievement for students is represented by a composite scale derived from the State of Texas Assessments of Academic Readiness (STAAR) performance, encompassing five tests taken during high school. This scale is constructed using standardized test values of Algebra I, Biology, English I and II, and U.S. history. We calculate the mean of these test performance measures to create a composite STAAR achievement variable with strong reliability. Cronbach's alpha values within the range of 0.7 to 0.95 are considered acceptable, with 0.80 and above being better and 0.90 and above deemed optimal (Devellis, 2003; Nunnally, 1994). The estimated Cronbach's alpha for the 2020, 2021, and 2022 cohorts are 0.92, 0.84, and 0.79, respectively. As our study focuses specifically on college-aspiring students, we express their standardized test scores in percentile form, ordering them from the lowest to highest within their cohort.

In addition to the variables mentioned above, we include five sets of control variables in our analysis: student characteristics include student age at high school graduation, receipt of special education, receipt of limited English proficiency (LEP) designation, bilingual status, and participation in gifted and talented programs during high school. We also include high school attendance rates, at-risk of high school dropout designation, and involvement in disciplinary actions, such as expulsion and suspension reports. Coursework encompasses course credits earned in high school, it includes credits from Advanced Placement (AP) and International Baccalaureate (IB), Dual Credit (DC), Career and Technical Education (CTE), DC-CTE, and advanced courses (as defined by the TEA). Additionally, we consider course credits from English, mathematics, science, social studies, and foreign language courses, excluding the aforementioned categories. The aspiration and intention category involves identifiers for students who exclusively applied to four-year colleges and those who applied to both two-year and four-year colleges, with the reference category being exclusive applications to two-year colleges. High school attributes include a binary indicator for charter schools, high school student size, student-teacher ratio, percentage of racial and ethnic minority students, percentage of FRPL students, years of teachers' teaching experience, teachers' educational attainment levels, and teachers' salaries. Lastly, high school dummy variables are included in our prediction model to account for other high school effects not captured by those high school variables on students' decisions regarding ADVi participation.

A detailed description of these variables is listed in Appendix A.1. In addition, the descriptive statistics and corresponding two-tailed t-tests of each explanatory variable are reported in Appendix A.2 and A.3, respectively.

METHOD

The SES gaps in ADVi are estimated empirically using logistic regressions, wherein participation in ADVi is predicted based on (a) selected SES characteristics, (b) student STAAR achievement, (c) student characteristics and coursework, (d) aspiration and intention, and (e) high school attributes and dummy variables. There are five models employed to calculate average marginal effects:

Model 1: Predicting ADVi participation as a function of the variable set (a);

Model 2: Predicting ADVi participation as a function of the variable set (a) throughout the achievement distribution (b);

Model 3: Predicting ADVi participation as a function of the variable set (a) and (c), along with the interaction of variable set (a) with (b) throughout the achievement distribution (b);

Model 4: Including types of higher education intentions, the variable set (d), into Model 3;

Model 5: Comprehensive adjustment for all variables, incorporating high school attributes and dummies, the set (e), into Model 4.

In some of our models, a considerable number of covariates are included, raising concerns about the correlation among these variables and their impact on standard errors and variance inflation factors (VIFs). Commonly used tools for examining multicollinearity diagnostics include pairwise correlation coefficients between predictors and VIF coefficients. While some researchers employ a correlation coefficient cutoff of 0.5 and above (Donath et al., 2012), the more typical threshold is 0.80 (Berry, 1985).

An examination of the correlation matrix for all variables (see Appendix B) indicates that the selected SES factors are not highly correlated with any variables, according to these guidelines. The highest correlation observed in the table was an absolute value of 0.53 between student FRPL status and the proportion of FRPL at the high school level across the cohorts. However, the majority of correlation coefficients were low or extremely low.

To further assess multicollinearity, we estimated VIFs. While a VIF value greater than 5 or 10 is often suggested for detecting multicollinearity, there is no universally agreed-upon cut-off value to identify it. Given that our models include interactions with achievement, which can inflate VIFs without addressing the real concerns related to factors, we estimated models without interactions. This allowed us to discern the underlying relationships of the key components. The average VIFs (without interaction terms and high school dummies) for cohorts 2020, 2021, and 2022 were 1.91, 1.89, and 1.76, respectively. That is, even with a large number of variables, no variable exhibited a worrisome VIF.

FINDINGS

Gender gaps

Among the students who graduated in 2020 with aspirations for college, those who participated in ADVi had a higher proportion of male students (49.6%) compared to those who did not participate (44.3%). This is equivalent to stating that the ADVi group has a lower proportion of females compared to the group of students who did not opt for ADVi. This gap was statistically significant and moderately widened to 6.5% for the 2022 high school graduates (see Appendix A.2 and A.3). Table 1 presents the average marginal effects of SES gaps, expressed in percentage points. We outline five models based on different sets of covariates, predicting students' participation in ADVi.

For the 2020 cohort, specifically in column (1) of Table 1, which represents a simplified version of the model with only key SES factors, the results indicate that males exhibited higher ADVi participation rates by an average of 4.7 percentage points compared to females, who had a participation rate of 58.1%. Notably, the inclusion of additional covariates does not significantly affect the gender gap estimates, in which the effect estimate only marginally decreases by 0.05 percentage points in Model 5.

Additionally, when ranked from the lowest to the highest achievement in STAAR, the participation likelihood in ADVi follows a concave function. That is, in the lower part of the STAAR achievement distribution, the likelihood of students' participation in ADVi increased, but it decreased as their STAAR achievement passed a certain point. Females at or below the 1st percentile participated in ADVi at a comparable rate to males at the 80th percentile of STAAR achievement distribution, as illustrated in Figure 2. Across all levels of STAAR achievement, males consistently exhibited higher participation rates in ADVi compared to females.

The findings also indicate that the absolute gender disparity was roughly twice as large between the top and bottom thirds of the STAAR achievement distribution. Specifically, there was a 5.4 percentage point gap among students in the top third, relative to a 2.6 percentage point difference in the bottom third (see the fifth row in Table 2). However, it is also noteworthy that, upon adjusting for all covariates, the statistical significance of gender gap in the bottom and middle thirds of the distribution disappeared, suggesting that the gender gap was more pronounced among the highest-performing students. Additionally, while the size of these gaps is worth noting in understanding the extent of inequality across the distribution, percentage point gaps do not factor in base rates, and thus, the gap represented in ratios is critical when examining representation. Specifically, in the bottom, middle, and top thirds of the achievement distribution, male students were predicted to have 4%, 8%, and 11% higher ADVi participation rates than females, respectively, where female participation rates decreased from 68% to 46%.

We observe similar trends in both the 2021 and 2022 cohorts (See Table 3). Among college aspiring students, males exhibited a higher likelihood of participating in ADVi by approximately 4 percentage points than females, of whom around 8 in 10 opted for ADVi. We also find a concave pattern across the STAAR achievement distribution; however, the curvature of the prediction curve appears to be less elastic than in the 2020 cohort (refer to Figures 2 and 3). Specifically, the earlier cohort curve shows a relatively smaller gender gap at the lower end of the distribution and it gradually widens as the achievement value increases. In contrast, the subsequent cohorts indicate an initial gap being remained consistent across the achievement distribution. The 2021 cohort also revealed a larger gender gap in the top third of the achievement distribution that is approximately 80% larger than the gap in the bottom third, with a gap of 5.1 percentage points compared to 3.2 percentage points in the bottom third (all p-values < 0.01; refer to Appendix C). These gender gaps remain consistent across various models. On the other hand, while similar patterns appeared for the 2022 cohort, the magnitude of gender gaps across the achievement distribution is relatively smaller.

In summary, there existed gender gaps, with males consistently revealing higher ADVi participation rates than females, but this gap diminished slightly over the cohorts. We also identify varying gender gaps across tertiles of students' STAAR achievement, with gaps in the top third generally exceeding those in the bottom third. However, the magnitudes of these gaps across the achievement distribution also reduced gradually over time.

Poverty Gaps

Of the students who graduated in 2020 with aspirations for college, the proportion of FRPL students was higher among those who engaged in ADVi (61.8%) compared to those who did not (44.9%). This gap moderately narrowed to 4.7% for the 2022 high school graduates (see Appendix A.2).

For the 2020 cohort, the results in column (1) of Table 1 indicate that FRPL students revealed higher ADVi participation rates by an average of 9.3 percentage points compared to non-FRPL students, who had a participation rate of 55.3%. Notably, by accounting for a range of student and school characteristics, our models explain nearly half of the poverty gap, resulting in a decreased effect size of 4.7 in Model 5. In addition, as previously discussed, the likelihood of participation in ADVi follows a concave function across the STAAR achievement distribution. Non-FRPL students at or below the 1st percentile participated in ADVi at a comparable rate to FRPL at the 82th percentile of STAAR achievement, as illustrated in Figure 4. Across all levels of STAAR achievement, FRPL students consistently exhibited higher participation rates in ADVi compared to non-FRPL students.

The findings also reveal that the poverty disparity increased approximately 2.6 to 4 times from the lowest to highest thirds of the STAAR achievement distribution across the models. However, the statistical significance of the poverty gap disappears for students in the bottom and top thirds of the achievement distribution. While students in the middle third of achievement, although it is weakly significant at a 10 percent level, had a 4.7 percentage point higher likelihood of ADVi participation than their counterparts (refer to Table 2).

The poverty gap was significantly reduced or even eliminated for later cohorts. According to Column (1) of Table 2, FRPL students had a greater likelihood of participating in ADVi by about 3.2 percentage points as compared to their non-FRPL peers for the 2021 cohort. However, this gap was reduced to 1.1 percentage points once various student and school characteristics were taken into account. Similarly, the coefficient on the poverty gap for the 2022 cohort also lost significance after controlling for all covariates. Additionally, a poverty gap was found in the lower third of the STAAR achievement distribution, but it was either weakly significant or negligible in size.

In summary, the 2020 cohort exhibited a relatively larger poverty gap in ADVi participation, with FRPL students demonstrating higher participation rates than non-FRPL students. However, this gap became much smaller or almost disappeared in the following years. Additionally, we found different poverty gaps among students with different levels of STAAR achievement, but they were either not significant or very small. Overall, the gap in ADVi participation between low-income and non-low-income students was more noticeable when ADVi was first introduced, but it decreased and became insignificant in the following years.

Racial and Ethnic Minority Gaps

Among 2020 college aspiring students, those engaging in ADVi had a higher percentage of African American and Hispanic students compared to their non-participating counterparts. Over the years, this trend persisted with a slightly reduced gap for Hispanic students. However, there was no discernible difference in the rate of African American students between the ADVi and non-ADVi groups for the 2021 cohort, and the non-ADVi group even showed a higher proportion of African American students for the 2022 cohort (refer to Appendix A.2 and A.3).

In the 2020 cohort (see column (1) of Table 1), findings revealed that African American and Hispanic students

had higher ADVi participation rates by an average of 8 and 10.7 percentage points, respectively, compared to the reference group students (Whites and other races). Notably, although not explicitly stated for brevity, Asians were found to be 2.6 percentage points less likely to engage in ADVi compared to the reference group. Furthermore, when factoring in all covariates, our models explained almost half of the racial and ethnic disparities (refer to column (5) of Table 1).

Additionally, Hispanic and African American students exhibited the highest ADVi participation rates, followed by Asians, and Whites (and other races), all at or below the 1st percentile of STAAR achievement (see Figure 5). However, the decrease in rates as achievement values increased was more pronounced for minority students, especially with higher decrease rates observed among African American students. Specifically, on average, at the 90th percentile, ADVi participation rates for African American students were lower than Asians and equal to Whites and other races. We also find that the racial and ethnic disparity in the lowest third tended to be larger than those in the middle and highest thirds of the STAAR achievement distribution. As more factors were considered, the significant difference in ADVi program participation rate for minority students disappeared for those in the middle and highest thirds of the distribution. This implies that race and ethnic gaps were only evident in the bottom third of the achievement distribution, after adjusting for an extensive set of controls.

Similar patterns were evident in the 2021 cohort when compared to the 2020 cohort (refer to Table 3). Specifically, the results of Model 5 in Table 2 indicated that, on average, African American and Hispanic students exhibited higher participation rates in ADVi by 2.5 and 5.8 percentage points, respectively, compared to Whites and other races. Additionally, by adjusting for a range of student and school characteristics, the racial and ethnic gaps decreased by nearly half, as opposed to the estimates in Model 1. Additionally, unlike the 2020 cohort, Hispanic and Asian students displayed the highest ADVi participation rates, followed by African Americans and Whites and other races, all falling at or below the 1st percentile of STAAR achievement (refer to Figure 6). The decline in participation rates with increasing achievement values was particularly pronounced for Asian students. Specifically, on average, at the 90th percentile, ADVi participation rates for Asian students were the lowest among all racial groups.

The findings further revealed that racial and ethnic disparity in the lowest third tended to be smaller than those in the middle and highest thirds of the STAAR achievement distribution. However, with the inclusion of more covariates in the estimation, the significant difference in the rate of ADVi participation for Hispanic students disappeared for those in the highest third of the distribution. Similarly, for African American students, the gap either disappeared or became negligible for those placed in the middle and highest thirds of the distribution.

We observed a similar trend in the 2022 cohort, where Hispanic students exhibited higher ADVi participation rates than the reference group students. However, after adjusting for all covariates, no significant difference in the participation gap was found for African American students. Furthermore, the results suggested a lack of a meaningful race gap among African American students across the three tertiles of the STAAR achievement distribution. In contrast, Hispanic students in the bottom and middle thirds of the achievement distribution were shown to be more likely to participate in ADVi by approximately 5 percentage points compared to their counterparts. This implies that race and ethnic gaps are more pronounced for Hispanic students, particularly in the bottom and middle thirds of the achievement distribution, even after accounting for an extensive set of controls.

Our analysis also revealed that African American students displayed higher ADVi participation rates by 6.2 percentage points compared to the reference group in 2020. However, this race gap decreased to 2.5 for the 2021 cohort and eventually disappeared for the 2022 cohort. Similarly, we observed that African American students in the bottom third of the distribution were more likely to participate in the program, but the size of the gap decreased over cohorts from 7.1 in 2022 to 5.2 in 2021, with no significant difference found for the 2022 cohort.

Moreover, no significant difference was found for students in the other two tertiles of the distribution.

Taking all these findings into account, students with racial and ethnic minority backgrounds, especially those placed in the bottom third of the achievement distribution, had a higher likelihood of ADVi participation. In contrast, no meaningful difference was found for other students at higher academic achievement levels.

LIMITATIONS

The study's quantitative analysis limits the study sample to public high school graduates who expressed an intent for higher education. In addition, among these college aspiring students, those exclusively applying to out-of-state institutions are excluded. Previous research has consistently identified systematic differences in attributes between those who pursue higher education upon high school graduation and those who do not. These disparities in characteristics may lead to distinct behavioral decisions regarding ADVi participation. Thus, our findings are valid and generalizable within the scope of college-aspiring students rather than applicable to all high school graduates

Given our focus on college-aspiring students and their STAAR test scores, it's important to note that the ranking of academic performance doesn't mirror the distribution of all high school graduates. For instance, a student in the 1st percentile of STAAR achievement within our sample may not correspond to the 1st percentile in the entire distribution of high school graduates. This discrepancy arises because higher-performing students pursuing college may rank lower in our study sample but hold a higher percentile in the broader distribution of STAAR achievement among all high school graduates.

It is important to note that the ranking of students' academic performance can vary depending on the year they took the test. Even if two students occupy the same percentile in the achievement distribution, their academic performance may differ due to differences in the composition of students in the study. For instance, the number of college-aspiring students doubled from 2020 to 2021 but decreased by 43.4% from 2021 to 2022. Therefore, the academic performance of college-aspiring students in 2020 differs from that of those in 2021, despite occupying the same percentile in the achievement distribution.

Similarly, the ranking of students' academic performance can vary across the cohorts. Despite occupying the same percentile in the achievement distribution, the academic performance of college-aspiring students in 2020 varies from that of those in 2021 due to a different composition of students between these two years. As previously mentioned, there was a significant increase in the number of college-aspiring students, doubling from 2020 to 2021 but decreasing by 43.4% from 2021 to 2022.

Assuming that the number of graduates from public high schools has remained approximately the same between 2020 and 2021, the fact that twice the number of graduates have applied to postsecondary education suggests that there may be more students in each percentile of the achievement distribution. This could potentially widen the range of academic performance within a percentile for the 2021 cohort compared to the 2020 cohort. Consequently, it would be overly strong to assume that students' academic performance within a percentile is identical across the cohorts. Recognizing this challenge, the authors opted to conduct a separate analysis for each cohort. These limitations highlight the need for caution when interpreting findings across cohorts. Although the number of college aspiring students was more comparable between the first and third cohorts than the 2021 cohort, our overall findings reveal distinct patterns across achievement distribution and cohorts. Therefore, this limitation does not alter the main findings of this study.

SUMMARY OF FINDINGS AND TRANSITION TO QUALITATIVE ANALYSIS

Our analysis of the 2020 cohort data reveals that, in general, male students were more likely to participate in ADVi than female students, with a difference of 4.7 percentage points. This gender gap persisted even after accounting for other factors that may influence participation. We also found that the gender gap varied across the STAAR achievement distribution, with the disparities being greater in the top third of the achievement distribution. Similarly, we observed a larger poverty gap in ADVi participation, with students receiving free or reduced-price lunches being more likely to participate than those who were not. Lastly, we found that students from racial and ethnic minority backgrounds, particularly those in the lower third of the achievement distribution, were more likely to participate in ADVi than their White and other race peers. However, these gaps became less significant in subsequent years.

In summary, students with lower socioeconomic status were more likely to participate in ADVi, especially those in the bottom tertile of STAAR achievement. However, these gaps were not substantial (less than 7 percentage points across all models and cohorts) and gradually decreased over the years. Thus, we conclude that SES disparities in ADVi participation are not a pronounced issue among college-aspiring students.

We now move on to the qualitative analysis to gain insights into the perspectives and experiences of ADVi student users, college advisors, and program developers/staff at THECB. Our main objective is to understand their opinions related to the content, usability, and impact of ADVi on students' understanding of the college-going process. We also aim to explore their perceptions of the tool's requirements and future implementation.

QUALITATIVE ANALYSIS

RESEARCH DESIGN

Students

We held 60-minute, one-on-one virtual interviews with 11 high school seniors across Texas. (See Appendix D for the full interview protocol.) In fall 2022, the THECB team sent a text message through ADVi to all opted-in students enrolled in Texas high schools, explaining the interview opportunity and asking for permission to share their contact information with the authors. We then reached out to a subset of the 152 students who consented via text, making sure to include students from different community types (urban, suburban, and rural). All participating students received a \$10 e-gift card from the vendor of their choice. Interviews were conducted between December 2022 and February 2023.

Six interviewees were from suburban areas (Donna, Houston, and Dallas-Fort Worth), four were from urban areas (El Paso and Austin), and one was from a rural area (Paris). Students were generally high achieving as gauged by their self-reports; all mentioned earning mostly A's, some mentioned a few B's, and one mentioned a C. Nine students planned to enroll in college in fall 2023, one student planned to work first and enroll in spring 2024, and one student planned to enroll in a trade program. This student did apply to college, which is how they opted into ADVi, but the major factor in the decision not to go to college was not being financially stable enough.

Counselor Focus Groups

We led two virtual interviews and one virtual focus group with counselors from three districts in Texas in February 2023 (See Appendix D.2 for the full interview protocol.) In fall 2022, we began emailing counseling staff in the districts that corresponded with the student data reports from THECB and Mainstay. Three districts responded to the invitation. Two districts were in urban areas, and one was in a rural area. For two conversations, only one person attended each so those are considered interviews, and for the third, four people attended, making it a focus group.

THECB

We held a single virtual focus group with eight staff members at the Texas Higher Education Coordinating Board around February 2023 (See Appendix D.3 for the full interview protocol.)

FINDINGS FROM STUDENTS

Perceptions of the College Application Process

We asked students how the college application process has been for them so far. Seven students said the process was simple or relatively easy. Four students said the process became easier when they were able to ask their counselors or college prep teachers for help, two students said the process got easier after their first one or two applications were set up in ApplyTexas, and one student said things got easier after completing the tedious tasks of submitting a lot of things in the beginning. Another student said, "In principle, it was simple, but in practice, it's a bit more complicated." Complicated tasks included writing multiple essays, remembering all the portal logins, and having to check different sites for admissions decisions.

Utilization and Engagement with ADVi

Most students viewed ADVi as a useful tool. Seven students said they use ADVi for reminders and tips about the application process and college. One student said the reminders took some time to get used to, but they helped a lot and made life easier. Two students said they use ADVi to answer any questions. One student said, “I was able to get the help that I needed without feeling bothersome to a real person or like waiting for a reply back, so that was what kept me engaged.” Another student uses ADVi because “you can never have too many resources” and appreciates the help with scholarships, and one student uses ADVi because it’s free, easy-to-use, and useful.

ADVi’s Helpfulness

Most students reported that ADVi’s reminders were very helpful. Seven students acted on reminders from ADVi, including reminders about financial aid and scholarships and submitting application materials. Students appreciated the frequency and the modality. As for critiques, one student said ADVi reminded them about things they had already done like writing essays and getting recommendation letters. Another student said some reminders were lengthy, which made it a lot to process. We asked the students what recommendations they could share to make ADVi more helpful: reminding students to check their emails, offering information about specific schools, personalizing messages to feel like less of a mailing list, and incorporating a more formal introduction to ADVi.

Favorite Things About ADVi

We asked students to share what they liked most about ADVi. They shared that they liked the texts with number options so students can pick the topic they want to know more about and that ADVi responds to students “so you kind of feel like you’re not being ignored or left out.” Of course, students appreciated the reminders. One student said, “With all the things I have: sports, track events, powerlifting, and school stuff, and homework...a thing telling you that, ‘You have to do this,’ it helps me a lot.” Other students liked that ADVi isn’t biased, it gives the facts straight from the colleges to students, which brought more closure. Other favorite things were the friendly tone of the messages, that it’s easy to contact someone, and that it doesn’t bombard you with a lot of messages like other systems.

Least Favorite Things About ADVi

We also asked students to share what they liked least about ADVi. One student did not like the influx of text messages. Another expressed trust issues because the texts came from a different area code and because they didn’t know how they opted in. And one student said they replied to a prompt with a hashtag but didn’t receive a response.

Thoughts of Application Process Without ADVi

Five students said the application process would’ve been taken longer if they did not have ADVi because the reminders kept them on track. Two students said they would probably be lost right now, and another student would have forgotten a lot more things and missed deadlines. One student said they wouldn’t have had as many college-going resources, which would’ve taken away from their study time to look for more resources. Finally, one student said it wouldn’t have made much of a difference because he had school staff available for his questions.

Likelihood of Recommending ADVi

All students said they would recommend ADVi to other students for a variety of reasons. Among these were because it's free and useful, it provides a timeline and keeps you updated, and it's easier to contact people through ADVi than by going through their counselors at school. One student said they would especially recommend ADVi to people with multiple siblings, specifically because of the help with financial aid. Two students said they would only recommend ADVi to certain people because "everyone is different," so they'd recommend it to people who had an experience like theirs or who also have trouble remembering things. One student also said they'd recommend ADVi to their school's Go Center to create a partnership so all students can access it.

What Students Have Learned

Through the college application process, students said they have learned a variety of strategies that would help them successfully complete college applications. For example, students learned to set aside dedicated time to work on the applications, and to reach out to people, like counselors, who can help to make it [college application process] easier. Students also learned to keep a note and write things down (i.e., passwords, social security number) just in case they pop up again, and that essays are required as part of the application package. One student mentioned learning that some colleges offer online courses for students who cannot physically be there, and another learned that FAFSA is based on earnings after taxes. Finally, one student felt like teachers/counselors made the application process seem harder than it was, but another felt the opposite.

What Students Still Need to Learn

When asked what students thought they still needed to learn, one student mentioned that they wanted to learn more about opportunities like research and work studies because they didn't want to just walk in, go to school, and learn.

Steps Students Wish They Had Taken Earlier

After completing most of the college application process, we asked students which steps they wished they'd taken earlier. The students shared that they wished they'd asked for and collected letters of recommendation and transcripts earlier, organized and maintained community service hours since freshman year, enrolled in more dual credit and other advanced classes, taken college more seriously at the beginning of high school, and researched scholarships and which programs colleges offer and don't offer to avoid wasting time and money.

Things Students Wish They Had Known Earlier

We also asked students what they wish they had known earlier about the college application process. Responses included more about scholarships and financial aid (i.e., what's out there, application deadlines, a document checklist, and dictionary for navigating FAFSA), how to prepare a good college application versus just getting it in by the due date, a timeline of the application process, which they felt takes a long time, specifically the wait time between submitting and hearing back from the schools. Students also mentioned wanting better, more specific SAT/ACT preparation, which can also improve access to financial aid, and wishing they had more information about essays, one student wrote three essays when they only had to choose one topic out of the three.

Perception of Preparedness

Almost all of the students we spoke with felt somewhat prepared and somewhat unprepared. Four students relied on themselves to figure out the process, two of whom gained confidence in their ability after the first application

or doing more research, one learned from asking their teachers questions, and the last student's older sister applied for college last year but wasn't much help, so the student plans to help his younger sister when it's time for her to apply. Two students said their perception of preparedness depended on the college; they felt prepared to apply to larger universities, but not to apply to other, less popular colleges. Finally, one student said COVID-19 made them feel less prepared. We asked the students to share their most helpful college-going resources and four students said counselors, teachers, and other school staff, three said ADVi, and one said their parents.

Least Helpful College-Going Resource

We also asked students to share their least helpful college-going resources. Five students said parents or family and friends in general were the least helpful either because they didn't give new information, they were too busy or tired from their jobs to give the students their full attention, they were biased and blinded the students' view, or they did not go to college, so they did not know how to help or answer questions. Four students said their teachers and high school counselors were the least helpful because the staff doesn't reach out to students or make as much effort because they have so many students and other responsibilities. One student said ADVi was the least helpful because it didn't give new information, and another student said Google because the information is too general.

FINDINGS FROM COUNSELORS

Interviewees' Roles with Students

We wanted to understand how counselors talked about their jobs, their roles with students, and specifically, their role helping students with college applications. The umbrella term used to describe the support the interviewees provide to their students was "post-secondary success." Within this umbrella, support with the college application process and career research were noted as the areas where they spend most of their time. Other focus areas included financial aid, scholarships, mental health support, college tours, military recruitment, and parent engagement. One counselor called different parts of the school year "seasons" and explained that how they spend their time depends on which season they are in. Another counselor suggested that about 55% of his students go on to college or university, about 40% go straight to the workforce, and about 5% go on to the military.

Counselor Knowledge of ADVi

When asked about ADVi, the counselors had some but not much prior knowledge to share. One counselor responded that ADVi is "a tool used to answer general questions about the college application process and the transition from high school to college." This counselor also shared "If the bot isn't able to answer definitively, it will at some point go to a human who could speak to those individual questions during certain hours of the day." When counselors were asked about their students' use of ADVi, the counselors expressed that their students have not shared much about the bot. They did say that the students do not call the bot "ADVi," they usually call it the ApplyTexas bot or the college text bot. The counselors also reported hearing that the reminders were helpful to students, but the students were overwhelmed by the number of texts they received from the bot. One counselor said he was worried about the overwhelming texts leading students to pay less attention to communication from the counselors.

College Application Process: Struggles

Many aspects of the college application process were listed as areas of struggle for most students. One main area is the financial aid process, specifically the difficulty that students have getting financial information from their

parents to complete the application. One counselor said, “The financial aid process has proved to be the most challenging because we have to include parents.” Monitoring email communications throughout the process is another difficult area for students. Colleges send important information through email, but many students don’t check their email accounts often enough to receive the information in a timely manner. Similarly, if students apply to multiple colleges and set up an online account with each of those colleges, it is difficult for them to keep track of login information and communications from each of those accounts. One counselor said sending transcripts was also a difficult part of the application process since students can only gain access to their transcripts with permission from the school. Multiple counselors mentioned essay writing as a struggle for students, so much so that the requirement of writing an essay is the only reason some students don’t apply to college. The counselors also reported a common theme of students thinking they are unable to go to college at all either because of cost, transportation, or a sense of not being good enough.

College Application Process: Student Preparedness

When discussing the level of their students’ preparedness, multiple counselors described two distinct groups of students they support. The first group are “go-getters” who already know how to move through the application process or can figure it out by themselves. This group requires little guidance. The second and largest group are students who think they are unable to accomplish the task and often require “hand-over-hand support.” One counselor commented on the difficult task of differentiating their support to students with such a wide range of needs and said that his job is to “bridge the gap” of understanding. The two most common areas that define the less prepared students are scholarships and parental support. Applying for scholarships can be difficult because the process relies on student initiative since each scholarship has its own set of requirements and its own due date. This makes it difficult for students to know how to be considered for applicable scholarships.

A lack of understanding of the application process by parents also leads to underprepared students. One counselor explained that either the students are first-generation college applicants, whose parents did not go through the process themselves, or “a lot of parents haven’t gone through the college process in a long time” and too much of the process has changed for them to be of much help. Specifically, parents don’t understand that the application process needs to start before the student’s senior year of high school. Cultural differences also play a role as some parents do not value a college education as much as the student might, and therefore the parent does not prioritize supporting the student through the process.

Another area where students are less prepared is in collecting and organizing the information needed to complete an application. Counselors reported that students do not keep track of things like coursework and community service hours and then must scramble to remember or find out the information. Also, financial decisions often require information from previous years. Both tasks delay the process. When counselors were asked what students wished they would have known earlier, multiple responses included applying for scholarships and beginning the application process earlier. One counselor mentioned current college students who said they wished they would have taken different classes when they were in high school and acquired better study skills. When asked what counselors wish students understood about the process, one counselor described his desire for students to understand the importance of prioritizing passion and happiness over money as well as an understanding that college can be for anybody. The counselor stated, “I think passion equals commitment, and commitment equals money... My job is to help them find happiness, and if they like what they do, the money will come.”

College Application Process: Successes

The counselors shared many successful strategies that have helped students through the application process. These strategies include calling parents, face-to-face meetings with students, large group dissemination, starting with an easy application, and using checklists. One counselor said their use of parent nights and senior nights

helps to disseminate information to lots of people at once. He explained how providing the content to a large group “knocks off a big chunk of the core” and eliminates the need for individual appointments for most of the students. He held multiple large group events throughout the year, some providing general information and some focusing on specific parts of the process such as FAFSA. Another counselor said their school requires every student to complete at least one application, which is typically an easy one for a local community college that does not require an essay. This strategy shows the students that the process isn’t that difficult and makes it more likely that they will complete more applications. One counselor said, “If you can learn to do the super easy ones, the challenging ones aren’t quite as intimidating to look at because you’ve already done it once and you’ve met it with success.” Many useful apps were also mentioned as successful tools including GoingMerry, RaiseMe, JLV College Counseling, and Loper.

Recommendations for Improving ADVi

The counselors we interviewed had many suggestions for improving the ADVi program. One suggestion shared by multiple counselors was targeting the program to younger students. This suggestion involved having a different level of the ADVi program for each grade level (9th-12th). The ability for the information provided by ADVi to be specific to individual colleges was also a common suggestion. One counselor commented on the usefulness of more encouraging types of messages that targeted the issue of senioritis and helped students maintain the stamina to finish out the school year. Other suggestions included a 24/7 human availability option, the opportunity for counselors to know which of their students are participating in ADVi, the ability to contact those students through the bot, the option for schools to release batches of student transcripts all at once, and improvements to the slow processing of the ApplyTexas website.

FINDINGS FROM THECB

Overview of Texas Oncourse

The THECB focus group began with a brief history of Texas OnCourse. It was noted that Texas OnCourse was created because of a legislative mandate and charged with the task of creating an online resource to support college and career counseling and advising efforts across Texas to achieve post-secondary success. The program originally focused exclusively on educator tools and only recently transitioned to student-focused tools. Over the years, these tools included The Academy, MapMyGrad, and MiddleGalaxy. They explained that most initiatives are legislatively driven, and the board often partners with the Texas Education Agency to develop the programs. This collaboration led to plans to “consider the whole trifecta of folks involved in ensuring a student is successful in their post-secondary planning and journey” instead of “treating students or educators in isolation.” The team also utilizes a variety of data tracking systems, specifically for The Academy and ApplyTexas.

Main Goal of Resources

When asked about the goal of all these resources, one focus group participant referred to the goal as their “North Star vision,” which is “to ensure that all Texans receive holistic and equitable advising that propels them to obtain credentials of value.” Another participant summarized the Texas OnCourse mission as ensuring that all Texas students “no matter where they came from or where they were heading, had a plan for where they were going.” These two statements are geared toward two audiences. The first audience is the learner, which includes middle and high school students as well as adult learners. The second audience is referred to as the supporters and includes people such as counselors, coaches, and parents.

Use of Feedback

The participants said continuous feedback is a highly effective aspect of the work. For example, the team received positive feedback about providing incentives for counselors and advisors using The Academy, as well as dedicating time to professional development. Feedback during the development of the project extended the release date but focused on ensuring students with disabilities would be able to access the content as well as improving the user-friendliness of the platform. The financial aid graduation requirement is also an area that provides differentiated feedback on content specific to students, families, counselors, advisors, and community partners.

New Tool

A new tool called My Texas Future (MTF) is a robust initiative with the intent of being “the main hub for any student seeking to plan for their postsecondary journey.” The new website is an online portal, like Texas.gov, that will enable students to explore things such as career assessments, program finders, and advisor connections. The program launched with a phased rollout, initially focusing on the adult learner population. As different versions of the site become available to different populations, eventually, MTF would be a “one-stop shop” where a learner in middle school could begin building a profile identifying their interests, documenting desired programs, and recording their accomplishments. This information could be automatically uploaded to ApplyTexas when needed to streamline the application process. The integration of ADVi into the new MTF website was described as “natural” because of the overall strategy of college and career advising and the desire to continue to provide supplemental advising resources to Texas students. It was noted that the MTF website will include an opt-in option for the ADVi web bot feature to support students. The structure of the MTF website also allows students to opt-in via text using a single phone number. This may partly address the ‘distrust’ that some students express as a factor that hinders their engagement with ADVi.

ADVi: Background

The group explained that the initiation of the ADVi program was driven by a need for virtual advising services across the state of Texas during COVID. After piloting the program with small groups, a full advising team was hired and transitioned to the THECB in December 2020. Two specific populations were targeted in the first full year: current high school seniors and recently graduated seniors impacted by COVID who had not gone on to college. The program targeted the high school seniors in supporting their transition to beginning college and the adult learners in supporting their return to college. At first, students were found through different partner institutions, but more recently, nearly all the students participating in the ADVi program were captured through ApplyTexas. Within the ApplyTexas application, students choose whether to consent to receive messages from ADVi.

Feedback

A surprising piece of feedback the participants received about students’ use of ADVi was the helpfulness of the bot, even to students who did not actively respond to the messages. Because “active engagement” is a data point that the ADVi team analyzes, the team was surprised to receive feedback from so many students saying things like, “I never texted back, but I want you to know that your messages were always really helpful.” This feedback led the team to realize that the “active engagement” piece doesn’t necessarily tell the full story of how a student is engaging with ADVi. One participant said, “Even if a student isn’t actively engaging with the bot, they may still be taking action based off the messages that we’re sending.” Another common example of feedback received from students is the usefulness of the due date reminders, which serve as a prompt for next steps and help students keep track of their timeline. Finally, the group discussed the impact of ADVi on school counselors and the need for more outreach. The text reminders mentioned above were said to be helpful to advisors by taking some of the

responsibility off them. Generally, after speaking to a large group of students, counselors still need to follow up with some for one-on-one support. Students who receive information and reminders from ADVi are less likely to need follow up meetings with the counselor, freeing up space within the counselor's day to meet with other students. Based on our findings here, ADVi will be very helpful in schools with a small number of counselors, which are prevalent in rural areas. A recommendation was made to be more intentional about connecting school counselors with the ADVi program. One person pointed out that if a counselor who is unaware of ADVi is helping a student fill out the ApplyTexas application, they might suggest the student not opt-in to the messages since they don't understand the program or the support it provides. Even though many counselors have not heard of ADVi, when the idea is introduced to them, many are excited about the bot, and some mention their intent to share the information with their students. Despite many resources being dedicated to increasing the outreach of ADVi, the participants noted that the program is still new, and people still tell them they need to do more to expand ADVi's reach, especially with school counselors.

LIMITATIONS

A key limitation of this qualitative analysis has to do with the size and scope of the student and counselor samples we interviewed. We only spoke with 11 students who had used ADVi as a tool. Therefore, we caution against drawing generalizable conclusions about all students in Texas who used ADVi. Similarly, we spoke with counselors at only seven campuses throughout the state of Texas. Therefore, like with the student experience and perceptions, we caution about drawing generalizable conclusions about the counselor perspective of ADVi in the state of Texas. Lessons gleaned from this work provide initial clues as to the power and utility of ADVi for ushering Texas students through the college application process; however, more research is needed to provide a more complete picture. Future studies should aim to capture a larger and more diverse sample of students and counselors to be able to describe a more comprehensive picture of ADVi's impact and utility over time.

DISCUSSION

Access to postsecondary education is a critical determinant of future opportunities for individuals, yet students with lower socioeconomic status (SES) often face barriers in navigating the transition from high school to college. The ADVi program, implemented to tackle educational challenges, initially showed promising results by effectively engaging lower socioeconomic status (SES) students and providing them with valuable information and support. This success indicated that ADVi was making headway in reaching and assisting students who traditionally lacked access to crucial information. However, over the subsequent cohorts, SES gaps in participation decreased, reflecting the effectiveness of THECB's marketing efforts in disseminating information among various stakeholders.

Our conversations with students, counselors, and the THECB team produced several recommendations to improve ADVi or similar college-going support programs. First, students asked that ADVi continue sending encouraging messages to students to finish their college applications, remind them to check their emails, offer information about specific schools, personalize messages to feel like less of a mailing list, and implement a more formal introduction to ADVi. In the focus groups, the high school counselors and THECB team suggested increasing high school staff (e.g., counselors and college advisors') awareness of ADVi, improving and advertising the option to interact with a human 24/7, targeting 9th through 12th graders, and providing tailored information by grade to students. Other suggestions included developing a way to send messages that are catered to specific colleges, increasing mental health-related messages, and developing a way to connect high school counselors with specific students who engage with ADVi and would benefit from a follow-up with someone on their campus. Future research should continue to investigate what students need from initiatives like ADVi, the support they are already receiving from their high schools, and any barriers that keep them from interacting with the chatbot.

One significant challenge identified in the qualitative analysis is student distrust in ADVi. Addressing this issue requires improving awareness among high school staff, advertising the program's safety, and implementing additional security measures. Emphasizing trustworthiness through multiple channels, such as the ADVi website and ApplyTexas, can help alleviate concerns about information security and phishing. Furthermore, ADVi alarming services underscore the importance of personalized and encouraging messages. There is a particular emphasis on tailoring messages to specific colleges that students have applied to, especially in relation to general college application documents and financial aid applications. By tailoring messages to specific colleges and facilitating communication between counselors and students, ADVi can better cater to students' needs, making the overall college application process more seamless and supportive.

While the study offers valuable insights, it is important to acknowledge its limitations, primarily centered on college-aspiring students. Subsequent research endeavors should explore potential disparities among all high school graduates, taking into account various factors that influence their decisions about pursuing higher education. Furthermore, there is a need to investigate the effectiveness of ADVi on postsecondary education enrollment and completion for a more comprehensive understanding of its impact across diverse student populations.

The ADVi program has shown promise in bridging gaps in postsecondary education access, particularly for students with lower SES. Continuous improvement based on qualitative feedback and targeted marketing strategies is necessary to address remaining disparities. As we move forward, future studies should explore broader perspectives to ensure equitable access and success for all high school graduates, regardless of socioeconomic background. Moreover, policy discussions and initiatives should prioritize systemic changes that foster inclusivity and address the root causes of educational disparities. Through collaborative efforts, we can build a more accessible and equitable educational landscape for the benefit of all students.

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TABLES

Table 1. Modeling the SES gap in ADVi: High school graduates in 2020

	Model 1	Model 2	Model 3	Model 4	Model 5
	(1)	(2)	(3)	(4)	(5)
Male	0.047***	0.049***	0.044***	0.043***	0.042***
African American	0.080***	0.053***	0.055***	0.060***	0.042***
Hispanic	0.107***	0.092***	0.085***	0.083***	0.062***
FRPL	0.093***	0.076***	0.066***	0.065***	0.047**
Controls					
Student achievement	N	Y	Y	Y	Y
Student characteristics	N	N	Y	Y	Y
Coursework	N	N	Y	Y	Y
Aspirations and intentions	N	N	N	Y	Y
High school attributes	N	N	N	N	Y
High school dummies	N	N	N	N	Y
Observations	55,113	55,113	55,113	55,113	55,113

Notes. All gaps are expressed in percentages. All estimates are average marginal effects, following logistic regressions predicting ADVi participation as a function of selected SES characteristics, student STAAR achievement, student characteristics and coursework, aspiration and intention, and high school attributes and dummy variables. See Appendix E for the full regression outputs (legitimate logistic coefficients, standard errors, significance levels, and 95% confidence intervals) of Model 5. Robust standard errors are clustered at the high school level. The regression outputs for Models 1 to 4 are available upon request from the authors.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 2. Modeling the SES gap in ADVi: High school graduates in 2020 by tertiles of high school STAAR achievement

	Low	Middle	High	Model
	(1)	(2)	(3)	(4)
Male	0.031***	0.053***	0.061***	1
Male	0.033***	0.053***	0.060***	2
Male	0.029	0.050	0.055**	3
Male	0.029	0.050	0.054**	4
Male	0.026	0.048	0.054**	5
African American	0.090***	0.056***	0.028**	1
African American	0.088***	0.052***	0.018	2
African American	0.086***	0.049	0.020	3
African American	0.090***	0.056	0.023	4
African American	0.071***	0.043	0.007	5
Hispanic	0.115***	0.094***	0.079***	1
Hispanic	0.115***	0.093***	0.071***	2
Hispanic	0.093***	0.082	0.071	3
Hispanic	0.094***	0.079	0.068	4
Hispanic	0.071***	0.058	0.053	5
FRPL	0.045***	0.073***	0.118***	1
FRPL	0.044***	0.072***	0.106***	2
FRPL	0.035	0.063**	0.095*	3
FRPL	0.035	0.062**	0.091*	4
FRPL	0.018	0.047*	0.072	5

Notes. All gaps are expressed in percentages. All estimates are average marginal effects, following logistic regressions predicting ADVi participation as a function of selected SES characteristics, student STAAR achievement, student characteristics and coursework, aspiration and intention, and high school attributes and dummy variables across different tertiles of the STAAR achievement. See the Method section for the model details. Appendix E reports the full regression outputs (legitimate logistic coefficients, standard errors, significance levels, and 95% confidence intervals) of Model 5. Robust standard errors are clustered at the high school level. The regression outputs for Models 1 to 4 are available upon request from the authors.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 3. Modeling the SES gap in ADVi: High school graduates in 2021 and 2022

	High School Graduates in 2021					High School Graduates in 2022				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Male	0.045***	0.046***	0.044***	0.043***	0.043***	0.041***	0.041***	0.040***	0.039***	0.038***
African American	0.044***	0.035***	0.037***	0.041***	0.025***	0.016***	0.015***	0.017	0.014	0.005
Hispanic	0.088***	0.085***	0.077***	0.075***	0.058***	0.079***	0.079***	0.062***	0.062***	0.054***
FRPL	0.032***	0.028***	0.024	0.023	0.011*	0.010***	0.009***	0.009	0.010	0.002**
Controls										
Student achievement	N	Y	Y	Y	Y	N	Y	Y	Y	Y
Student characteristics	N	N	Y	Y	Y	N	N	Y	Y	Y
Coursework	N	N	Y	Y	Y	N	N	Y	Y	Y
Aspirations and intentions	N	N	N	Y	Y	N	N	N	Y	Y
High school attributes	N	N	N	N	Y	N	N	N	N	Y
High school dummies	N	N	N	N	Y	N	N	N	N	Y
Observations	122,131	122,131	122,131	122,131	122,131	68,999	68,999	68,999	68,999	68,999

Notes. All gaps are expressed in percentages. All estimates are average marginal effects, following logistic regressions predicting ADVi participation as a function of selected SES characteristics, student STAAR achievement, student characteristics and coursework, aspiration and intention, and high school attributes and dummy variables. See Appendix E for the full regression outputs (legitimate logistic coefficients, standard errors, significance levels, and 95% confidence intervals) of Model 5. Robust standard errors are clustered at the high school level. The regression outputs for Models 1 to 4 are available upon request from the authors.

* p < 0.1; ** p < 0.05; *** p < 0.01

FIGURES

Figure 1. Undergraduate enrollment in public high education institutions in Texas

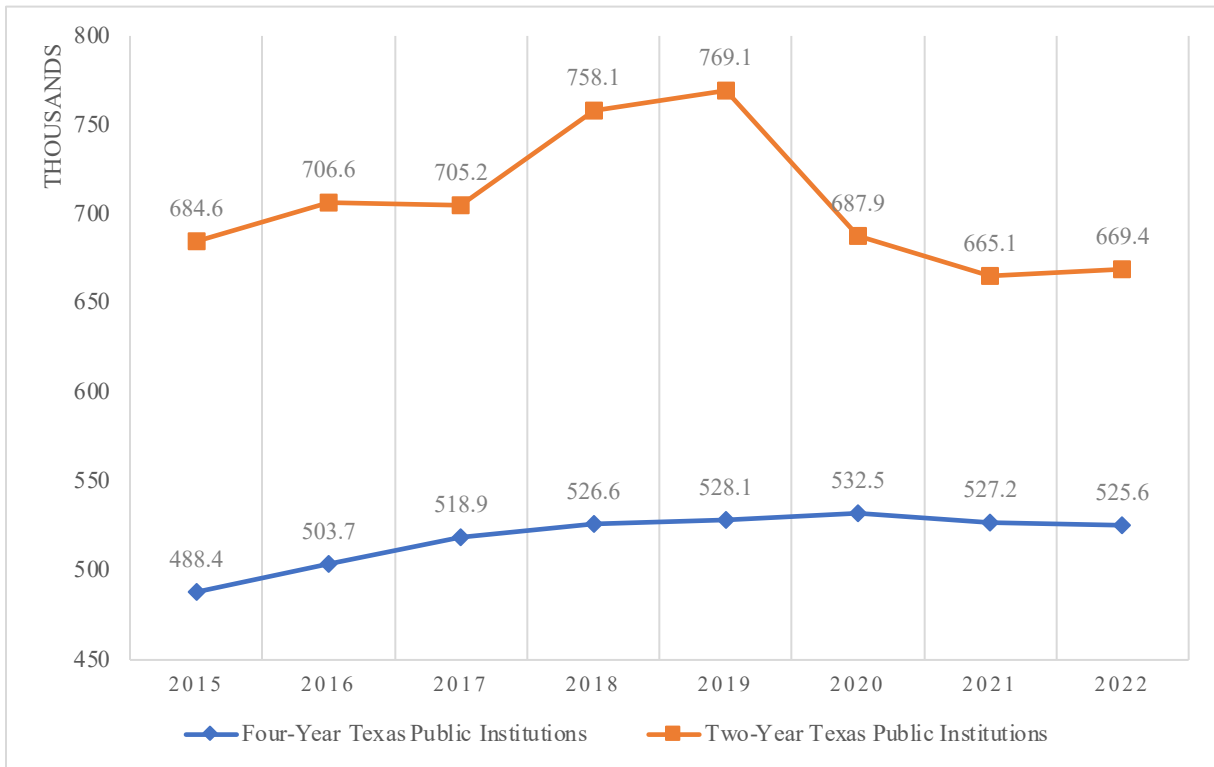
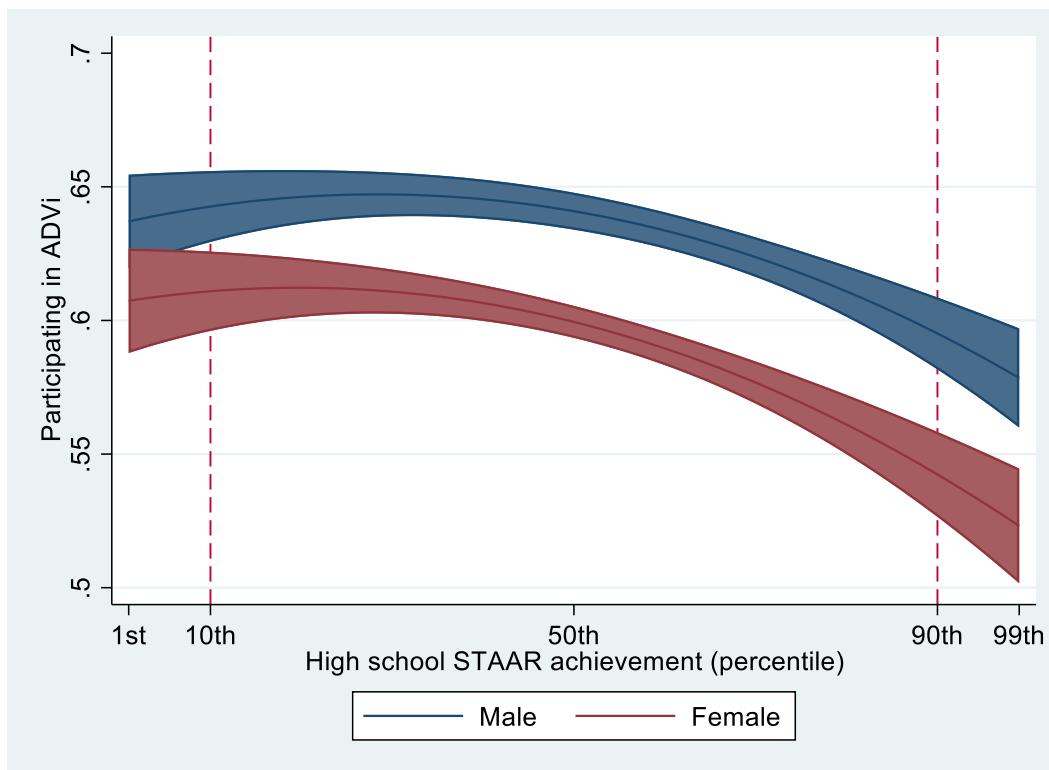
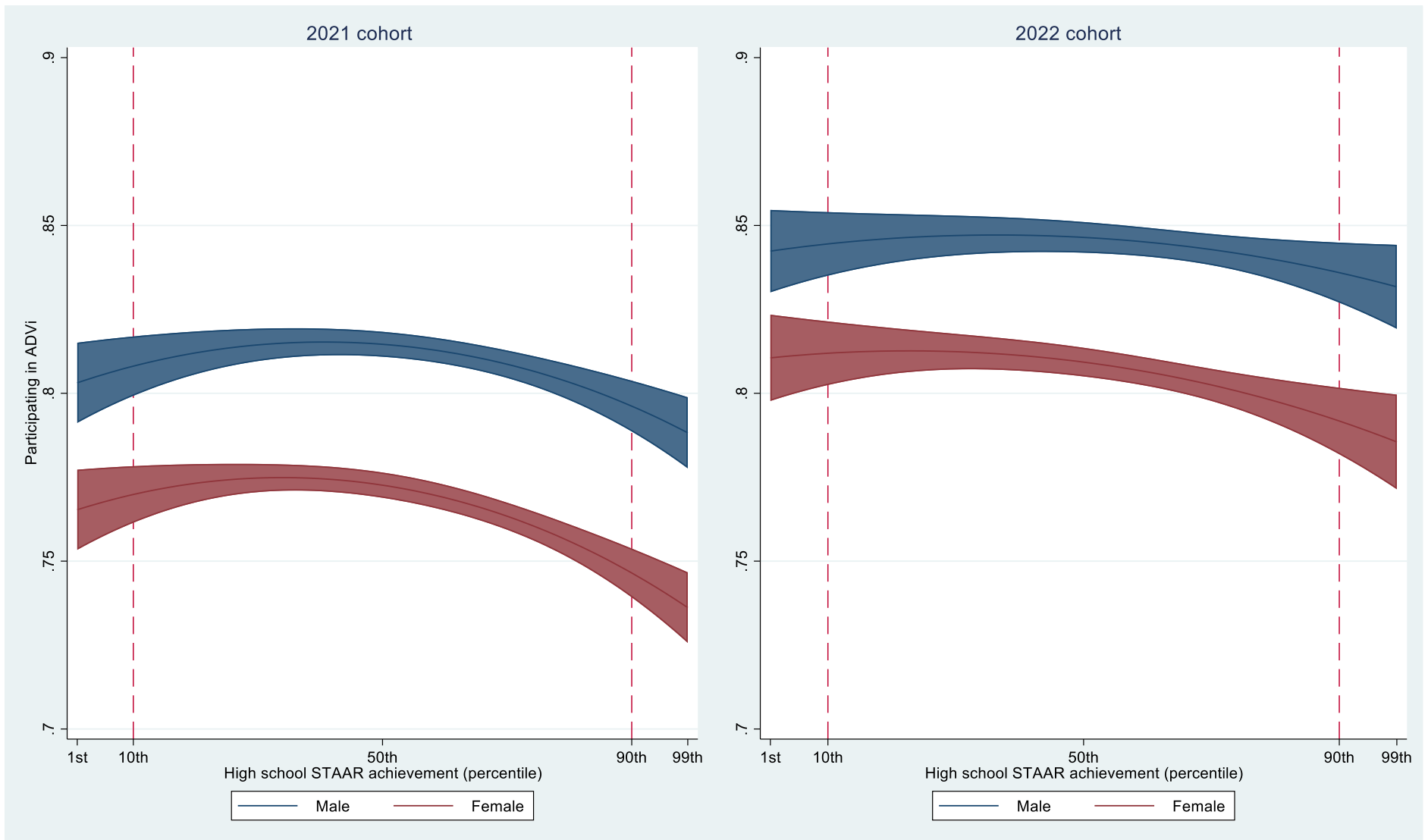


Figure 2. Prediction of ADVi participation probability by gender for 2020 cohort



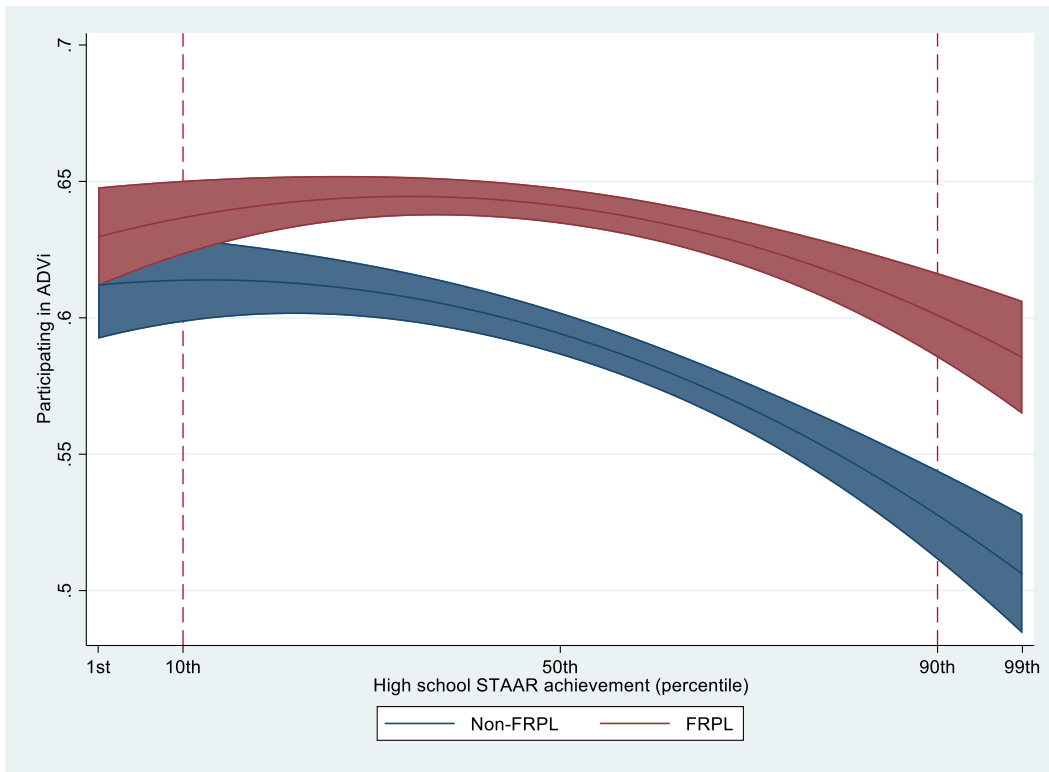
Notes. The probability is predicted by Model 5. The shaded areas represent 95% confidence intervals.

Figure 3. Prediction of ADVi participation probability by gender for 2021 and 2022 cohorts



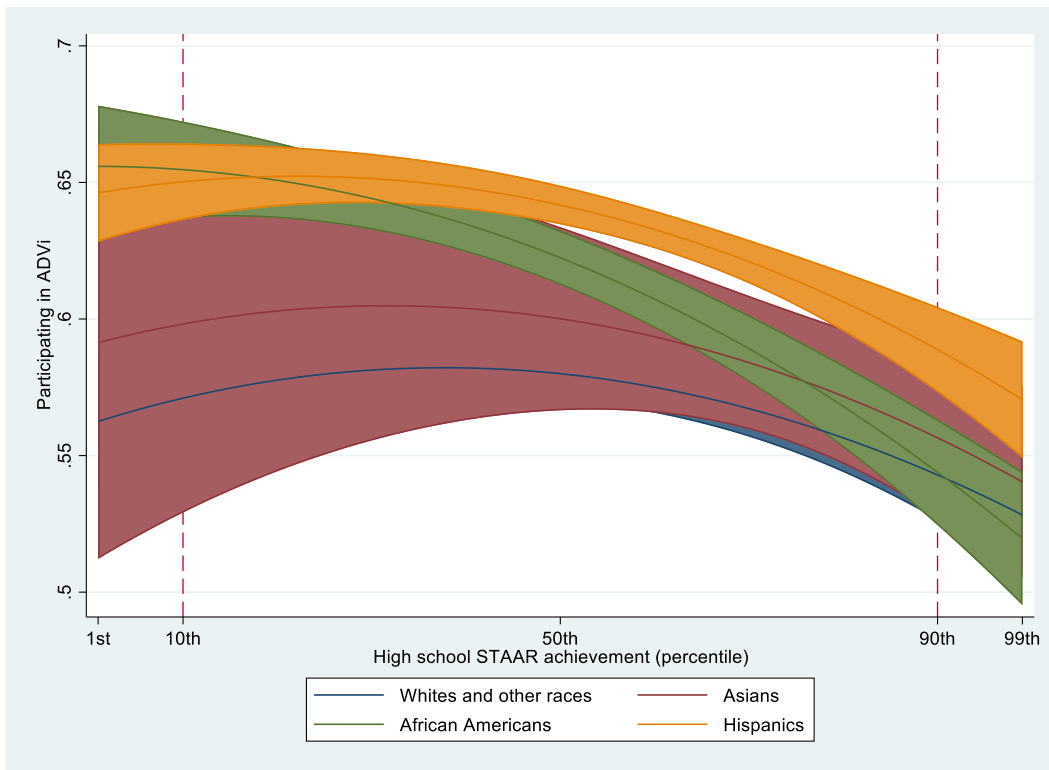
Notes. The probability is predicted by Model 5. The shaded areas represent 95% confidence intervals.

Figure 4. Prediction of ADVi participation probability by the FRPL status for 2020 cohort



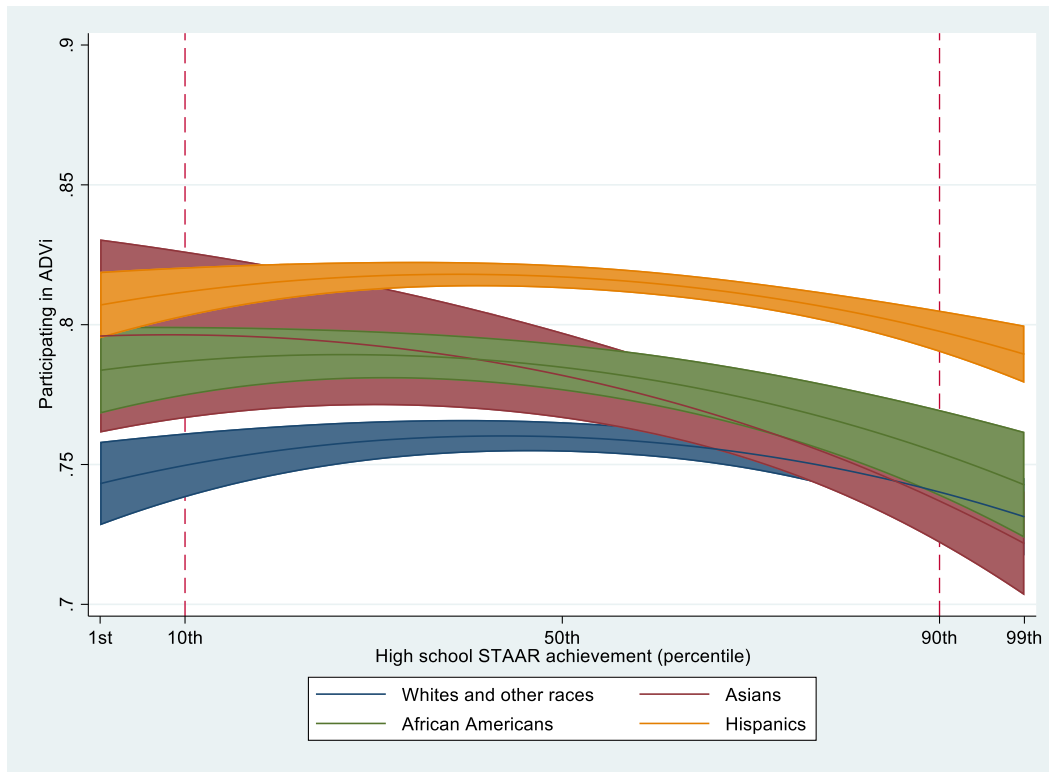
Notes. The probability is predicted by Model 5. The shaded areas represent 95% confidence intervals.

Figure 5. Prediction of ADVi participation probability by race and ethnicity status for 2020 cohort



Notes. The probability is predicted by Model 5. The shaded areas represent 95% confidence intervals.

Figure 6. Prediction of ADVi participation probability by race and ethnicity status for 2021 cohort



Notes. The probability is predicted by Model 5. The shaded areas represent 95% confidence intervals.

APPENDIX

APPENDIX A.

A.1. Description of variables

	Description of Variable
Dependent variable	
ADVi	1 if a student participates in ADVi; 0 if otherwise
Exploratory variable	
<i>Selected SES characteristics</i>	
Male	1 if a student is male; 0 if female
African American	1 if a student is African American; 0 if otherwise
Hispanic	1 if a student is Hispanic; 0 if otherwise
Asian	1 if a student is Asian; 0 if otherwise
FRPL	1 if a student received a free- or reduced-price lunch or is eligible for other public assistance in the graduating year; 0 if otherwise
At risk	1 if a student was designed as at risk of dropout in the graduating year; 0 if otherwise
<i>Student achievement</i>	
STAAR achievement	This is a composite scale variable derived from the State of Texas Assessments of Academic Readiness (STAAR) performance, encompassing five tests taken during high school. This scale, measured in percentiles, is constructed using standardized test values: Algebra I, Biology, English I and II, and U.S. history.
<i>Student characteristics</i>	
Age	Student age at graduation
Special education	1 if a student received special education in high school; 0 if otherwise
LEP	1 if a student is designated as limited English proficient (LEP) in high school; 0 if otherwise
Bilingual	1 if a student is recorded as bilingual; 0 if otherwise
Gifted	1 if a student participated in gifted and talented programs in high school; 0 if otherwise
Attendance rates	Student average attendance rates in high school
Expulsion	1 if a student received an expulsion (disciplinary action) report in high school; 0 if otherwise
Suspension	1 if a student received a suspension (disciplinary action) report in high school; 0 if otherwise
<i>Coursework</i>	
AP and IB credits earned	The total number of credits earned from Advanced Placement (AP) and International Baccalaureate (IB) courses
DC credits earned	The total number of credits earned from dual credit (DC) courses
DC-CTE credits earned	The total number of credits earned from DC-career and technical education (CTE) courses
CTE credits earned	The total number of credits earned from CTE courses
Advanced credits earned	The total number of credits earned from advanced courses (defined by Texas Education Agency)

English credits earned	The total number of credits earned from non-AP, non-IB, non-DC, and non-advanced English courses.
Math credits earned	The total number of credits earned from non-AP, non-IB, non-DC, and non-advanced mathematics courses
Science credits earned	The total number of credits earned from non-AP, non-IB, non-DC, and non-advanced science courses
Social studies credits earned	The total number of credits earned from non-AP, non-IB, non-DC, and non-advanced social studies courses
Foreign language credits earned	The total number of credits earned from non-AP, non-IB, non-DC, and non-advanced foreign language courses
Other course credits earned	The total number of credits earned from all other courses
<i>Aspirations and intentions</i>	
Four-year and two-year colleges	1 if a student has indicated an intention to apply to both four-year and two-year colleges; 0 otherwise
Four-year college only	1 if a student has indicated an intention to apply to Four-year colleges only; 0 otherwise
<i>High school attributes</i>	
Charter school	1 if a high school student graduated from was a charter school; 0 otherwise
School Size	Total number of students in the school where a student graduated
Student-teacher ratio	Student-teacher ratio in the school where a student graduated
Percent minority	Proportion of African American and Hispanic students in the school where a student graduated
Percent FRPL	Proportion of FRPL students in the school where a student graduated
Years of teaching experience	The average number of years of teaching experience among the teachers at the school where a student graduated
Teacher educational attainment	Proportion of teachers who earned master's or higher degrees in the school where a student graduated
Teacher salary	Average teacher salary in the school where a student graduated

A.2. Descriptive statistics

	2020 Cohort			2021 Cohort			2022 Cohort		
	All	ADVi	Non-ADVi	All	ADVi	Non-ADVi	All	ADVi	Non-ADVi
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent variable									
ADVi	0.603 (0.489)	– (–)	– (–)	0.783 (0.413)	– (–)	– (–)	0.820 (0.384)	– (–)	– (–)
Exploratory variable									
<i>Selected SES characteristics</i>									
Male	0.475 (0.499)	0.496 (0.500)	0.443 (0.497)	0.440 (0.496)	0.453 (0.498)	0.393 (0.488)	0.442 (0.497)	0.454 (0.498)	0.389 (0.488)
African American	0.156 (0.363)	0.165 (0.371)	0.144 (0.351)	0.131 (0.338)	0.131 (0.338)	0.130 (0.336)	0.159 (0.366)	0.153 (0.360)	0.186 (0.389)
Hispanic	0.531 (0.499)	0.587 (0.492)	0.445 (0.497)	0.499 (0.500)	0.528 (0.499)	0.393 (0.488)	0.531 (0.499)	0.553 (0.497)	0.433 (0.496)
Asian	0.034 (0.180)	0.025 (0.157)	0.046 (0.210)	0.060 (0.237)	0.055 (0.228)	0.076 (0.265)	0.041 (0.199)	0.041 (0.199)	0.041 (0.198)
FRPL	0.551 (0.497)	0.618 (0.486)	0.449 (0.497)	0.477 (0.499)	0.500 (0.500)	0.396 (0.489)	0.544 (0.498)	0.552 (0.497)	0.505 (0.500)
At risk	0.440 (0.496)	0.504 (0.500)	0.342 (0.475)	0.336 (0.472)	0.352 (0.478)	0.276 (0.447)	0.402 (0.490)	0.405 (0.491)	0.388 (0.487)
<i>Student achievement</i>									
STAAR	49.336 (30.707)	44.420 (29.506)	56.814 (30.988)	50.687 (28.717)	49.424 (28.527)	55.232 (28.939)	51.090 (27.558)	50.954 (27.473)	51.711 (27.932)
<i>Student characteristics</i>									
Age	17.140 (0.444)	17.162 (0.460)	17.106 (0.416)	17.088 (0.384)	17.091 (0.388)	17.077 (0.369)	17.108 (0.421)	17.108 (0.415)	17.107 (0.444)
Special education	0.058 (0.234)	0.067 (0.251)	0.044 (0.205)	0.041 (0.197)	0.043 (0.202)	0.033 (0.179)	0.054 (0.225)	0.054 (0.225)	0.053 (0.224)
LEP	0.142 (0.349)	0.174 (0.379)	0.093 (0.291)	0.153 (0.360)	0.169 (0.375)	0.098 (0.297)	0.202 (0.402)	0.216 (0.412)	0.138 (0.345)
Bilingual	0.001 (0.023)	0.001 (0.025)	0.000 (0.021)	0.001 (0.033)	0.001 (0.035)	0.001 (0.023)	0.002 (0.039)	0.002 (0.040)	0.001 (0.032)

Gifted	0.105 (0.307)	0.081 (0.273)	0.142 (0.349)	0.140 (0.347)	0.133 (0.340)	0.163 (0.370)	0.102 (0.303)	0.102 (0.303)	0.100 (0.299)
Attendance rates	0.940 (0.063)	0.935 (0.066)	0.947 (0.057)	0.958 (0.048)	0.958 (0.049)	0.959 (0.047)	0.938 (0.063)	0.939 (0.062)	0.931 (0.069)
Expulsion	0.056 (0.231)	0.062 (0.241)	0.048 (0.214)	0.031 (0.173)	0.031 (0.174)	0.030 (0.171)	0.041 (0.198)	0.040 (0.195)	0.048 (0.213)
Suspension	0.303 (0.459)	0.336 (0.472)	0.251 (0.434)	0.189 (0.392)	0.194 (0.395)	0.174 (0.379)	0.229 (0.420)	0.223 (0.416)	0.255 (0.436)
<i>Coursework</i>									
AP and IB credits earned	2.055 (3.245)	1.655 (2.822)	2.664 (3.718)	2.578 (3.364)	2.485 (3.266)	2.914 (3.678)	1.804 (2.780)	1.823 (2.783)	1.718 (2.764)
DC credits earned	0.901 (2.271)	0.762 (2.118)	1.111 (2.472)	1.748 (3.134)	1.698 (3.113)	1.929 (3.199)	1.356 (2.934)	1.351 (2.942)	1.382 (2.893)
DC-CTE credits earned	0.188 (0.817)	0.193 (0.856)	0.180 (0.754)	0.293 (1.025)	0.299 (1.051)	0.274 (0.925)	0.274 (0.998)	0.278 (1.016)	0.253 (0.906)
CTE credits earned	5.178 (2.831)	5.245 (2.818)	5.077 (2.846)	5.506 (2.895)	5.526 (2.895)	5.434 (2.895)	5.684 (2.904)	5.691 (2.911)	5.650 (2.873)
Advanced credits earned	0.881 (0.920)	0.812 (0.871)	0.985 (0.982)	0.953 (0.923)	0.942 (0.915)	0.991 (0.951)	0.847 (0.895)	0.856 (0.901)	0.803 (0.865)
English credits earned	3.795 (1.266)	3.904 (1.252)	3.628 (1.268)	3.464 (1.229)	3.491 (1.232)	3.366 (1.213)	3.666 (1.206)	3.667 (1.207)	3.658 (1.200)
Math credits earned	3.199 (0.714)	3.225 (0.723)	3.159 (0.699)	3.146 (0.659)	3.152 (0.662)	3.126 (0.649)	3.235 (0.713)	3.237 (0.714)	3.230 (0.712)
Science credits earned	3.042 (0.785)	3.075 (0.780)	2.991 (0.790)	2.957 (0.772)	2.969 (0.772)	2.914 (0.771)	3.020 (0.778)	3.024 (0.780)	3.004 (0.771)
Social studies credits earned	3.935 (1.733)	4.116 (1.641)	3.658 (1.832)	3.465 (1.864)	3.515 (1.853)	3.283 (1.893)	3.899 (1.787)	3.897 (1.791)	3.908 (1.767)
Foreign language credits earned	1.973 (0.726)	1.941 (0.733)	2.022 (0.714)	1.961 (0.747)	1.948 (0.754)	2.008 (0.717)	1.910 (0.733)	1.902 (0.741)	1.946 (0.693)
Other course credits earned	5.455 (2.273)	5.382 (2.213)	5.565 (2.358)	5.522 (2.271)	5.524 (2.267)	5.514 (2.282)	5.351 (2.212)	5.376 (2.218)	5.238 (2.182)
<i>Aspirations and intentions</i>									
Four-year and two-year colleges	0.232 (0.422)	0.243 (0.429)	0.216 (0.411)	0.313 (0.464)	0.316 (0.465)	0.310 (0.459)	0.049 (0.217)	0.047 (0.212)	0.059 (0.236)
Four-year college only	0.365 (0.481)	0.307 (0.461)	0.454 (0.498)	0.453 (0.498)	0.436 (0.496)	0.518 (0.500)	0.480 (0.500)	0.484 (0.500)	0.463 (0.499)

<i>High school attributes</i>									
Charter school	0.049 (0.217)	0.062 (0.240)	0.049 (0.217)	0.060 (0.238)	0.063 (0.242)	0.051 (0.221)	0.054 (0.226)	0.054 (0.226)	0.053 (0.225)
School Size ^a	7.273 (0.917)	7.258 (0.923)	7.296 (0.908)	7.284 (0.908)	7.286 (0.904)	7.276 (0.922)	7.257 (0.950)	7.266 (0.941)	7.216 (0.989)
Student-teacher ratio	15.180 (3.588)	15.119 (3.586)	15.273 (3.589)	15.182 (3.593)	15.208 (3.560)	15.087 (3.711)	14.881 (3.546)	14.925 (3.490)	14.684 (3.787)
Percent minority	0.534 (0.243)	0.570 (0.236)	0.480 (0.244)	0.505 (0.236)	0.519 (0.235)	0.455 (0.233)	0.528 (0.232)	0.534 (0.231)	0.498 (0.235)
Percent FRPL	0.554 (0.255)	0.592 (0.246)	0.497 (0.257)	0.533 (0.254)	0.547 (0.252)	0.481 (0.252)	0.560 (0.244)	0.567 (0.243)	0.529 (0.245)
Years of teaching experience	10.941 (3.951)	10.802 (3.957)	11.152 (3.932)	10.949 (4.090)	10.910 (4.072)	11.092 (4.154)	10.872 (4.091)	10.855 (4.079)	10.952 (4.145)
Teacher educational attainment	0.281 (0.125)	0.278 (0.124)	0.285 (0.126)	0.275 (0.126)	0.276 (0.126)	0.274 (0.127)	0.274 (0.127)	0.274 (0.127)	0.271 (0.128)
Teacher salary ^a	10.905 (0.092)	10.904 (0.092)	10.905 (0.092)	10.926 (0.091)	10.927 (0.091)	10.924 (0.093)	10.952 (0.090)	10.952 (0.089)	10.948 (0.092)
Observations	55,113	33,253	21,860	122,131	95,577	26,554	68,999	56,623	12,376

Notes. a-The values are expressed in natural logarithm. Means and standard deviations (in parentheses) are reported.

A.3. Difference in explanatory variables between ADVi and non-ADVi students

	2020 Cohort	2021 Cohort	2022 Cohort
	(1)	(2)	(3)
<i>Selected SES characteristics</i>			
Male	0.053*** (0.004)	0.060*** (0.003)	0.064*** (0.005)
African American	0.021*** (0.003)	0.001 (0.002)	-0.033*** (0.004)
Hispanic	0.141*** (0.004)	0.136*** (0.003)	0.120*** (0.005)
Asian	-0.021*** (0.002)	-0.021*** (0.002)	0.003 (0.002)
FRPL	0.169*** (0.004)	0.103*** (0.003)	0.047*** (0.005)
At risk	0.162*** (0.004)	0.076*** (0.003)	0.017*** (0.005)
<i>Student achievement</i>			
STAAR	-12.394*** (0.262)	-5.807*** (0.198)	-0.757*** (0.275)
<i>Student characteristics</i>			
Age	0.057*** (0.004)	0.013*** (0.003)	0.001 (0.004)
Special education	0.023*** (0.002)	0.010*** (0.001)	0.001 (0.002)
LEP	0.081*** (0.003)	0.071*** (0.002)	0.078*** (0.004)
Bilingual	0.000 (0.000)	0.001 (0.000)	0.001 (0.000)
Gifted	-0.061*** (0.003)	-0.030*** (0.002)	0.003 (0.003)
Attendance rates	-0.012*** (0.001)	-0.001*** (0.000)	0.009*** (0.001)
Expulsion	0.014*** (0.002)	0.001 (0.001)	-0.008*** (0.002)
Suspension	0.084*** (0.004)	0.020*** (0.003)	-0.032*** (0.004)
<i>Coursework</i>			
AP and IB credits earned	-1.009*** (0.028)	-0.428*** (0.023)	-0.105*** (0.028)
DC credits earned	-0.349*** (0.020)	-0.231*** (0.022)	-0.031 (0.029)
DC-CTE credits earned	0.012* (0.007)	0.025*** (0.007)	0.026*** (0.010)

CTE credits earned	0.168*** (0.025)	0.092*** (0.020)	0.041 (0.028)
Advanced credits earned	-0.172*** (0.008)	-0.049*** (0.006)	0.053*** (0.009)
English credits earned	0.275*** (0.011)	0.125*** (0.009)	0.010 (0.011)
Math credits earned	0.066*** (0.006)	0.026*** (0.005)	0.007 (0.007)
Science credits earned	0.084*** (0.007)	0.055*** (0.005)	0.020*** (0.008)
Social studies credits earned	0.458*** (0.015)	0.232*** (0.013)	-0.010 (0.018)
Foreign language credits earned	-0.081*** (0.006)	-0.060*** (0.005)	-0.043*** (0.007)
Other course credits earned	0.183*** (0.020)	0.010 (0.015)	0.138*** (0.022)
<i>Aspirations and intentions</i>			
Four-year and two-year colleges	0.028*** (0.004)	0.015*** (0.003)	-0.012*** (0.002)
Four-year college only	-0.147*** (0.004)	-0.082*** (0.003)	-0.021*** (0.005)
<i>High school attributes</i>			
Charter school	0.012*** (0.002)	0.011*** (0.002)	0.001 (0.002)
School Size	-0.038*** (0.007)	0.011* (0.006)	0.050*** (0.009)
Student-teacher ratio	-0.154*** (0.031)	0.121*** (0.025)	0.241*** (0.035)
Percent minority	0.089*** (0.002)	0.064*** (0.002)	0.037*** (0.002)
Percent FRPL	0.095*** (0.002)	0.066*** (0.002)	0.038*** (0.002)
Years of teaching experience	-0.349*** (0.034)	-0.183*** (0.028)	-0.097*** (0.041)
Teacher educational attainment	-0.008*** (0.001)	0.001 (0.001)	0.003** (0.001)
Teacher salary	-0.000 (0.001)	0.003*** (0.001)	0.004*** (0.001)
Observations	55,113	122,131	68,999

Notes. Two-tailed t-test results are reported with standard errors in parentheses.

* p < 0.1; ** p < 0.05; *** p < 0.01.

APPENDIX B. CORRELATION MATRIX

See Appendix E.1 for matching the coded variable names of statistical software with those listed in Appendix A.1.

(a) 2020 Cohort

	male	black_~p	hispanic	asian	nslp	grad_a~k	staar_qt	grad_age	grad_s~d	ever_lep	grad_bil	grad_g~d	hs_att~e	hs_exp~n	hs_sus~t	ap_ib~t	dc_cre~t
male	1.0000																
black_non_~p	0.0021	1.0000															
hispanic	0.0028	-0.4578	1.0000														
asian	0.0068	-0.0803	-0.1983	1.0000													
nslp	-0.0221	0.1054	0.3234	-0.1088	1.0000												
grad_at_risk	0.0535	0.0668	0.2156	-0.0968	0.2846	1.0000											
staar_qt	-0.0026	-0.1590	-0.2180	0.1736	-0.3488	-0.5614	1.0000										
grad_age	0.0878	0.0089	0.0545	-0.0534	0.0913	0.2671	-0.2585	1.0000									
grad_speced	0.0518	0.0561	0.0077	-0.0326	0.0647	0.2039	-0.3032	0.1995	1.0000								
ever_lep	0.0132	-0.1598	0.3219	0.0237	0.2189	0.2659	-0.2240	0.0734	0.0350	1.0000							
grad_bil	-0.0035	-0.0100	0.0219	-0.0044	0.0101	0.0060	0.0026	-0.0039	-0.0025	0.0195	1.0000						
grad_gifted	0.0073	-0.0732	-0.0834	0.1391	-0.1361	-0.1964	0.3844	-0.1025	-0.0820	-0.0834	0.0072	1.0000					
hs_att_rate	0.0760	-0.0509	-0.0887	0.0902	-0.1947	-0.3026	0.2980	-0.1560	-0.0724	-0.0210	-0.0020	0.1317	1.0000				
hs_expulsion	0.0443	0.0727	-0.0132	-0.0347	0.0579	0.1631	-0.1334	0.0258	0.0383	-0.0191	-0.0023	-0.0533	-0.2996	1.0000			
hs_suspens~t	0.0844	0.1691	0.0104	-0.0830	0.1517	0.2534	-0.3206	0.0677	0.0705	0.0153	0.0032	-0.1327	-0.3048	0.3428	1.0000		
ap_ib_credit	-0.0461	-0.0984	-0.1259	0.3052	-0.2152	-0.3338	0.5651	-0.1467	-0.1384	-0.0785	0.0034	0.4147	0.2532	-0.1112	-0.2559	1.0000	
dc_credit	-0.0639	-0.0583	-0.0300	-0.0048	-0.0869	-0.2074	0.2965	-0.0762	-0.0926	-0.0607	-0.0021	0.1435	0.1581	-0.0712	-0.1531	0.0196	1.0000
dc_cte_cre~t	-0.0103	-0.0122	0.0499	-0.0179	0.0442	-0.0273	0.0531	-0.0220	-0.0296	0.0328	0.0051	0.0493	0.0617	-0.0301	-0.0464	-0.0254	0.3429
cte_credit	0.0139	-0.0072	0.0081	-0.0671	0.0607	-0.0231	-0.0984	-0.0138	0.0153	0.0079	0.0102	-0.0821	0.0966	-0.0028	0.0265	-0.2438	0.0083
adv_credit	-0.0422	-0.0814	-0.0494	0.0950	-0.1187	-0.2353	0.3500	-0.0926	-0.1240	-0.0451	0.0094	0.1963	0.2109	-0.0951	-0.1977	0.3444	0.0444
ot_english~t	0.0414	0.0445	0.1188	-0.0944	0.1663	0.2645	-0.4109	0.1226	0.1406	0.1404	-0.0094	-0.2259	-0.0851	0.0513	0.1503	-0.4330	-0.2849
ot_math_cr~t	-0.0068	0.0518	0.0250	-0.0999	0.0591	0.0903	-0.2193	0.0346	0.0615	0.0290	-0.0087	-0.1573	0.0669	0.0123	0.0548	-0.2708	-0.1238
ot_science~t	0.0800	0.0533	0.0249	-0.0795	0.0493	0.0909	-0.1695	0.0360	0.0462	0.0399	-0.0042	-0.1364	0.0259	0.0132	0.0625	-0.3160	-0.1181
ot_socsci~t	0.0377	0.0851	0.1172	-0.1826	0.1826	0.2827	-0.4722	0.1191	0.1252	0.0816	-0.0032	-0.3228	-0.1634	0.0861	0.2089	-0.6508	-0.3605
ot_forlang~t	-0.0357	-0.0069	-0.1262	0.0710	-0.1331	-0.1327	0.1646	-0.0625	-0.0789	-0.0906	-0.0040	0.0672	0.1345	-0.0423	-0.0814	0.1319	-0.0404
ot_ot_credit	0.0179	0.0348	-0.0444	-0.0500	-0.0562	-0.1228	0.0958	-0.0392	-0.0379	-0.0600	0.0068	0.0390	0.1979	-0.0535	-0.0993	0.0338	-0.0052
psa_1	-0.0376	0.0638	0.0825	-0.0442	0.1234	0.0428	-0.0738	-0.0091	-0.0285	0.0383	0.0130	-0.0351	-0.0044	-0.0187	0.0027	-0.0367	-0.0413
psa_2	-0.0242	-0.0002	-0.2185	0.1287	-0.2420	-0.3223	0.4423	-0.1215	-0.1245	-0.1394	-0.0096	0.2185	0.2247	-0.0895	-0.2006	0.3884	0.2652
ln_hs_size	0.0188	0.0491	-0.0021	0.0808	-0.0882	-0.0260	0.0984	-0.0510	-0.0097	0.0567	0.0114	0.0334	0.1300	-0.0377	-0.0446	0.1232	-0.1527
hs_minority	0.0200	0.0974	0.4668	-0.1522	0.4740	0.3618	-0.3776	0.1070	0.0433	0.2482	0.0136	-0.1040	-0.2357	0.0505	0.1557	-0.1840	-0.0742
hs_nslp	0.0136	0.0640	0.4269	-0.1701	0.5270	0.3284	-0.3931	0.1085	0.0422	0.2562	0.0150	-0.1075	-0.2080	0.0490	0.1595	-0.2248	-0.0229
students	-0.0020	0.0223	0.0302	0.0689	-0.0429	-0.0727	0.1425	-0.0438	-0.0293	0.0173	0.0101	0.0695	0.1637	-0.0574	-0.0791	0.1691	0.0242
hs_teach~per	-0.0003	-0.0647	-0.0943	0.0138	-0.1087	-0.0610	0.0555	-0.0341	-0.0087	-0.0778	-0.0040	0.0437	0.0357	0.0030	-0.0360	-0.0328	-0.0437
hs_teach~oc	-0.0033	0.0217	-0.0391	0.0579	-0.0758	-0.0289	0.1030	-0.0442	-0.0166	-0.0286	-0.0111	0.0821	0.0429	-0.0247	-0.0657	0.1036	-0.0101
ln_hs_teach~y	0.0122	0.0873	0.0036	0.0946	-0.0376	0.0054	0.0765	-0.0358	-0.0155	0.0598	-0.0018	0.0379	0.0273	-0.0190	-0.0251	0.1295	-0.0731
hs_charter	-0.0031	-0.0137	0.0852	-0.0196	0.0876	0.0484	-0.0354	0.0588	0.0131	0.0430	-0.0057	-0.0569	-0.0581	-0.0132	0.0179	0.0657	-0.0166

(b) 2021 Cohort

	male	black_~p	hispanic	asian	nslp	grad_a~k	staar_qt	grad_age	grad_s~d	ever_lep	grad_bil	grad_g~d	hs_att~e	hs_exp~n	hs_sus~t	ap_ib~t	dc_cre~t
male	1.0000																
black_non_~p	-0.0120	1.0000															
hispanic	-0.0308	-0.3876	1.0000														
asian	0.0368	-0.0978	-0.2512	1.0000													
nslp	-0.0539	0.1113	0.3441	-0.1016	1.0000												
grad_at_risk	0.0239	0.0749	0.1686	-0.0947	0.2396	1.0000											
staar_qt	0.0079	-0.1775	-0.1731	0.2018	-0.2835	-0.5002	1.0000										
grad_age	0.0809	-0.0036	0.0311	-0.0536	0.0657	0.2322	-0.2133	1.0000									
grad_speced	0.0484	0.0487	0.0073	-0.0311	0.0508	0.1986	-0.2620	0.1748	1.0000								
ever_lep	0.0021	-0.1465	0.3188	-0.0544	0.2609	0.2258	-0.1820	0.0517	0.0228	1.0000							
grad_bil	-0.0016	-0.0097	0.0267	-0.0061	0.0080	-0.0062	0.0118	-0.0068	-0.0067	0.0189	1.0000						
grad_gifted	0.0387	-0.0839	-0.0511	0.0939	-0.1068	-0.1914	0.3782	-0.0836	-0.0763	-0.0671	0.0195	1.0000					
hs_att_rate	0.0472	-0.0576	-0.0540	0.1121	-0.1688	-0.2601	0.2783	-0.1662	-0.0765	-0.0038	0.0118	0.1163	1.0000				
hs_expulsion	0.0305	0.0553	-0.0056	-0.0327	0.0426	0.1432	-0.1111	0.0199	0.0416	-0.0166	-0.0029	-0.0401	-0.2753	1.0000			
hs_suspens~t	0.0708	0.1633	0.0002	-0.0820	0.1283	0.2101	-0.2805	0.0578	0.0712	0.0046	-0.0068	-0.1059	-0.2993	0.3324	1.0000		
ap_ib_credit	0.0120	-0.1168	-0.0628	0.2948	-0.1457	-0.2594	0.5085	-0.1201	-0.1257	-0.0213	0.0201	0.3356	0.2352	-0.0874	-0.2054	1.0000	
dc_credit	-0.0784	-0.0689	0.0176	-0.0086	-0.0513	-0.2113	0.3025	-0.0807	-0.1007	-0.0392	0.0081	0.1416	0.1549	-0.0659	-0.1450	-0.0627	1.0000
dc_cte_cre~t	-0.0305	-0.0125	0.0836	-0.0289	0.0628	-0.0419	0.0745	-0.0270	-0.0366	0.0635	0.0068	0.0586	0.0500	-0.0234	-0.0557	-0.0414	0.3924
cte_credit	0.0136	-0.0193	0.0024	-0.0493	0.0278	-0.0391	-0.0727	-0.0158	-0.0076	0.0020	0.0142	-0.0464	0.0679	-0.0018	0.0061	-0.2089	0.0420
adv_credit	-0.0117	-0.0913	-0.0224	0.0929	-0.0900	-0.1849	0.2989	-0.0762	-0.1027	-0.0217	0.0282	0.1614	0.1927	-0.0772	-0.1547	0.2797	-0.0052
ot_english~t	0.0270	0.0721	0.0543	-0.1077	0.1167	0.2463	-0.4119	0.1097	0.1532	0.0783	-0.0152	-0.2155	-0.1297	0.0619	0.1590	-0.4278	-0.3347
ot_math_cr~t	-0.0137	0.0740	-0.0250	-0.0957	0.0194	0.1226	-0.2717	0.0451	0.0969	-0.0023	-0.0129	-0.1675	0.0016	0.0311	0.0837	-0.2846	-0.1819
ot_science~t	0.0676	0.0632	0.0123	-0.0877	0.0420	0.1051	-0.2168	0.0397	0.0748	0.0233	0.0067	-0.1362	-0.0221	0.0287	0.0825	-0.3411	-0.1447
ot_socsci~t	0.0089	0.1023	0.0481	-0.1718	0.1138	0.2637	-0.4758	0.1051	0.1301	0.0474	-0.0099	-0.2915	-0.1908	0.0855	0.1957	-0.6145	-0.3842
ot_forlang~t	-0.0181	0.0057	-0.1387	0.0879	-0.1325	-0.0833	0.1093	-0.0489	-0.0458	-0.1089	0.0162	0.0319	0.0894	-0.0237	-0.0479	0.0948	-0.0795
ot_ot_credit	0.0057	0.0259	0.0043	-0.0776	-0.0262	-0.0611	0.0302	-0.0222	-0.0237	-0.0349	0.0008	0.0260	0.1528	-0.0384	-0.0688	-0.0101	-0.0119
psa_1	-0.0308	0.0087	0.0836	-0.0423	0.0946	0.0358	-0.0781	-0.0014	-0.0123	0.0470	0.0104	-0.0357	0.0103	-0.0093	0.0088	-0.0332	-0.0460
psa_2	-0.0130	0.0141	-0.1766	0.1127	-0.1870	-0.2389	0.3463	-0.1007	-0.1072	-0.1258	-0.0030	0.1519	0.1860	-0.0683	-0.1468	0.2579	0.2225
ln_hs_size	0.0234	0.0532	-0.0101	0.1114	-0.0826	-0.0098	0.0819	-0.0490	-0.0102	0.0410	0.0050	0.0332	0.1322	-0.0242	-0.0355	0.1602	-0.1786
hs_minority	-0.0307	0.1044	0.4847	-0.1643	0.4786	0.2754	-0.2858	0.0672	0.0306	0.2583	0.0244	-0.0392	-0.1490	0.0317	0.1084	-0.0835	0.0004
hs_nslp	-0.0436	0.0765	0.4382	-0.1834	0.5303	0.2351	-0.2951	0.0723	0.0275	0.2657	0.0239	-0.0377	-0.1455	0.0337	0.1148	-0.1371	0.0622
students	0.0143	0.0068	0.0926	0.0636	0.0266	-0.0315	0.0950	-0.0339	-0.0135	0.0650	0.0090	0.0374	0.1535	-0.0514	-0.0637	0.1700	-0.0332
hs_teach~per	-0.0047	-0.0663	-0.0899	-0.0030	-0.1094	-0.0503	0.0403	-0.0073	-0.0141	-0.0785	-0.0009	0.0539	0.0154	0.0151	-0.0170	-0.0577	-0.0224
hs_teach~oc	-0.0015	0.0326	-0.0343	0.0662	-0.0473	0.0010	0.0652	-0.0284	-0.0125	0.0048	-0.0165	0.0700	0.0168	-0.0032	-0.0339	0.0794	-0.0235
ln_hs_teach~y	0.0169	0.0898	-0.0020	0.1275	-0.0185	-0.0119	0.0658	-0.0332	-0.0079	0.0713	0.0069	0.0271	0.0313	-0.0062	-0.0187	0.1313	-0.0670
hs_charter	0.0089	-0.0122	0.1130	-0.0230	0.1179	0.0638	-0.0531	0.0407	0.0228	0.0568	-0.0083	-0.0629	-0.0478	-0.0161	0.0180	0.0937	-0.0443

	dc_cte..	cte_cr~t	adv_cr~t	ot_eng~t	ot_mat~t	ot_sci~t	ot_soc~t	ot_for~t	ot_ot~t	psa_2	psa_3	ln_hs~e	hs_min~y	hs_nslp	students	hs_t~per	hs_te~oc
dc_cte_cre~t	1.0000																
cte_credit	0.2342	1.0000															
adv_credit	-0.0496	-0.1762	1.0000														
ot_english~t	-0.1301	0.0065	-0.1199	1.0000													
ot_math_cr~t	-0.0863	0.0845	-0.2114	0.3142	1.0000												
ot_science~t	-0.0649	-0.0365	-0.0444	0.3119	0.2659	1.0000											
ot_socsci~t	-0.1417	0.1002	-0.1780	0.4998	0.3271	0.3598	1.0000										
ot_forlang~t	-0.0776	-0.0375	0.0497	-0.0289	0.0618	0.0105	-0.0169	1.0000									
ot_ot_credit	-0.0521	-0.2727	0.1763	-0.0250	0.0687	0.0436	0.0037	-0.0329	1.0000								
psa_2	-0.0169	0.0347	-0.0084	0.0385	0.0127	0.0089	0.0418	-0.0310	0.0401	1.0000							
psa_3	0.0757	-0.0631	0.1391	-0.2278	-0.1125	-0.1197	-0.2791	0.0688	0.0482	-0.6149	1.0000						
ln_hs_size	-0.1133	-0.1329	0.0844	-0.0345	0.0165	0.0324	-0.0051	0.0407	0.0619	-0.0173	0.0212	1.0000					
hs_minority	0.1292	-0.0270	-0.0672	0.0675	-0.0386	0.0168	0.0491	-0.1949	0.0112	0.1230	-0.2088	0.0664	1.0000				
hs_nslp	0.1556	0.0720	-0.0810	0.0570	-0.0411	-0.0009	0.0354	-0.2028	0.0020	0.1372	-0.2187	-0.1699	0.8815	1.0000			
students	-0.0342	-0.1777	0.0410	-0.0747	-0.0885	-0.0362	-0.1253	-0.0213	-0.0545	0.0164	0.0563	0.3064	0.0982	-0.0080	1.0000		
hs_teach~per	-0.0166	0.1246	-0.0023	0.0192	0.0582	0.0362	0.0480	0.0569	0.0612	-0.0314	0.0070	0.1100	-0.1907	-0.1467	-0.2932	1.0000	
hs_teach~oc	0.0090	-0.1094	0.0239	-0.0122	0.0115	0.0078	-0.0214	0.0160	0.0288	-0.0442	0.0439	0.3004	-0.0050	-0.0944	0.0264	0.5608	1.0000
ln_hs_teach~y	-0.0272	-0.1418	0.0604	-0.0185	0.0159	0.0714	0.0021	0.0082	0.0095	-0.0378	0.0192	0.5901	0.0840	-0.0902	0.1742	0.0908	0.3426
hs_charter	-0.0130	-0.1268	0.0014	0.0118	-0.0545	-0.0625	-0.0500	-0.0271	-0.0705	0.0588	-0.0130	-0.3681	0.1497	0.1768	0.2285	-0.4713	-0.3056
		ln_hs~y	hs_cha~r														
ln_hs_teach~y	1.0000																
hs_charter	-0.3271	1.0000															

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	male	black_~p	hispanic	asian	nslp	grad_a~k	staar_qt	grad_age	grad_s~d	ever_lep	grad_bil	grad_g~d	hs_att~e	hs_exp~n	hs_sus~t	ap_ib~t	dc_cre~t
male	1.0000																
black_non~p	-0.0108	1.0000															
hispanic	-0.0262	-0.4627	1.0000														
asian	0.0366	-0.0902	-0.2207	1.0000													
nslp	-0.0607	0.0985	0.2789	-0.0803	1.0000												
grad_at_risk	0.0144	0.0555	0.1480	-0.0613	0.2324	1.0000											
staar_qt	0.0473	-0.1585	-0.1149	0.1502	-0.2471	-0.4665	1.0000										
grad_age	0.0744	-0.0067	0.0283	-0.0444	0.0619	0.2232	-0.2275	1.0000									
grad_speced	0.0528	0.0384	-0.0050	-0.0245	0.0385	0.1792	-0.2735	0.1727	1.0000								
ever_lep	-0.0060	-0.1930	0.3607	0.0673	0.2406	0.2376	-0.1407	0.0416	0.0044	1.0000							
grad_bil	0.0053	-0.0140	0.0316	-0.0063	0.0121	0.0071	0.0057	-0.0030	-0.0044	0.0474	1.0000						
grad_gifted	0.0259	-0.0659	-0.0079	0.0528	-0.0656	-0.1520	0.3226	-0.0769	-0.0712	-0.0194	0.0100	1.0000					
hs_att_rate	0.0544	-0.0397	-0.0574	0.0839	-0.1763	-0.2896	0.2770	-0.1764	-0.0524	0.0036	0.0085	0.0939	1.0000				
hs_expulsion	0.0431	0.0459	-0.0079	-0.0311	0.0362	0.1235	-0.1101	0.0183	0.0335	-0.0271	-0.0081	-0.0378	-0.2668	1.0000			
hs_suspens~t	0.0712	0.1483	-0.0348	-0.0701	0.1002	0.1878	-0.2612	0.0427	0.0607	-0.0295	-0.0108	-0.0888	-0.2787	0.3440	1.0000		
ap_ib_credit	-0.0134	-0.0888	-0.0040	0.2112	-0.1035	-0.2475	0.4354	-0.1115	-0.1214	0.0128	0.0157	0.3002	0.2123	-0.0847	-0.1879	1.0000	
dc_credit	-0.0739	-0.0641	0.0191	0.0087	-0.0559	-0.2033	0.2827	-0.0825	-0.0961	-0.0180	0.0099	0.1595	0.1721	-0.0668	-0.1433	0.0147	1.0000
dc_cte_cre~t	-0.0321	-0.0238	0.0657	-0.0151	0.0344	-0.0518	0.0839	-0.0358	-0.0365	0.0428	0.0037	0.0746	0.0769	-0.0260	-0.0675	-0.0096	0.4188
cte_credit	0.0010	-0.0380	-0.0106	-0.0340	0.0108	-0.0868	0.0031	-0.0347	-0.0128	-0.0149	0.0078	-0.0273	0.1395	-0.0162	-0.0115	-0.1466	0.0441
adv_credit	-0.0190	-0.0578	0.0124	0.0669	-0.0648	-0.1591	0.2651	-0.0740	-0.1015	0.0119	0.0313	0.1395	0.1928	-0.0781	-0.1504	0.2731	0.0172
ot_english~t	0.0286	0.0511	0.0279	-0.0779	0.0828	0.2149	-0.3435	0.0935	-0.1301	0.0429	-0.0098	-0.1910	-0.0940	0.0457	0.1191	-0.4269	-0.3345
ot_math_cr~t	-0.0019	0.0507	-0.0231	-0.0641	0.0144	0.0733	-0.1983	0.0124	0.0818	-0.0054	0.0029	-0.1331	0.0486	0.0146	0.0491	-0.2263	-0.1724
ot_science~t	0.0802	0.0387	0.0015	-0.0537	0.0157	0.0877	-0.1398	0.0218	0.0635	0.0212	0.0116	-0.0955	0.0172	0.0105	0.0550	-0.2848	-0.1500
ot_socsci~t	0.0162	0.0800	0.0042	-0.1229	0.0830	0.2191	-0.3793	0.0896	0.1132	0.0116	0.0035	-0.2601	-0.1485	0.0694	0.1627	-0.5984	-0.4191
ot_forlang~t	-0.0284	0.0207	-0.1058	0.0522	-0.0920	-0.0780	0.0729	-0.0497	-0.0477	-0.1162	-0.0229	-0.0102	0.0871	-0.0272	-0.0276	0.0388	-0.0771
ot_ot_credit	0.0201	0.0395	-0.0221	-0.0431	-0.0384	-0.0976	0.0542	-0.0424	-0.0241	-0.0534	0.0009	0.0378	0.1740	-0.0428	-0.0802	0.0366	-0.0022
psa_1	-0.0301	0.0309	-0.0178	-0.0194	0.0092	0.0086	-0.0258	0.0119	-0.0035	-0.0215	0.0013	-0.0162	-0.0139	0.0034	0.0121	-0.0182	-0.0175
psa_2	-0.0227	0.1176	-0.1017	0.0509	-0.0575	-0.1483	0.1839	-0.0924	-0.0819	-0.0710	-0.0051	0.0917	0.1578	-0.0536	-0.0905	0.1588	0.1788
ln_hs_size	0.0317	0.0683	0.0024	0.0916	-0.0604	-0.0155	0.0765	-0.0436	-0.0141	0.0691	0.0173	0.0179	0.1243	-0.0288	-0.0394	0.1273	-0.1440
hs_minority	-0.0261	0.0861	0.4312	-0.1328	0.4243	0.2733	-0.2500	0.0728	0.0129	0.2607	0.0197	0.0059	-0.1974	0.0265	0.0811	-0.0229	-0.0024
hs_nslp	-0.0422	0.0628	0.3763	-0.1454	0.4747	0.2391	-0.2627	0.0751	0.0123	0.2620	0.0130	0.0110	-0.1779	0.0282	0.0926	-0.0675	0.0476
students	0.0193	0.0211	0.0748	0.0581	0.0062	-0.0248	0.0803	-0.0253	-0.0205	0.0975	0.0114	0.0419	0.1566	-0.0580	-0.0718	0.1703	-0.0193
hs_teach~per	-0.0003	-0.0757	-0.0530	-0.0092	-0.0645	-0.0528	0.0400	-0.0051	-0.0152	-0.0560	0.0072	0.0390	0.0280	0.0186	-0.0122	-0.0536	-0.0259
hs_teach~oc	0.0117	0.0240	0.0022	0.0443	-0.0079	0.0047	0.0434	-0.0204	-0.0059	0.0312	0.0035	0.0566	0.0002	0.0011	-0.0288	0.0668	-0.0273
ln_hs_teach~y	0.0260	0.0792	0.0150	0.1028	-0.0058	0.0062	0.0773	-0.0341	-0.0116	0.1018	0.0089	0.0339	0.0251	-0.0131	-0.0292	0.1357	-0.0531
hs_charter	-0.0067	-0.0048	0.0711	-0.0141	0.0795	0.0650	-0.0609	0.0479	0.0208	0.0390	-0.0094	-0.0440	-0.0647	-0.0135	0.0170	0.0751	-0.0187

	dc_cte..	cte_cr~t	adv_cr~t	ot_eng~t	ot_mat~t	ot_sci~t	ot_soc~t	ot_for~t	ot_ot~t	psa_2	psa_3	ln_hs~e	hs_min~y	hs_nslp	students	hs_t~per	hs_te~oc
dc_cte_cre~t	1.0000																
cte_credit	0.2262	1.0000															
adv_credit	-0.0081	-0.1316	1.0000														
ot_english~t	-0.1360	-0.0003	-0.1012	1.0000													
ot_math_cr~t	-0.0861	0.0895	-0.1958	0.3092	1.0000												
ot_science~t	-0.0590	-0.0732	-0.0250	0.2999	0.2611	1.0000											
ot_socsci~t	-0.1619	0.0694	-0.1706	0.4746	0.2955	0.3331	1.0000										
ot_forlang~t	-0.0594	-0.0057	0.0315	0.0251	0.0980	0.0446	0.0362	1.0000									
ot_ot_credit	-0.0401	-0.2545	0.2004	-0.0208	0.0738	0.0504	-0.0086	-0.0179	1.0000								
psa_2	-0.0105	0.0183	-0.0173	0.0087	0.0074	0.0102	0.0228	0.0010	0.0003	1.0000							
psa_3	0.0765	-0.0345	0.1124	-0.1313	-0.0553	-0.0722	-0.1742	0.0261	0.0988	-0.2190	1.0000						
ln_hs_size	-0.1011	-0.1386	0.0641	-0.0162	0.0400	0.0742	0.0208	0.0104	0.0640	-0.0283	0.0215	1.0000					
hs_minority	0.1021	-0.0779	-0.0072	0.0428	-0.0328	0.0139	0.0088	-0.1395	-0.0069	0.0119	-0.0623	0.0727	1.0000				
hs_nslp	0.1186	0.0399	-0.0268	0.0333	-0.0339	-0.0205	-0.0093	-0.1475	-0.0162	0.0175	-0.0808	-0.1462	0.8717	1.0000			
students	-0.0258	-0.1361	0.0583	-0.0796	-0.0649	-0.0273	-0.1049	-0.0148	-0.0609	-0.0183	0.0574	0.3987	0.0828	-0.0246	1.0000		
hs_teach~per	-0.0322	0.1099	-0.0358	0.0212	0.0532	0.0249	0.0340	0.0317	0.0566	-0.0037	-0.0372	0.0742	-0.1591	-0.0982	-0.2675	1.0000	
hs_teach~oc	-0.0171	-0.1283	0.0009	-0.0111	0.0014	0.0153	-0.0166	-0.0172	0.0411	-0.0272	0.0251	0.2788	0.0496	-0.0299	0.0195	0.5800	1.0000
ln_hs_teach~y	-0.0223	-0.1673	0.0539	-0.0290	0.0116	0.0770	-0.0127	-0.0195	0.0054	-0.0330	-0.0006	0.5741	0.1068	-0.0496	0.2364	0.0830	0.3408
hs_charter	-0.0056	-0.0901	0.0378	-0.0022	-0.0443	-0.0605	-0.0530	0.0161	-0.0857	0.0195	0.0189	-0.3584	0.1236	0.1374	0.1722	-0.4355	-0.2902
		ln_hs~y	hs_cha~r														
ln_hs_teach~y	1.0000																
hs_charter	-0.3366	1.0000															

APPENDIX C. MODELING THE SES GAP IN ADVI: HIGH SCHOOL GRADUATES IN 2021 AND 2022 BY TERILES OF HIGH SCHOOL STAAR ACHIEVEMENT

	High School Graduates in 2021			High School Graduates in 2022			Model
	Low	Medium	High	Low	Medium	High	
	(1)	(2)	(3)	(4)	(5)	(6)	
Female	-0.034***	-0.050***	-0.052***	-0.034***	-0.040***	-0.048***	1
Female	-0.034***	-0.050***	-0.052***	-0.034***	-0.040***	-0.048***	2
Female	-0.033***	-0.048***	-0.051	-0.033***	-0.040	-0.045	3
Female	-0.031***	-0.047***	-0.051	-0.032***	-0.040	-0.044	4
Female	-0.032***	-0.047***	-0.051	-0.031***	-0.039	-0.044	5
African American	0.042***	0.041***	0.032**	0.010	0.014	0.026**	1
African American	0.041***	0.040***	0.028***	0.011	0.014	0.026**	2
African American	0.041***	0.042	0.023*	0.011	0.013	0.025	3
African American	0.046***	0.044	0.024**	0.010	0.010	0.023	4
African American	0.029**	0.032	0.009*	-0.008	0.007	0.011	5
Hispanic	0.087***	0.085***	0.087***	0.079***	0.076***	0.078***	1
Hispanic	0.087***	0.084***	0.085***	0.079***	0.076***	0.078***	2
Hispanic	0.067***	0.075***	0.083	0.060**	0.057***	0.068	3
Hispanic	0.066***	0.074***	0.081	0.060**	0.057***	0.068	4
Hispanic	0.052***	0.061**	0.063	0.046*	0.051**	0.060	5
FRPL	0.009**	0.031***	0.148***	-0.007	0.008	0.026***	1
FRPL	0.009**	0.030***	0.044***	-0.006	0.008	0.026***	2
FRPL	0.004*	0.025	0.038	-0.004	0.008	0.024	3
FRPL	0.004*	0.025	0.036	-0.004	0.008	0.025	4
FRPL	-0.002*	0.015	0.017	-0.009	0.001	0.015	5

Notes. All gaps are expressed in percentages. All estimates are average marginal effects, following logistic regressions predicting ADVi participation as a function of selected SES characteristics, student STAAR achievement, student characteristics and coursework, aspiration and intention, and high school attributes and dummy variables across different tertiles of the STAAR achievement. See the Method section for the model details. Appendix E reports the full regression outputs (legitimate logistic coefficients, standard errors, significance levels, and 95% confidence intervals) of Model 5. Robust standard errors are clustered at the high school level. The regression outputs for Models 1 to 4 are available upon request from the authors.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

APPENDIX D.

D.1. Student Interview Protocol

Baseline User Info, Engagement Level, College Steps Awareness

1. What is your name? (Get their email address if you don't have it)
2. What is the name of your school?
3. What grade are you in?
4. How would you describe your grades in school this year? Mostly A's? B's? C's? D's? a mix of these?
5. Do you know what your plans are after high school?
 - If college, where are you in the process of applying to college?
PROTOCOL A FOR SOMEONE IN PROCESS
PROTOCOL B FOR SOMEONE WHO IS DONE WITH APPLICATION PROCESS
 - If not college:
PROTOCOL C FOR SOMEONE WHO IS NOT PLANNING ON GOING TO COLLEGE

PROTOCOL A – SOMEONE WHO IS CURRENTLY IN PROCESS OF APPLYING TO COLLEGE

For this next set of questions, I want you to think about your college application process overall and the use of the ADVi text bot and how it has worked for you.

1. Describe where you are in the college application process.
 - How many applications have you done/worked on/submitted?
2. How is the college application process going so far?
3. How/why are you using ADVi? What keeps you engaged?
4. As you probably recall, ADVi sends out text reminders to encourage you throughout the college application process. How well did those reminders work for you?
5. Did you take any steps because of these reminders? If yes, which steps? (Choices: committing to/preparing for college, completing financial aid, submitting a college application)
6. When applying to college, it is common to rely on a variety of sources to help us such as family and friends, high school counselors and teachers, and ADVi to name a few. What has been most helpful to you and why?
 - How much did you rely on ADVi specifically?
 - What would make ADVi more helpful?
7. What has helped you the LEAST with the process of applying to college? (high school staff? ADVi? Family/friends, internet).
8. What is your favorite thing about ADVi? What is your least favorite thing about ADVi?
9. How do you think your application process would have gone if you did not have ADVi?
10. Would you recommend ADVi to your friends who don't receive the texts? Why or why not?

Now we want you to think about your high school experience in general and reflect on the experiences and choices you made that led up to your college application process.

11. When you think about your college application process:
 - What have you learned so far about the steps you must take to apply for college?
 - What do you think you need to know more about?
 - Are there any actions or steps you wish you would have done earlier?
12. Some college applicants feel relatively prepared and informed throughout the college application process. Some figure it out as they go, often feeling unsure of the steps they should be taking or the

questions they should be asking. What has this process felt like for you?

- If prepared: How did you get prepared? Who helped you the most or what resources did you rely on? What role did ADVi play in this journey so far?
 - If not prepared: Who or what resource has helped you the most? What role did ADVi play in this journey so far?
13. Is there anything you're learning about the application process you wish you had known earlier?
 14. Imagine that I'm a younger high school student who hasn't started the application process, what are the important things that I should know, work on, or begin thinking about before beginning the application process?
 15. What kind of encouragement do you wish you would have received about college as a freshman and sophomore in high school?

Wrap Up

16. Is there anything else that you would like to share about anything we have talked about?
17. Would you be willing to be contacted again by our team, if we have any other questions or want to follow up about anything?

PROTOCOL B – SOMEONE WHO HAS COMPLETED THE COLLEGE APPLICATION PROCESS

For this next set of questions, I want you to think about your college application process overall and the use of the ADVi bot and how it worked for you throughout the process.

1. When did you complete your application process?
2. How many applications did you submit?
3. How did the college application process go for you?
4. What role did ADVi play in helping you with the application process?
5. As you probably recall, ADVi sends out text reminders to encourage you throughout the college application process. How well did those reminders work for you?
6. Did you take any steps because of these reminders? If yes, which steps? (Choices: committing to/preparing for college, completing financial aid, submitting a college application)
7. When applying to college, it is common to rely on a variety of sources to help us such as family and friends, high school counselors and teachers, and ADVi to name a few. What has been most helpful to you and why?
 - How much did you rely on ADVi specifically?
 - What would make ADVi more helpful?
8. What has helped you the LEAST with the process of applying to college? (high school staff? ADVi? Family/friends, internet).
9. What is your favorite thing about ADVi? What is your least favorite thing about ADVi?
10. How do you think your application process would have gone if you did not have ADVi?
11. Would you recommend ADVi to your friends who don't receive the texts? Why or why not?

Now we want you to think about your high school experience in general and reflect on the experiences and choices you made that led up to your college application process.

12. When you think about your college application journey, what actions or steps do you wish you would have done earlier?
13. Some college applicants feel relatively prepared and informed throughout the college application process. Some figure it out as they go, often feeling unsure of the steps they should be taking or the

questions they should be asking. What was it like for you?

- If prepared: How did you get prepared? Who helped you most or what resources did you rely on? What role did ADVi play in your journey?
 - If not prepared: Who or what resource helped you the most? What did you do if you had questions along the way? What role did ADVi play in your process?
14. I'm going to list a few areas related to college application process. Some of these areas you may have thought about and some areas you may not have thought about at all. There are no right or wrong answers, we just want to know what it was like for you. Looking back on your application process:
 - How did you decide what colleges you would apply to?
 - How much did you think about different college majors?
 - How much did you think about the courses you would take in high school to prepare for college? (Dual Credit/AP)
 - How much did you think about getting involved in extracurricular activities?
 - How much did you think about how you would pay for college?
 - How much did you think about the PSAT and/or SAT?
 15. What information or advice about colleges, college applications, college acceptance, or financial aid do you wish you would have known earlier in your high school career?
 16. Imagine that I'm a younger high school student who hasn't started the application process, what are the important things that I should know, work on, or begin thinking about before beginning the application process?
 17. What kind of encouragement do you wish you would have received about college as a freshman and sophomore in high school?

Wrap Up

18. Is there anything else that you would like to share about anything we have talked about?
19. Would you be willing to be contacted again by our team, if we have any other questions or want to follow up about anything?

PROTOCOL C -- FOR SOMEONE NOT PLANNING TO GO TO COLLEGE

For this next set of questions, I want you to think about your use of the ADVi bot and how it has or hasn't worked for you.

1. How would you describe the circumstances that led to your decision not to go to college?
2. What role did ADVi play in your decision about whether to go to college?
3. As you probably recall, ADVi sends out text reminders to encourage you throughout the college application process. How well did those reminders work for you?
4. Did you take any steps because of these reminders? If yes, which steps? (Choices: committing to/ preparing for college, completing financial aid, submitting a college application)
5. What are some recommendations you have for how ADVi could be more helpful?
6. What is your favorite thing about ADVi? What is your least favorite thing about ADVi?
7. Would you recommend ADVi to your friends who do not receive the texts? Why or why not?

Wrap Up

8. Is there anything else that you would like to share about anything we have talked about?
9. Would you be willing to be contacted again by our team, if we have any other questions or want to follow up about anything?

D.2: Advisor/Counselor Focus Group Protocol

Baseline information

1. What is your name? (Get their email address if you don't have it)
2. What is your title and how long have you worked in this role?
3. What school or schools do you work in?
4. How would you characterize how you spend your time? For example,
 - What are the main areas of support you provide students? (examples include: college research, financial aid/scholarship help, student supports such as mental health)
 - How would you describe about how much of your time you spend on each?
5. In general, what proportion of students you advise end up going to college?

For this next set of questions, I want you to think about students' college application process overall and their use of the ADVi text bot. First, are you familiar with ADVi text bot?

If yes, continue with next set of questions. If NOT, skip to question 12

6. Describe what you know or understand about the ADVi text bot?
 - PROBE: have students shared any information about it? What have they shared?
7. What are students' general reactions to ADVi text bot?
 - PROBE: Do they report is as being useful? Why or why not?
8. How would you characterize ADVI text bot as a source of support for students?
 - PROBE: In what ways might it enhance your work supporting students through college application process? In what ways might it detract from your work supporting students through college application process?
9. Did students take any concrete steps on the college application process because of the reminders from ADVI text bot?
10. In your view, how critical has ADVi text bot been to students' progression through college application process?
11. What recommendations do you have (if any) for improving or changing ADVi program? (SKIP TO QUESTION 14)

If individuals are not familiar with ADVi, ask the following then progress to the rest of interview

12. The ADVi text bot gives students regular reminders on key college application milestones/tasks/deadlines. What are your thoughts about whether something like would be helpful for students?
 - PROBE: Any pros or cons you can foresee?
13. In what ways might this kind of reminder system complement the work you do?

Now we want you to think about students' high school experiences in general and reflect on your work advising them on the college going process.

14. When you think about students' college application process:
 - What are key steps students need to understand to apply to college?
 - What, if any, are aspects of the process students tend to misunderstand?
 - Are there any actions or steps students tend to complete too late in the process?
15. Some college applicants feel relatively prepared and informed throughout the college application process. Some figure it out as they go, often feeling unsure of the steps they should be taking or the questions they should be asking. How you characterize the students you work with?

- PROBE: Why do you think some students are prepared and some are less prepared?
 - PROBE: Tell me a little more about your prepared students.
 - PROBE: tell me a little more about your less prepared students
 - PROBE: What resources or strategies tend to help students most?
16. Is there anything you notice about students as they learn about the application process:
- PROBE: Anything they wish they had known earlier?
 - PROBE: Any specific interventions you know work?
17. What kind of strategies tend to be most successful helping students through the application process?
What strategies are least successful?

Wrap Up

18. Is there anything else that you would like to share about anything we have talked about?
19. Would you be willing to be contacted again by our team, if we have any other questions or want to follow up about anything?

D.3: THECB Focus Group Protocol

1. Can you describe what Texas Oncourse is? When was it created? How has it evolved over time?
 - PROBE: What are the main goals of this site as a resource?
2. Tell me a little about your role(s) with this resource.
 - PROBE: How long have you worked with this program?
 - PROBE: What changes, if any, have you seen along the way?
3. How would you describe how the resource has been used over time?
 - Tell me little bit about each component: student, parent, teacher/district leader
 - What expectations did you have at the start of the rollout of the program?
 - PROBE: Explore connections to student college application process throughout remainder of interview.
4. What have you learned about what works well and what doesn't work well across the various sectors of support—specifically:
 - PROBE: can you characterize what you have learned from educators who have used the resource?
 - PROBE: can you characterize what you have learned from families/parents who have used the resource?
 - PROBE: can you characterize what you have learned from students who have used the resource?
 - PROBE: can you characterize what you have learned from district leaders who have used the resource?
5. As it relates to students, we know a relatively new offering is a PD on the ADVi chatbot. Are you familiar with this resource? (PROBE to explain).
 - PROBE: have you received any feedback about ADVi's functionality? Effectiveness?
 - PROBE: do you have any suggestions for improvement or changes to the program? More specifically, any feedback on best practices for getting educator buy-in?
 - PROBE: have you heard back from anyone any questions or feedback that have emerged in the time since the initial roll out of the textbot ?
 - PROBE: Has there been anything you have learned about the use of ADVi that has been surprising?
6. Given your experience working with schools, how do you see ADVi fitting into a school's advising program?
7. Is there anything else that you would like to share about your work with Texas Oncourse suite and/ or the ADVi text bot that would help us learn more about students' experiences applying for college?
8. Is there anything else about your work you would like to share that we haven't talked about?

APPENDIX E.

E.1. STATA variable name

	STATA variable name
ADVi	adv_i
Male	male
African American	race:2
Hispanic	race:3
Asian	race:1
FRPL	nslp
At risk	grad_at_risk
STAAR achievement	staar_qt
Age	grad_age
Special education	grad_speced
LEP	ever_lep
Bilingual	grad_bil
Gifted	grad_gifted
Attendance rates	hs_att_rate
Expulsion	hs_expulsion
Suspension	hs_suspension_ot
AP and IB credits earned	ap_ib_credit
DC credits earned	dc_credit
DC-CTE credits earned	dc_cte_credit
CTE credits earned	cte_credit
Advanced credits earned	adv_credit
English credits earned	ot_english_credit
Math credits earned	ot_math_credit
Science credits earned	ot_science_credit
Social studies credits earned	ot_socsci_credit
Foreign language credits earned	ot_forlang_credit
Other course credits earned	ot_ot_credit
Four-year and two-year colleges	psa:1
Four-year college only	psa:2
Charter school	hs_charter
School Size	ln_hs_size
Student-teacher ratio	students
Percent minority	hs_minority
Percent FRPL	hs_nslp
Years of teaching experience	ln_teacher_exper
Teacher educational attainment	hs_teacher_ma_doc
Teacher salary	ln_hs_teacher_pay

E.2. Logistic regression results of predicting selected SES gaps in ADVi for 2020 cohort

Logistic regression
Log pseudolikelihood = -34841.21

Number of obs = 55,113
Pseudo R2 = 0.0588

(Std. err. adjusted for 369 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.1323553	.0352836	-3.75	0.000	-.20151	-.0632007
race						
1	.1234879	.1692394	0.73	0.466	-.2082152	.455191
2	.4129062	.0577899	7.14	0.000	.2996402	.5261723
3	.3658312	.0507677	7.21	0.000	.2663283	.4653342
1.nslp	.0765636	.0375229	2.04	0.041	.00302	.1501072
1.grad_at_risk	.0564387	.0429171	1.32	0.188	-.0276772	.1405546
staar_qt	.0033154	.0018498	1.79	0.073	-.0003101	.006941
grad_age	.0332772	.0239011	1.39	0.164	-.0135682	.0801226
1.grad_sped	.0617886	.0446491	1.38	0.166	-.0257219	.1492992
1.everlep	.2895162	.0310644	9.32	0.000	.2286311	.3504013
1.grad_bil	.0263966	.4352577	0.06	0.952	-.8266928	.8794861
1.grad_gifted	-.0778411	.036099	-2.16	0.031	-.1485939	-.0070883
hs_att_rate	-.3414785	.1727304	-1.98	0.048	-.6800239	-.0029331
1.hs_expulsion	-.0866956	.0427395	-2.03	0.043	-.1704636	-.0029277
1.hs_suspension_ot	.0664558	.0246677	2.69	0.007	.0181081	.1148036
ap_ib_credit	-.023939	.0047161	-5.08	0.000	-.0331824	-.0146956
dc_credit	-.0219354	.0066179	-3.31	0.001	-.0349062	-.0089646
dc_cte_credit	.0214414	.0126214	1.70	0.089	-.003296	.0461789
cte_credit	-.0051407	.0053686	-0.96	0.338	-.015663	.0053816
adv_credit	-.0330511	.0104082	-3.18	0.001	-.0534508	-.0126515
ot_english_credit	.0060087	.0105507	0.57	0.569	-.0146703	.0266877
ot_math_credit	-.0099265	.0146985	-0.68	0.499	-.0387351	.0188821
ot_science_credit	.0087562	.0132887	0.66	0.510	-.0172891	.0348014
ot_socsci_credit	-.0013153	.0076536	-0.17	0.864	-.0163162	.0136856
ot_forlang_credit	.0092333	.0163634	0.56	0.573	-.0228383	.041305
ot_ot_credit	-.0083549	.0049404	-1.69	0.091	-.0180379	.0013281
c.staar_qt#c.staar_qt	-.0000617	.0000144	-4.30	0.000	-.0000898	-.0000336
male#c.staar_qt						
1	.0010851	.0006253	-1.74	0.083	-.0023105	.0001404
race#c.staar_qt						
1	-.000724	.0020928	-0.35	0.729	-.0048258	.0033778
2	-.004541	.0008984	-5.05	0.000	-.0063018	-.0027801
3	-.0018603	.0007805	-2.38	0.017	-.0033901	-.0003305
nslp#c.staar_qt						
1	.0026373	.0006962	3.79	0.000	.0012728	.0040017
grad_at_risk#c.staar_qt						
1	.0012004	.0008761	1.37	0.171	-.0005167	.0029175

psa							
1	-.1298131	.0267821	-4.85	0.000	-.182305	-.0773211	
2	-.20724	.0304738	-6.80	0.000	-.2669676	-.1475123	
ln_hs_size	-.031461	.0192095	-1.64	0.101	-.0691109	.0061889	
hs_minority	.0544282	.1009917	0.54	0.590	-.1435119	.2523683	
hs_nslp	.3927783	.1882372	2.09	0.037	.0238402	.7617164	
students	.0057041	.0038164	1.49	0.135	-.001776	.0131842	
hs_teacher_exper	-.0025395	.0042956	-0.59	0.554	-.0109587	.0058796	
hs_teacher_ma_doc	-.0244119	.1419623	-0.17	0.863	-.3026528	.2538291	
ln_hs_teacher_pay	.0686959	.2009428	0.34	0.732	-.3251448	.4625366	
hs_charter	-.0024607	.0612319	-0.04	0.968	-.122473	.1175516	
_cons	-.2675184	2.175714	-0.12	0.902	-4.53184	3.996803	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.2.1. Logistic regression results of predicting selected SES gaps in ADVi for 2020 cohort at the bottom third of STAAR achievement

Logistic regression
Log pseudolikelihood = -12094.521

Number of obs = 20,298
Pseudo R2 = 0.0329

(Std. err. adjusted for 341 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.0551243	.0696269	-0.79	0.429	-.1915906	.0813419
race						
1	.0415152	.3026704	0.14	0.891	-.5517079	.6347383
2	.4198761	.1005064	4.18	0.000	.2228871	.6168651
3	.4016802	.0968805	4.15	0.000	.2117979	.5915624
1.nslp	-.0346435	.065867	-0.53	0.599	-.1637404	.0944534
1.grad_at_risk	.0194133	.0996684	0.19	0.846	-.1759333	.2147598
staar_qt	-.0167654	.0105681	-1.59	0.113	-.0374784	.0039476
grad_age	.0605666	.033566	1.80	0.071	-.0052216	.1263547
1.grad_sped	.0071948	.0594134	0.12	0.904	-.1092533	.1236429
1.ever_lep	.290318	.0466686	6.22	0.000	.1988493	.3817867
1.grad_bil	-.3182827	.9812797	-0.32	0.746	-2.241556	1.60499
1.grad_gifted	.0852878	.2025368	0.42	0.674	-.3116771	.4822527
hs_att_rate	-.1147063	.2563703	-0.45	0.655	-.6171828	.3877702
1.hs_expulsion	-.0610818	.0652106	-0.94	0.349	-.1888922	.0667286
1.hs_suspension_ot	.0482053	.040699	1.18	0.236	-.0315632	.1279738
ap_ib_credit	.0052818	.0130055	0.41	0.685	-.0202084	.0307721
dc_credit	-.0539798	.0200097	-2.70	0.007	-.0931981	-.0147616
dc_cte_credit	.0127255	.0248911	0.51	0.609	-.0360603	.0615112
cte_credit	-.0159091	.0078798	-2.02	0.043	-.0313532	-.000465
adv_credit	-.0040302	.0256909	-0.16	0.875	-.0543835	.0463231
ot_english_credit	.0086137	.0214738	0.40	0.688	-.0334743	.0507016
ot_math_credit	-.0261726	.0271838	-0.96	0.336	-.0794519	.0271068
ot_science_credit	.0176577	.0260583	0.68	0.498	-.0334156	.068731
ot_socsci_credit	-.0036988	.0145447	-0.25	0.799	-.0322059	.0248083
ot_forlang_credit	-.0102783	.0231929	-0.44	0.658	-.0557356	.0351789
ot_ot_credit	-.0141794	.0079861	-1.78	0.076	-.0298318	.001473
c.staar_qt#c.staar_qt	.0003958	.0002215	1.79	0.074	-.0000384	.0008299
male#c.staar_qt						
1	.0043248	.0035594	-1.22	0.224	-.0113011	.0026514
race#c.staar_qt						
1	.0104303	.0142598	0.73	0.465	-.0175184	.0383789
2	-.0054615	.0054488	-1.00	0.316	-.016141	.005218
3	-.0043056	.0046914	-0.92	0.359	-.0135007	.0048894
nslp#c.staar_qt						
1	.0075284	.0036739	2.05	0.040	.0003277	.0147291
grad_at_risk#c.staar_qt						
1	.003582	.0046693	0.77	0.443	-.0055696	.0127336

psa							
1	-.1287011	.0449252	-2.86	0.004	-.216753	-.0406492	
2	-.0724121	.0428697	-1.69	0.091	-.1564353	.011611	
ln_hs_size	-.0574902	.0395195	-1.45	0.146	-.134947	.0199667	
hs_minority	.0386621	.2985263	0.13	0.897	-.5464388	.6237629	
hs_nslp	.4813631	.2751252	1.75	0.080	-.0578723	1.020599	
students	.010817	.0050854	2.13	0.033	.0008498	.0207843	
hs_teacher_exper	-.0010956	.0084821	-0.13	0.897	-.0177203	.0155291	
hs_teacher_ma_doc	-.1591067	.2715267	-0.59	0.558	-.6912892	.3730758	
ln_hs_teacher_pay	.455042	.3773218	1.21	0.228	-.2844952	1.194579	
hs_charter	.0542243	.0997338	0.54	0.587	-.1412504	.2496989	
_cons	-5.074918	3.988132	-1.27	0.203	-12.89151	2.741677	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.2.2. Logistic regression results of predicting selected SES gaps in ADVi for 2020 cohort at the middle third of STAAR achievement

Logistic regression
Log pseudolikelihood = -10067.058

Number of obs = 15,920
Pseudo R2 = 0.0398

(Std. err. adjusted for 332 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.2335036	.1760971	-1.33	0.185	-.5786476	.1116403
race						
1	-1.085925	.7000184	-1.55	0.121	-2.457936	.2860856
2	.3273356	.2878285	1.14	0.255	-.2367979	.891469
3	-.1375934	.2432715	-0.57	0.572	-.6143968	.3392099
1.nslp	.3540261	.1918103	1.85	0.065	-.0219153	.7299674
1.grad_at_risk	-.0326221	.1753456	-0.19	0.852	-.3762931	.311049
staar_qt	.00752	.0220174	0.34	0.733	-.0356334	.0506734
grad_age	.0363072	.0479393	0.76	0.449	-.0576522	.1302665
1.grad_speced	.1850346	.1336994	1.38	0.166	-.0770114	.4470805
1.ever_lep	.2994243	.0588478	5.09	0.000	.1840847	.4147639
1.grad_bil	-.1005498	.2760713	-0.36	0.716	-.6416397	.4405401
1.grad_gifted	-.0216469	.081786	-0.26	0.791	-.1819445	.1386508
hs_att_rate	-.2862031	.3472086	-0.82	0.410	-.9667194	.3943131
1.hs_expulsion	-.0507639	.0747705	-0.68	0.497	-.1973114	.0957837
1.hs_suspension_ot	.0956318	.0457931	2.09	0.037	.005879	.1853846
ap_ib_credit	.0011863	.0118337	0.10	0.920	-.0220073	.0243799
dc_credit	-.0098445	.008451	-1.16	0.244	-.0264082	.0067192
dc_cte_credit	.0494894	.0263443	1.88	0.060	-.0021445	.1011232
cte_credit	.0049622	.0078396	0.63	0.527	-.0104032	.0203276
adv_credit	-.0438072	.019788	-2.21	0.027	-.0825909	-.0050236
ot_english_credit	-.0016396	.0180919	-0.09	0.928	-.0370991	.0338199
ot_math_credit	.034515	.0287553	1.20	0.230	-.0218444	.0908744
ot_science_credit	-.0219724	.0269935	-0.81	0.416	-.0748787	.030934
ot_socsci_credit	-.0091907	.0162582	-0.57	0.572	-.0410563	.0226748
ot_forlang_credit	-.0074744	.0269958	-0.28	0.782	-.0603852	.0454364
ot_ot_credit	.0140826	.0107521	1.31	0.190	-.0069912	.0351564
c.staar_qt#c.staar_qt	-.0001639	.0002098	-0.78	0.435	-.000575	.0002473
male#c.staar_qt						
1	-.0003376	.0035255	0.10	0.924	-.0065722	.0072474
race#c.staar_qt						
1	.0205769	.0132064	1.56	0.119	-.0053072	.046461
2	-.0027718	.0056301	-0.49	0.622	-.0138065	.0082629
3	.0079321	.0046247	1.72	0.086	-.0011323	.0169964
nslp#c.staar_qt						
1	-.0028816	.003816	-0.76	0.450	-.0103607	.0045976
grad_at_risk#c.staar_qt						
1	.0024117	.0035221	0.68	0.494	-.0044915	.009315

psa							
1	-.1698091	.0492196	-3.45	0.001	-.2662777	-.0733404	
2	-.2863221	.0519185	-5.51	0.000	-.3880806	-.1845637	
ln_hs_size	-.0478638	.0460464	-1.04	0.299	-.1381131	.0423855	
hs_minority	.2492517	.3395853	0.73	0.463	-.4163233	.9148266	
hs_nslp	.2791838	.289793	0.96	0.335	-.2888001	.8471677	
students	.0030734	.0099704	0.31	0.758	-.0164683	.0226151	
hs_teacher_exper	.0047645	.0111563	0.43	0.669	-.0171015	.0266305	
hs_teacher_ma_doc	.0937487	.2307265	0.41	0.685	-.3584668	.5459643	
ln_hs_teacher_pay	-.3086731	.4636739	-0.67	0.506	-1.217457	.6001111	
hs_charter	.0258173	.1373067	0.19	0.851	-.2432989	.2949336	
_cons	3.926425	4.906542	0.80	0.424	-5.690221	13.54307	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.2.3. Logistic regression results of predicting selected SES gaps in ADVi for 2020 cohort at the middle top of STAAR achievement

Logistic regression
Log pseudolikelihood = -12223.164

Number of obs = 18,711
Pseudo R2 = 0.0565

(Std. err. adjusted for 329 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.5568527	.2639258	-2.11	0.035	-1.074138	-.0395678
race						
1	-.389615	.7003161	-0.56	0.578	-1.762209	.9829792
2	.3594969	.5579317	0.64	0.519	-.7340291	1.453023
3	.4139872	.3116513	1.33	0.184	-.1968382	1.024813
1.nslp	.5092106	.3368644	1.51	0.131	-.1510314	1.169453
1.grad_at_risk	.2184286	.5275166	0.41	0.679	-.815485	1.252342
staar_qt	.094629	.0329797	2.87	0.004	.0299899	.159268
grad_age	-.0335755	.0461967	-0.73	0.467	-.1241194	.0569684
1.grad_speced	.1942876	.2197697	0.88	0.377	-.2364532	.6250283
1.ever_lep	.2547808	.069122	3.69	0.000	.1193042	.3902573
1.grad_bil	.5988888	.5303996	1.13	0.259	-.4406753	1.638453
1.grad_gifted	-.0706579	.0375064	-1.88	0.060	-.1441691	.0028532
hs_att_rate	-1.054469	.4829846	-2.18	0.029	-2.001101	-.1078363
1.hs_expulsion	-.2270145	.1082167	-2.10	0.036	-.4391155	-.0149136
1.hs_suspension_ot	.082397	.0521185	1.58	0.114	-.0197533	.1845473
ap_ib_credit	-.0253173	.0080965	-3.13	0.002	-.0411862	-.0094484
dc_credit	-.0187974	.008796	-2.14	0.033	-.0360372	-.0015576
dc_cte_credit	-.0007262	.0184094	-0.04	0.969	-.036808	.0353556
cte_credit	-.0026192	.0099367	-0.26	0.792	-.0220948	.0168564
adv_credit	-.044782	.0170909	-2.62	0.009	-.0782794	-.0112845
ot_english_credit	.0174377	.0186333	0.94	0.349	-.019083	.0539583
ot_math_credit	-.0021209	.0266172	-0.08	0.936	-.0542898	.0500479
ot_science_credit	.0117006	.0245574	0.48	0.634	-.036431	.0598322
ot_socsci_credit	.0118554	.0128782	0.92	0.357	-.0133855	.0370963
ot_forlang_credit	.0400669	.0298822	1.34	0.180	-.018501	.0986349
ot_ot_credit	-.017689	.0078678	-2.25	0.025	-.0331096	-.0022684
c.staar_qt#c.staar_qt	-.0005978	.000193	-3.10	0.002	-.0009761	-.0002195
male#c.staar_qt						
1	-.0037953	.003093	1.23	0.220	-.0022667	.0098574
race#c.staar_qt						
1	.0052018	.0076762	0.68	0.498	-.0098433	.0202468
2	-.0038728	.0066592	-0.58	0.561	-.0169245	.009179
3	-.0021701	.0036732	-0.59	0.555	-.0093695	.0050292
nslp#c.staar_qt						
1	-.0023853	.0041389	-0.58	0.564	-.0104975	.0057269
grad_at_risk#c.staar_qt						
1	-.000387	.0061953	-0.06	0.950	-.0125297	.0117557

psa						
1	-.1629902	.050012	-3.26	0.001	-.2610118	-.0649686
2	-.2492382	.04376	-5.70	0.000	-.3350063	-.1634702
ln_hs_size	-.006569	.02971	-0.22	0.825	-.0647996	.0516616
hs_minority	-.044539	.2738601	-0.16	0.871	-.581295	.492217
hs_nslp	.4722139	.2734941	1.73	0.084	-.0638247	1.008252
students	.0060004	.0048589	1.23	0.217	-.0035228	.0155237
hs_teacher_exper	-.0065748	.0084071	-0.78	0.434	-.0230524	.0099028
hs_teacher_ma_doc	.0001821	.2343456	0.00	0.999	-.4591267	.459491
ln_hs_teacher_pay	.0029917	.4539792	0.01	0.995	-.8867912	.8927746
hs_charter	-.1333236	.1095806	-1.22	0.224	-.3480975	.0814504
_cons	-1.443696	5.437537	-0.27	0.791	-12.10107	9.21368

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.3. Logistic regression results of predicting selected SES gaps in ADVi for 2021 cohort

Logistic regression
Log pseudolikelihood = -61827.837

Number of obs = 122,131
Pseudo R2 = 0.0333

(Std. err. adjusted for 550 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.2294107	.0307826	-7.45	0.000	-.2897435	-.1690779
race						
1	.3082298	.1095979	2.81	0.005	.0934219	.5230377
2	.231065	.0556481	4.15	0.000	.1219968	.3401332
3	.3759609	.0435392	8.64	0.000	.2906256	.4612961
1.nslp	-.0619852	.0334941	-1.85	0.064	-.1276323	.003662
1.grad_at_risk	.0923926	.0413594	2.23	0.025	.0113295	.1734556
staar_qt	.004048	.0015448	2.62	0.009	.0010203	.0070758
grad_age	-.040613	.0209848	-1.94	0.053	-.0817425	.0005165
1.grad_speced	.0543362	.0430474	1.26	0.207	-.0300353	.1387076
1.ever_lep	.2902676	.0282349	10.28	0.000	.2349281	.345607
1.grad_bil	.5700181	.2308133	2.47	0.014	.1176323	1.022404
1.grad_gifted	-.0417169	.0232081	-1.80	0.072	-.0872038	.0037701
hs_att_rate	.8146377	.1828391	4.46	0.000	.4562796	1.172996
1.hs_expulsion	-.0369141	.0459801	-0.80	0.422	-.1270335	.0532052
1.hs_suspension_ot	-.034932	.0208005	-1.68	0.093	-.0757002	.0058362
ap_ib_credit	-.0100422	.0051467	-1.95	0.051	-.0201295	.0000451
dc_credit	-.0118349	.0038966	-3.04	0.002	-.0194722	-.0041977
dc_cte_credit	.0062579	.0091627	0.68	0.495	-.0117008	.0242166
cte_credit	.0072002	.0038803	1.86	0.064	-.0004051	.0148055
adv_credit	.0060467	.009649	0.63	0.531	-.0128651	.0249584
ot_english_credit	-.0017323	.0071528	-0.24	0.809	-.0157516	.0122869
ot_math_credit	.0027372	.0130686	0.21	0.834	-.0228768	.0283512
ot_science_credit	.020466	.0109409	1.87	0.061	-.0009777	.0419097
ot_socsci_credit	.0081355	.0073515	1.11	0.268	-.0062732	.0225442
ot_forlang_credit	-.0035622	.0113162	-0.31	0.753	-.0257416	.0186173
ot_ot_credit	.0070452	.0045534	1.55	0.122	-.0018793	.0159698
c.staar_qt#c.staar_qt	-.0000509	.0000126	-4.03	0.000	-.0000756	-.0000261
male#c.staar_qt						
1	.0006963	.0005214	-1.34	0.182	-.0017181	.0003256
race#c.staar_qt						
1	-.0036139	.0014203	-2.54	0.011	-.0063977	-.0008301
2	-.0017234	.0009441	-1.83	0.068	-.0035737	.000127
3	-.0004793	.000702	-0.68	0.495	-.0018551	.0008966
nslp#c.staar_qt						
1	.0024014	.000551	4.36	0.000	.0013215	.0034813
grad_at_risk#c.staar_qt						
1	-.0008474	.0008246	-1.03	0.304	-.0024637	.0007689

psa							
1	-.1938502	.0246894	-7.85	0.000	-.2422404	-.1454599	
2	-.2356264	.025724	-9.16	0.000	-.2860446	-.1852082	
ln_hs_size	.0224564	.0204711	1.10	0.273	-.0176662	.062579	
hs_minority	-.0967976	.071053	-1.36	0.173	-.2360589	.0424637	
hs_nslp	.4724327	.1311309	3.60	0.000	.2154209	.7294445	
students	-.003932	.0028378	-1.39	0.166	-.009494	.0016301	
hs_teacher_exper	-.0003674	.004713	-0.08	0.938	-.0096047	.00887	
hs_teacher_ma_doc	.2339591	.1275195	1.83	0.067	-.0159746	.4838927	
ln_hs_teacher_pay	-.1051884	.2010948	-0.52	0.601	-.4993269	.2889501	
hs_charter	.0474618	.0406884	1.17	0.243	-.0322861	.1272097	
_cons	1.751012	2.225464	0.79	0.431	-2.610818	6.112841	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.3.1. Logistic regression results of predicting selected SES gaps in ADVi for 2021 cohort at the bottom third of STAAR achievement

Logistic regression
Log pseudolikelihood = -18314.829

Number of obs = 39,848
Pseudo R2 = 0.0372

(Std. err. adjusted for 525 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.1630236	.0532012	-3.06	0.002	-.267296	-.0587512
race						
1	.2785364	.279512	1.00	0.319	-.2692971	.8263698
2	.2097206	.0954417	2.20	0.028	.0226584	.3967829
3	.3824211	.0886627	4.31	0.000	.2086454	.5561968
1.nslp	-.1499412	.0628144	-2.39	0.017	-.273055	-.0268273
1.grad_at_risk	.1324346	.0718856	1.84	0.065	-.0084585	.2733277
staar_qt	.0090158	.0083713	1.08	0.281	-.0073916	.0254232
grad_age	-.046204	.0301931	-1.53	0.126	-.1053814	.0129733
1.grad_speced	.0720426	.0497316	1.45	0.147	-.0254295	.1695147
1.ever_lep	.3685478	.0433307	8.51	0.000	.2836211	.4534745
1.grad_bil	-.1858549	.2545379	-0.73	0.465	-.6847399	.3130302
1.grad_gifted	.0098312	.109383	0.09	0.928	-.2045556	.224218
hs_att_rate	1.122099	.3198357	3.51	0.000	.4952321	1.748965
1.hs_expulsion	.052635	.0619554	0.85	0.396	-.0687954	.1740654
1.hs_suspension_ot	-.0470159	.0305802	-1.54	0.124	-.106952	.0129202
ap_ib_credit	-.0008891	.0141007	-0.06	0.950	-.0285259	.0267477
dc_credit	-.0069897	.0094307	-0.74	0.459	-.0254735	.011494
dc_cte_credit	.0117869	.0210049	0.56	0.575	-.029382	.0529558
cte_credit	.007539	.0063462	1.19	0.235	-.0048994	.0199774
adv_credit	.0480545	.0193036	2.49	0.013	.0102202	.0858888
ot_english_credit	.0048465	.0148195	0.33	0.744	-.0241991	.0338922
ot_math_credit	.000688	.0223268	0.03	0.975	-.0430718	.0444477
ot_science_credit	-.0008435	.0191473	-0.04	0.965	-.0383714	.0366845
ot_socsci_credit	-.0022964	.0125955	-0.18	0.855	-.0269832	.0223904
ot_forlang_credit	-.0369808	.0201643	-1.83	0.067	-.0765021	.0025405
ot_ot_credit	.0145149	.0079152	1.83	0.067	-.0009986	.0300284
c.staar_qt#c.staar_qt	-.0002815	.0001843	-1.53	0.127	-.0006427	.0000797
male#c.staar_qt						
1	.003449	.0028412	-1.21	0.225	-.0090177	.0021197
race#c.staar_qt						
1	-.0040405	.013322	-0.30	0.762	-.0301512	.0220703
2	-.0015812	.0042239	-0.37	0.708	-.0098598	.0066974
3	-.0020884	.004093	-0.51	0.610	-.0101105	.0059338
nslp#c.staar_qt						
1	.0076084	.0032508	2.34	0.019	.001237	.0139798
grad_at_risk#c.staar_qt						
1	-.0036341	.0033002	-1.10	0.271	-.0101024	.0028343

psa							
1	-.1774414	.0345273	-5.14	0.000	-.2451137	-.1097691	
2	-.2415041	.0402115	-6.01	0.000	-.3203172	-.162691	
ln_hs_size	.025387	.035939	0.71	0.480	-.0450522	.0958262	
hs_minority	-.2967155	.2344016	-1.27	0.206	-.7561343	.1627032	
hs_nslp	.4933162	.2300872	2.14	0.032	.0423536	.9442789	
students	-.0132009	.0069667	-1.89	0.058	-.0268554	.0004536	
hs_teacher_exper	-.0024928	.0071957	-0.35	0.729	-.0165961	.0116105	
hs_teacher_ma_doc	.405631	.2171004	1.87	0.062	-.019878	.83114	
ln_hs_teacher_pay	-.0845884	.3776436	-0.22	0.823	-.8247561	.6555794	
hs_charter	-.004175	.0942993	-0.04	0.965	-.1889983	.1806483	
_cons	1.709006	3.980166	0.43	0.668	-6.091976	9.509988	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.3.2. Logistic regression results of predicting selected SES gaps in ADVi for 2021 cohort at the middle third of STAAR achievement

Logistic regression
Log pseudolikelihood = -19777.615

Number of obs = 40,247
Pseudo R2 = 0.0362

(Std. err. adjusted for 529 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.5953323	.1511003	-3.94	0.000	-.8914835	-.2991811
race						
1	.0053552	.3683925	0.01	0.988	-.7166808	.7273912
2	.227343	.2160255	1.05	0.293	-.1960592	.6507452
3	.4195946	.1660886	2.53	0.012	.0940669	.7451223
1.nslp	-.0685909	.1448702	-0.47	0.636	-.3525313	.2153495
1.grad_at_risk	.0915775	.1701692	0.54	0.590	-.2419479	.425103
staar_qt	-.0168566	.0159458	-1.06	0.290	-.0481099	.0143966
grad_age	-.0071401	.0438238	-0.16	0.871	-.0930331	.078753
1.grad_sped	.0171055	.1474049	0.12	0.908	-.2718028	.3060139
1.ever_lep	.2532969	.0472314	5.36	0.000	.1607251	.3458688
1.grad_bil	.0796306	.4729113	0.17	0.866	-.8472586	1.00652
1.grad_gifted	-.0531607	.0497151	-1.07	0.285	-.1506005	.0442792
hs_att_rate	.0627015	.4256603	0.15	0.883	-.7715772	.8969803
1.hs_expulsion	-.0459668	.0829987	-0.55	0.580	-.2086411	.1167076
1.hs_suspension_ot	-.0655953	.0396758	-1.65	0.098	-.1433584	.0121677
ap_ib_credit	.0110766	.0080007	1.38	0.166	-.0046046	.0267577
dc_credit	-.0138533	.0072371	-1.91	0.056	-.0280377	.0003311
dc_cte_credit	.0222913	.0197829	1.13	0.260	-.0164824	.061065
cte_credit	.0108181	.0064147	1.69	0.092	-.0017544	.0233906
adv_credit	-.0031896	.0166084	-0.19	0.848	-.0357415	.0293624
ot_english_credit	-.0102978	.0133357	-0.77	0.440	-.0364353	.0158397
ot_math_credit	.0008681	.0223491	0.04	0.969	-.0429354	.0446715
ot_science_credit	.0343168	.0209704	1.64	0.102	-.0067845	.075418
ot_socsci_credit	.0227396	.013468	1.69	0.091	-.0036572	.0491365
ot_forlang_credit	-.0180049	.0202466	-0.89	0.374	-.0576875	.0216776
ot_ot_credit	.0029877	.0078226	0.38	0.703	-.0123443	.0183197
c.staar_qt#c.staar_qt	.0001147	.0001531	0.75	0.454	-.0001854	.0004148
male#c.staar_qt						
1	-.0057868	.0029402	1.97	0.049	.000024	.0115495
race#c.staar_qt						
1	.0017569	.0068693	0.26	0.798	-.0117066	.0152204
2	-.0007703	.0042552	-0.18	0.856	-.0091104	.0075698
3	-.0008571	.0032258	-0.27	0.790	-.0071794	.0054653
nslp#c.staar_qt						
1	.0032045	.002798	1.15	0.252	-.0022795	.0086884
grad_at_risk#c.staar_qt						
1	-.0006504	.0034407	-0.19	0.850	-.0073941	.0060932

psa						
1	-.1647562	.0415669	-3.96	0.000	-.2462258	-.0832865
2	-.1587881	.0406506	-3.91	0.000	-.2384617	-.0791144
ln_hs_size	.0624087	.0342707	1.82	0.069	-.0047607	.1295781
hs_minority	-.3983411	.1879251	-2.12	0.034	-.7666675	-.0300148
hs_nslp	.5436772	.182084	2.99	0.003	.1867992	.9005553
students	.0020269	.0046136	0.44	0.660	-.0070155	.0110693
hs_teacher_exper	.014839	.0077444	1.92	0.055	-.0003398	.0300177
hs_teacher_ma_doc	-.0429882	.2227239	-0.19	0.847	-.479519	.3935427
ln_hs_teacher_pay	-.1030126	.3604023	-0.29	0.775	-.8093881	.6033629
hs_charter	.1496018	.0924055	1.62	0.105	-.0315096	.3307133
_cons	1.90841	3.862079	0.49	0.621	-5.661125	9.477945

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.3.3. Logistic regression results of predicting selected SES gaps in ADVi for 2021 cohort at the top third of STAAR achievement

Logistic regression
Log pseudolikelihood = -23049.619

Number of obs = 41,728
Pseudo R2 = 0.0375

(Std. err. adjusted for 516 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.3329291	.2042052	-1.63	0.103	-.7331639	.0673057
race						
1	.1944799	.3348091	0.58	0.561	-.461734	.8506937
2	.7037016	.4165523	1.69	0.091	-.112726	1.520129
3	.1823709	.2508984	0.73	0.467	-.309381	.6741229
1.nslp	.1123568	.2508661	0.45	0.654	-.3793317	.6040453
1.grad_at_risk	.6595795	.3905894	1.69	0.091	-.1059615	1.425121
staar_qt	-.0096034	.0249279	-0.39	0.700	-.0584613	.0392545
grad_age	-.0419496	.0388075	-1.08	0.280	-.1180108	.0341117
1.grad_speced	-.0122608	.1823267	-0.07	0.946	-.3696146	.3450929
1.ever_lep	.2161747	.0526028	4.11	0.000	.1130751	.3192744
1.grad_bil	1.918649	.5973643	3.21	0.001	.7478369	3.089462
1.grad_gifted	-.0389728	.0265286	-1.47	0.142	-.090968	.0130224
hs_att_rate	1.109675	.4309152	2.58	0.010	.2650967	1.954253
1.hs_expulsion	-.2413861	.1038779	-2.32	0.020	-.444983	-.0377892
1.hs_suspension_ot	.0543234	.0510329	1.06	0.287	-.0456993	.1543461
ap_ib_credit	-.0182025	.0074667	-2.44	0.015	-.0328369	-.0035682
dc_credit	-.0163324	.0065843	-2.48	0.013	-.0292373	-.0034275
dc_cte_credit	-.0114022	.0134618	-0.85	0.397	-.037787	.0149825
cte_credit	.0020634	.0069864	0.30	0.768	-.0116297	.0157564
adv_credit	-.0080983	.0157649	-0.51	0.607	-.038997	.0228004
ot_english_credit	.0027898	.0138334	0.20	0.840	-.0243231	.0299027
ot_math_credit	.0344247	.0239454	1.44	0.151	-.0125074	.0813568
ot_science_credit	.0237257	.0209697	1.13	0.258	-.0173742	.0648256
ot_socsci_credit	-.0001672	.010903	-0.02	0.988	-.0215366	.0212023
ot_forlang_credit	.0221451	.0163604	1.35	0.176	-.0099208	.0542109
ot_ot_credit	.0026473	.0078249	0.34	0.735	-.0126892	.0179837
c.staar_qt#c.staar_qt	.0000335	.0001469	0.23	0.819	-.0002543	.0003214
male#c.staar_qt						
1	-.0006352	.0024437	0.26	0.795	-.0041543	.0054246
race#c.staar_qt						
1	-.0017201	.0039323	-0.44	0.662	-.0094274	.0059871
2	-.0078504	.004994	-1.57	0.116	-.0176384	.0019377
3	.0019003	.0029693	0.64	0.522	-.0039194	.0077199
nslp#c.staar_qt						
1	-.0002285	.0029902	-0.08	0.939	-.0060891	.0056322
grad_at_risk#c.staar_qt						
1	-.0074927	.0046921	-1.60	0.110	-.016689	.0017037

psa							
1	-.2888446	.0550072	-5.25	0.000	-.3966567	-.1810325	
2	-.350652	.0548478	-6.39	0.000	-.4581517	-.2431524	
ln_hs_size	-.009534	.0402348	-0.24	0.813	-.0883927	.0693247	
hs_minority	.0592104	.3288955	0.18	0.857	-.5854129	.7038337	
hs_nslp	.3779563	.2955642	1.28	0.201	-.201339	.9572515	
students	-.0026934	.0043557	-0.62	0.536	-.0112304	.0058435	
hs_teacher_exper	-.0147505	.007445	-1.98	0.048	-.0293425	-.0001585	
hs_teacher_ma_doc	.4684547	.1636545	2.86	0.004	.1476978	.7892117	
ln_hs_teacher_pay	-.0877683	.3014711	-0.29	0.771	-.6786407	.5031041	
hs_charter	-.0117763	.096896	-0.12	0.903	-.201689	.1781365	
_cons	2.221279	3.458003	0.64	0.521	-4.556281	8.99884	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.4. Logistic regression results of predicting selected SES gaps in ADVi for 2022 cohort

Logistic regression
Log pseudolikelihood = -31589.945

Number of obs = 68,999
Pseudo R2 = 0.0286

(Std. err. adjusted for 391 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.2263831	.048625	-4.66	0.000	-.3216864	-.1310798
race						
1	.1684732	.2053792	0.82	0.412	-.2340626	.571009
2	-.0138743	.0663065	-0.21	0.834	-.1438328	.1160841
3	.3484775	.0652389	5.34	0.000	.2206115	.4763434
1.nslp	-.1139225	.0498859	-2.28	0.022	-.2116971	-.0161479
1.grad_at_risk	-.0229563	.0609513	-0.38	0.706	-.1424185	.096506
staar_qt	.0002118	.0020394	0.10	0.917	-.0037854	.004209
grad_age	.0201553	.0224855	0.90	0.370	-.0239156	.0642261
1.grad_speced	.020998	.0484334	0.43	0.665	-.0739297	.1159256
1.ever_lep	.2682416	.0355512	7.55	0.000	.1985624	.3379207
1.grad_bil	-.0699565	.2102493	-0.33	0.739	-.4820377	.3421246
1.grad_gifted	-.0059423	.0339876	-0.17	0.861	-.0725568	.0606722
hs_att_rate	1.908423	.1958599	9.74	0.000	1.524545	2.292302
1.hs_expulsion	.0539124	.0522457	1.03	0.302	-.0484872	.156312
1.hs_suspension_ot	-.1087101	.0269631	-4.03	0.000	-.1615568	-.0558633
ap_ib_credit	.0089627	.0065874	1.36	0.174	-.0039485	.0218738
dc_credit	-.0068252	.0048088	-1.42	0.156	-.0162503	.0025999
dc_cte_credit	.0027707	.0107461	0.26	0.797	-.0182911	.0238326
cte_credit	.0087141	.0047016	1.85	0.064	-.0005008	.0179291
adv_credit	.0261805	.0125699	2.08	0.037	.001544	.0508171
ot_english_credit	.001786	.0101524	0.18	0.860	-.0181123	.0216843
ot_math_credit	.0116269	.0150968	0.77	0.441	-.0179622	.0412161
ot_science_credit	.015902	.0172097	0.92	0.355	-.0178284	.0496324
ot_socsci_credit	.0035168	.0084971	0.41	0.679	-.0131373	.0201709
ot_forlang_credit	-.0391313	.0154238	-2.54	0.011	-.0693614	-.0089012
ot_ot_credit	.0183197	.0055442	3.30	0.001	.0074532	.0291862
c.staar_qt#c.staar_qt	-.0000292	.0000161	-1.81	0.070	-.0000608	2.42e-06
male#c.staar_qt						
1	.0008266	.0007896	-1.05	0.295	-.0023743	.0007211
race#c.staar_qt						
1	-.0002766	.0026559	-0.10	0.917	-.0054821	.004929
2	.000819	.001155	0.71	0.478	-.0014448	.0030827
3	.0004869	.0010104	0.48	0.630	-.0014935	.0024673
nslp#c.staar_qt						
1	.0025054	.0008968	2.79	0.005	.0007477	.004263
grad_at_risk#c.staar_qt						
1	.0006315	.0012314	0.51	0.608	-.001782	.003045

psa						
1	-.1213204	.0479848	-2.53	0.011	-.2153688	-.027272
2	.0945761	.0240945	3.93	0.000	.0473518	.1418003
ln_hs_size	-.0066561	.0158644	-0.42	0.675	-.0377498	.0244377
hs_minority	-.1670752	.0801469	-2.08	0.037	-.3241603	-.0099902
hs_nslp	.6181764	.1458222	4.24	0.000	.3323701	.9039828
students	-.0002221	.0045736	-0.05	0.961	-.0091862	.008742
hs_teacher_exper	-.0029432	.0045546	-0.65	0.518	-.0118701	.0059837
hs_teacher_ma_doc	-.0551384	.1315056	-0.42	0.675	-.3128847	.2026078
ln_hs_teacher_pay	.1918756	.2710042	0.71	0.479	-.3392829	.723034
hs_charter	-.0623255	.0711193	-0.88	0.381	-.2017168	.0770657
_cons	-3.393311	2.877927	-1.18	0.238	-9.033944	2.247321

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.4.1. Logistic regression results of predicting selected SES gaps in ADVi for 2022 cohort at the bottom third of STAAR achievement

Logistic regression
Log pseudolikelihood = -9360.0237

Number of obs = 20,817
Pseudo R2 = 0.0417

(Std. err. adjusted for 350 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.2861045	.0883691	-3.24	0.001	-.4593048	-.1129043
race						
1	-.3457957	.3366542	-1.03	0.304	-1.005626	.3140344
2	-.0135252	.1529412	-0.09	0.930	-.3132846	.2862341
3	.2234377	.1274595	1.75	0.080	-.0263783	.4732537
1.nslp	.0327544	.0853722	0.38	0.701	-.134572	.2000808
1.grad_at_risk	.0247167	.1088038	0.23	0.820	-.1885348	.2379683
staar_qt	.007971	.0118038	0.68	0.499	-.015164	.0311061
grad_age	.0370622	.0294714	1.26	0.209	-.0207007	.0948252
1.grad_speced	.0093005	.0655754	0.14	0.887	-.1192248	.1378259
1.ever_lep	.2872268	.0551116	5.21	0.000	.1792101	.3952435
1.grad_bil	-.3028191	.8016483	-0.38	0.706	-1.874021	1.268383
1.grad_gifted	.1507275	.1713838	0.88	0.379	-.1851786	.4866336
hs_att_rate	1.809309	.2835976	6.38	0.000	1.253468	2.36515
1.hs_expulsion	.1161792	.0719385	1.61	0.106	-.0248178	.2571761
1.hs_suspension_ot	-.095657	.0394883	-2.42	0.015	-.1730527	-.0182612
ap_ib_credit	.0095186	.0153027	0.62	0.534	-.0204741	.0395114
dc_credit	.0041977	.0163843	0.26	0.798	-.0279149	.0363102
dc_cte_credit	-.007162	.0274685	-0.26	0.794	-.0609993	.0466753
cte_credit	.001029	.008061	0.13	0.898	-.0147704	.0168283
adv_credit	-.0065191	.0270322	-0.24	0.809	-.0595013	.0464631
ot_english_credit	-.0071764	.0192552	-0.37	0.709	-.044916	.0305631
ot_math_credit	.0056176	.0260159	0.22	0.829	-.0453726	.0566078
ot_science_credit	.0330185	.0273758	1.21	0.228	-.0206371	.0866741
ot_socsci_credit	-.017317	.0159573	-1.09	0.278	-.0485928	.0139587
ot_forlang_credit	-.0557981	.0272259	-2.05	0.040	-.1091598	-.0024364
ot_ot_credit	.01832	.0113763	1.61	0.107	-.0039772	.0406172
c.staar_qt#c.staar_qt	-.0001585	.0002466	-0.64	0.520	-.0006418	.0003249
male#c.staar_qt						
1	-.0037632	.0041567	0.91	0.365	-.0043839	.0119103
race#c.staar_qt						
1	.0155056	.0159174	0.97	0.330	-.0156919	.0467032
2	-.0020484	.0074943	-0.27	0.785	-.016737	.0126403
3	.0058916	.0061481	0.96	0.338	-.0061585	.0179417
nslp#c.staar_qt						
1	-.0054918	.0043565	-1.26	0.207	-.0140303	.0030467
grad_at_risk#c.staar_qt						
1	-.0005658	.004893	-0.12	0.908	-.0101559	.0090243

psa							
1	-.1690158	.0837434	-2.02	0.044	-.3331498	-.0048817	
2	.0468552	.0419026	1.12	0.263	-.0352723	.1289827	
ln_hs_size	-.0287466	.0328548	-0.87	0.382	-.0931409	.0356477	
hs_minority	.0749173	.2908096	0.26	0.797	-.495059	.6448936	
hs_nslp	.0884344	.2495562	0.35	0.723	-.4006868	.5775555	
students	.0085505	.0083574	1.02	0.306	-.0078298	.0249307	
hs_teacher_exper	.0040859	.0098357	0.42	0.678	-.0151916	.0233635	
hs_teacher_ma_doc	-.0678206	.2724227	-0.25	0.803	-.6017593	.4661182	
ln_hs_teacher_pay	-.2039388	.3377766	-0.60	0.546	-.8659688	.4580912	
hs_charter	-.1954382	.106545	-1.83	0.067	-.4042625	.0133861	
_cons	.8359663	3.625108	0.23	0.818	-6.269115	7.941047	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.4.2. Logistic regression results of predicting selected SES gaps in ADVi for 2022 cohort at the middle third of STAAR achievement

Logistic regression
Log pseudolikelihood = -11102.599

Number of obs = 24,805
Pseudo R2 = 0.0379

(Std. err. adjusted for 367 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.2680131	.1986794	-1.35	0.177	-.6574176	.1213915
race						
1	.6754289	.6526375	1.03	0.301	-.603717	1.954575
2	-.0172224	.290274	-0.06	0.953	-.586149	.5517041
3	.5912725	.231663	2.55	0.011	.1372213	1.045324
1.nslp	-.2332749	.2008854	-1.16	0.246	-.6270031	.1604533
1.grad_at_risk	-.2762363	.2037511	-1.36	0.175	-.675581	.1231084
staar_qt	.0269771	.0212026	1.27	0.203	-.0145792	.0685333
grad_age	-.0603558	.0459528	-1.31	0.189	-.1504216	.02971
1.grad_speced	.0501706	.1119445	0.45	0.654	-.1692366	.2695777
1.ever_lep	.3166887	.0560737	5.65	0.000	.2067862	.4265912
1.grad_bil	-.1327083	.2467711	-0.54	0.591	-.6163708	.3509543
1.grad_gifted	.0143938	.0778881	0.18	0.853	-.138264	.1670516
hs_att_rate	2.275713	.3390324	6.71	0.000	1.611222	2.940205
1.hs_expulsion	.0115572	.0874678	0.13	0.895	-.1598766	.182991
1.hs_suspension_ot	-.1206668	.0464219	-2.60	0.009	-.211652	-.0296815
ap_ib_credit	.0231179	.0109004	2.12	0.034	.0017534	.0444823
dc_credit	.0000511	.0073522	0.01	0.994	-.014359	.0144612
dc_cte_credit	-.001458	.0205308	-0.07	0.943	-.0416976	.0387816
cte_credit	.0069075	.0084849	0.81	0.416	-.0097226	.0235376
adv_credit	.0370607	.0224917	1.65	0.099	-.0070222	.0811436
ot_english_credit	.0041153	.0172924	0.24	0.812	-.0297772	.0380077
ot_math_credit	-.0016564	.0294066	-0.06	0.955	-.0592923	.0559795
ot_science_credit	.0330503	.0265979	1.24	0.214	-.0190807	.0851813
ot_socsci_credit	.029602	.014698	2.01	0.044	.0007945	.0584095
ot_forlang_credit	-.0086426	.0290876	-0.30	0.766	-.0656532	.0483679
ot_ot_credit	.0033001	.0088853	0.37	0.710	-.0141147	.020715
c.staar_qt#c.staar_qt	-.0003119	.0002009	-1.55	0.121	-.0007057	.000082
male#c.staar_qt						
1	.0002173	.0038758	-0.06	0.955	-.0078138	.0073792
race#c.staar_qt						
1	-.0074519	.0120792	-0.62	0.537	-.0311267	.016223
2	.0012221	.0054961	0.22	0.824	-.0095499	.0119942
3	-.0046602	.0044542	-1.05	0.295	-.0133902	.0040699
nslp#c.staar_qt						
1	.0048431	.0037945	1.28	0.202	-.0025939	.0122802
grad_at_risk#c.staar_qt						
1	.0061334	.0040006	1.53	0.125	-.0017077	.0139744

psa							
1	-.0745549	.0719718	-1.04	0.300	-.215617	.0665072	
2	.1361626	.0399243	3.41	0.001	.0579124	.2144129	
ln_hs_size	-.0492467	.0261685	-1.88	0.060	-.1005359	.0020426	
hs_minority	-.4040136	.2950526	-1.37	0.171	-.9823061	.1742789	
hs_nslp	.7211108	.2657844	2.71	0.007	.2001829	1.242039	
students	.0060197	.0087977	0.68	0.494	-.0112235	.0232629	
hs_teacher_exper	-.0035361	.0074514	-0.47	0.635	-.0181406	.0110685	
hs_teacher_ma_doc	-.0762739	.2346433	-0.33	0.745	-.5361662	.3836184	
ln_hs_teacher_pay	.6790981	.4596766	1.48	0.140	-.2218515	1.580048	
hs_charter	-.1583092	.1163428	-1.36	0.174	-.386337	.0697186	
_cons	-8.100833	5.099398	-1.59	0.112	-18.09547	1.893803	

Note. High school dummy variables are included in the estimation but omitted due to the space.

E.4.3. Logistic regression results of predicting selected SES gaps in ADVi for 2022 cohort at the top third of STAAR achievement

Logistic regression
Log pseudolikelihood = -10642.124

Number of obs = 22,900
Pseudo R2 = 0.0407

(Std. err. adjusted for 342 clusters in gr_camp)

advi	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
1.male	.3397794	.3124079	-1.09	0.277	-.9520877	.2725289
race						
1	.1353091	.5438829	0.25	0.804	-.9306818	1.2013
2	.099191	.4949495	0.20	0.841	-.8708922	1.069274
3	.4439214	.3883103	1.14	0.253	-.3171529	1.204996
1.nslp	-.0707168	.3614686	-0.20	0.845	-.7791823	.6377486
1.grad_at_risk	-.5454642	.4460947	-1.22	0.221	-1.419794	.3288653
staar_qt	.025009	.0348552	0.72	0.473	-.043306	.093324
grad_age	.0693866	.0532422	1.30	0.192	-.0349661	.1737393
1.grad_sped	.1554717	.1893133	0.82	0.412	-.2155757	.526519
1.ever_lep	.1914527	.0674576	2.84	0.005	.0592382	.3236672
1.grad_bil	.2243531	.5822556	0.39	0.700	-.916847	1.365553
1.grad_gifted	-.025836	.0434974	-0.59	0.553	-.1110893	.0594174
hs_att_rate	2.223059	.4299428	5.17	0.000	1.380387	3.065732
1.hs_expulsion	-.0945906	.1439678	-0.66	0.511	-.3767622	.187581
1.hs_suspension_ot	-.108222	.0665849	-1.63	0.104	-.238726	.0222819
ap_ib_credit	.0083887	.0094332	0.89	0.374	-.0101001	.0268775
dc_credit	-.0124521	.0075515	-1.65	0.099	-.0272528	.0023487
dc_cte_credit	.0080624	.0189897	0.42	0.671	-.0291567	.0452815
cte_credit	.0196974	.0077704	2.53	0.011	.0044677	.0349271
adv_credit	.032348	.0206363	1.57	0.117	-.0080984	.0727944
ot_english_credit	.0138916	.0183399	0.76	0.449	-.022054	.0498371
ot_math_credit	.0424262	.0299602	1.42	0.157	-.0162948	.1011472
ot_science_credit	.0091156	.0331546	0.27	0.783	-.0558663	.0740975
ot_socsci_credit	-.0030642	.0131591	-0.23	0.816	-.0288556	.0227271
ot_forlang_credit	-.0462762	.0280854	-1.65	0.099	-.1013226	.0087702
ot_ot_credit	.0337047	.0097101	3.47	0.001	.0146733	.0527361
c.staar_qt#c.staar_qt	-.0001764	.0002068	-0.85	0.394	-.0005818	.000229
male#c.staar_qt						
1	-.0004753	.0036852	0.13	0.897	-.0067476	.0076982
race#c.staar_qt						
1	.0001474	.0062636	0.02	0.981	-.0121291	.0124239
2	-.0004049	.0060641	-0.07	0.947	-.0122904	.0114805
3	-.000404	.004718	-0.09	0.932	-.009651	.0088431
nslp#c.staar_qt						
1	.0020697	.0043065	0.48	0.631	-.0063709	.0105103
grad_at_risk#c.staar_qt						
1	.0070979	.0054535	1.30	0.193	-.0035907	.0177866

psa							
1	-.1042783	.0952321	-1.09	0.274	-.2909297	.0823731	
2	.0990434	.0400291	2.47	0.013	.0205879	.1774989	
ln_hs_size	.0360703	.0372842	0.97	0.333	-.0370054	.1091459	
hs_minority	-.6772616	.3165212	-2.14	0.032	-1.297632	-.0568914	
hs_nslp	.9968943	.2773057	3.59	0.000	.4533852	1.540403	
students	-.0114722	.0099341	-1.15	0.248	-.0309427	.0079983	
hs_teacher_exper	-.0102031	.0074944	-1.36	0.173	-.0248919	.0044856	
hs_teacher_ma_doc	.1119816	.1944225	0.58	0.565	-.2690795	.4930428	
ln_hs_teacher_pay	.0795926	.4132259	0.19	0.847	-.7303154	.8895005	
hs_charter	.172784	.1799755	0.96	0.337	-.1799615	.5255295	
_cons	-4.785752	4.396033	-1.09	0.276	-13.40182	3.830315	

Note. High school dummy variables are included in the estimation but omitted due to the space.

APPENDIX F. WHO PARTICIPATED IN ADVI BY SES AND STAAR ACHIEVEMENT FOR PUBLIC HIGH SCHOOL GRADUATES IN BEXAR COUNTY?

This appendix section focuses on examining the demographics of ADVi users that included public high school graduates in Bexar County with an interest in higher education upon graduation. Utilizing the identical restricted-use ERC datasets in the main study, we investigate the presence of socioeconomic disparities—across gender, racial and ethnic minority status, and poverty—in ADVi participation for the three most recent cohorts from 2020 to 2022. The SES gaps in ADVi are estimated empirically using logistic regressions adopting the Model 5 specification in the main study. The average VIFs (without interaction terms and high school dummies) for cohorts 2020, 2021, and 2022 were 2.89, 2.79, and 2.40, respectively, indicating that, even with a large number of variables, no variable exhibited a worrisome VIF.

The data show that the analysis examines 19,378 college-aspiring students from 2020 to 2022, with those choosing ADVi constituting 77.8% of the study population. Breaking down these figures by year, the 2020 cohort comprises 4,874 aspiring students, of which 62.6% participated in ADVi. The 2021 cohort, consisting of 8,969 aspiring students, 81.7% opted for ADVi, and the 2022 cohort encompasses 5,535 aspiring students, with 84.8% choosing the program. These percentages exceeded those of statewide college-aspiring students by 3.8%, 4.3%, and 3.4%, respectively. See Appendix A.1 for a detailed description of explanatory variables, and the descriptive statistics and two-tailed t-test results of each explanatory variable will be available from authors upon request.

Our main findings show that, for the 2020 cohort, males demonstrated higher ADVi participation rates by an average of 4.7 percentage points compared to females, who had a participation rate of 60.3% (See F.1). Similar patterns were observed in both the 2021 and 2022 cohorts. Among college aspiring students, males were around 4 to 5 percentage points more likely to participate in ADVi than females, with approximately 8 in 10 females opting for ADVi. Additionally, findings revealed that, for the 2020 cohort, African American students exhibited ADVi participation rates higher by an average of 4.6 percentage points compared to the reference group students (Whites and other races). However, this gap became statistically insignificant or negligible for the latter two cohorts. Conversely, no significant gender gaps were found for Asian and Hispanic students compared to the reference group students. Furthermore, there was no meaningful difference in ADVi participation based on poverty, as measured by students' eligibility for free- or reduced-price lunch (or other public assistance).

F.1. SES gaps in ADVi for public high school graduates in Bexar County

	2020 Cohort	2021 Cohort	2022 Cohort
	(1)	(2)	(3)
Male	0.047***	0.047***	0.044*
African American	0.046**	-0.008	-0.007***
Hispanic	0.031	0.027	0.034
FRPL	0.052	-0.009***	0.018
Controls			
Student achievement	Y	Y	Y
Student characteristics	Y	Y	Y
Coursework	Y	Y	Y
Aspirations and intentions	Y	Y	Y

High school attributes	Y	Y	Y
High school dummies	Y	Y	Y
Observations	4,874	8,969	5,535

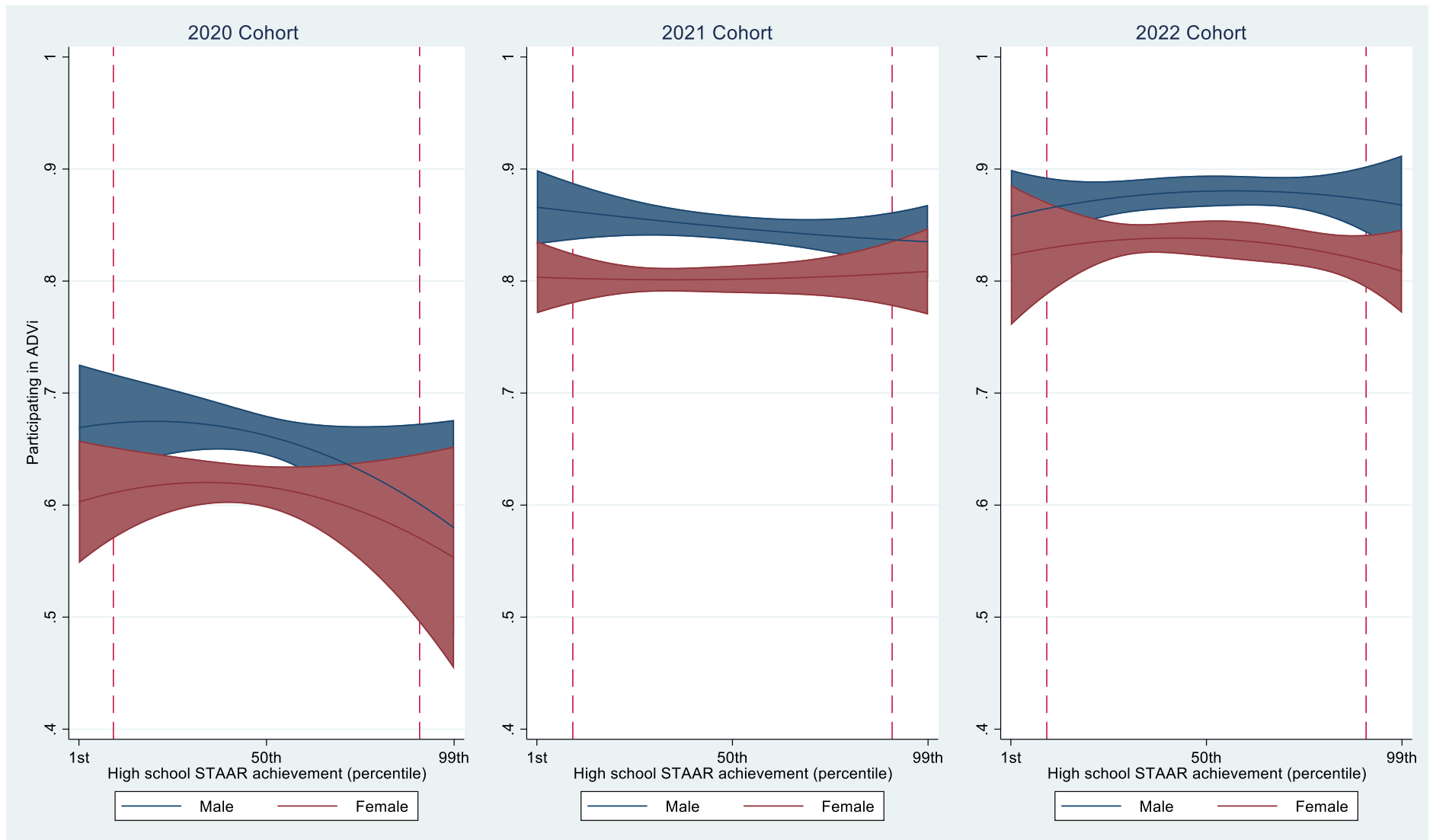
Notes. All gaps are expressed in percentages. All estimates are average marginal effects, following logistic regressions predicting ADVi participation using the Model 5 specification. Robust standard errors are clustered at the high school level. The full regression results are available upon request from the authors.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

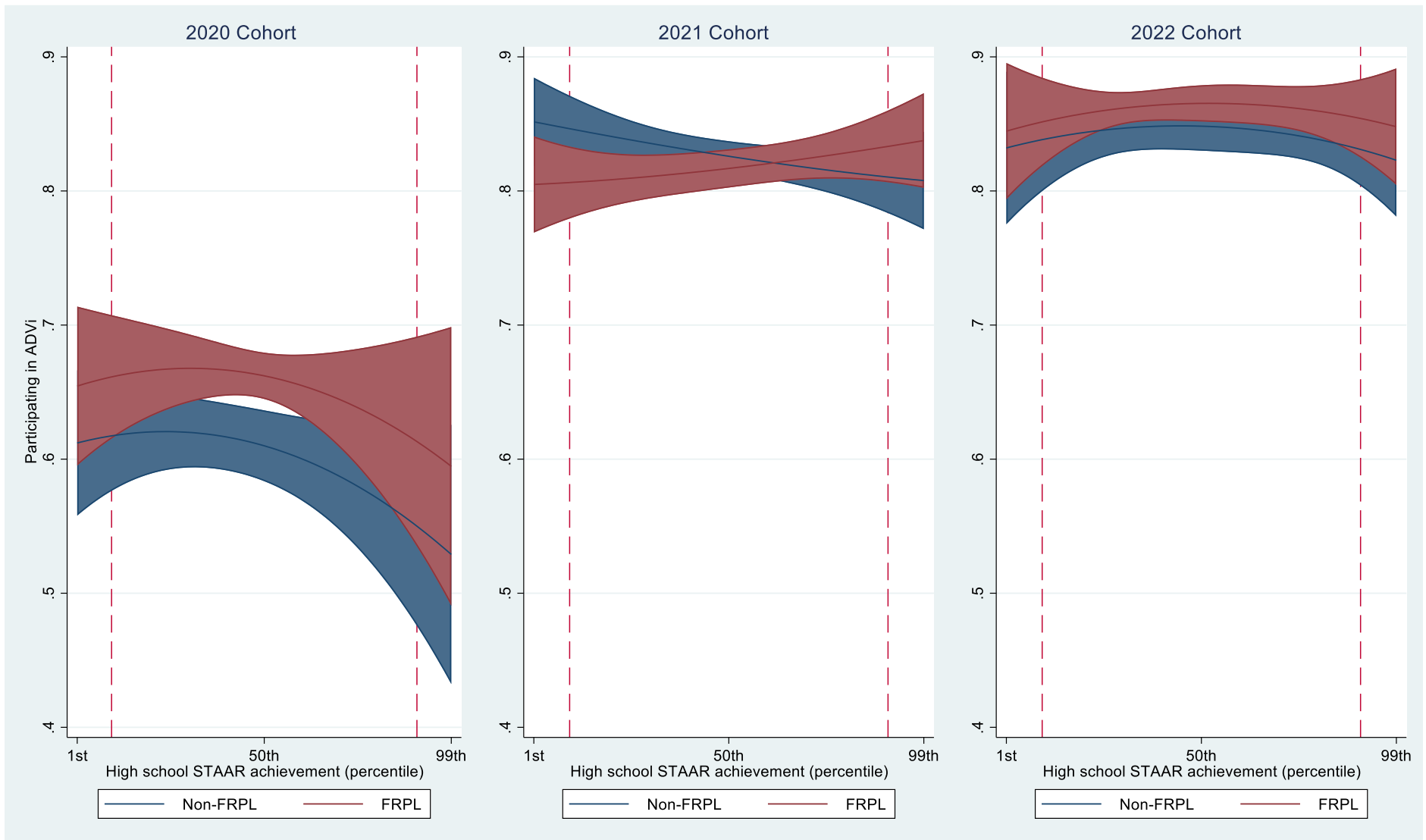
Moreover, we observe a concave pattern throughout the STAAR achievement distribution, with the curvature of the prediction curve appearing more elastic in the 2020 cohort compared to the 2021 and 2022 cohorts (see F.2). Specifically, the curve for the earlier cohort displays a relatively larger gender gap at the lower end of the distribution, gradually narrowing as the achievement value increases (while the gap becomes slightly wider for the 2022 cohort). Although the predicted probability curves are detailed in F.2, we omit an explanation of patterns regarding predicted probabilities of other key SES characteristics due to either non-statistically significant gaps or less meaningful differences.

In summary, during the initial implementation of ADVi, there was a greater likelihood of participation among male and African American students. The racial gap significantly decreased and became nonsignificant, while a consistent gender gap remained over the years.

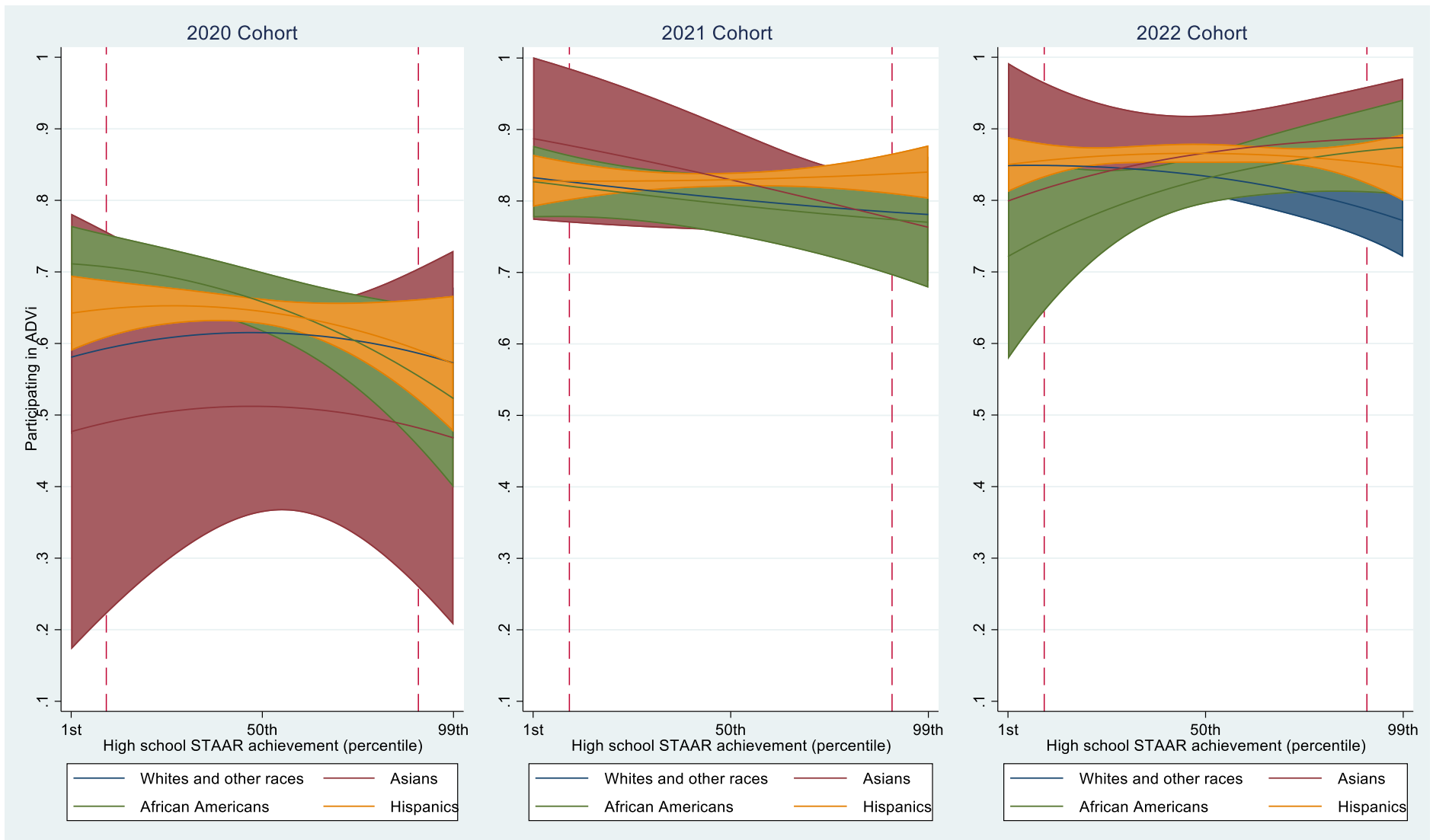
F.2. Prediction of ADVi participation probability



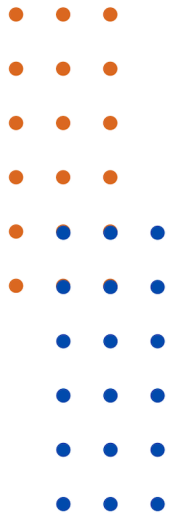
(a) By gender



(b) By FRPL



(c) By race and ethnicity



ADVI THE VIRTUAL ADVISOR

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