College Counseling in the Classroom:
Randomized Evaluation of a Teacher-Based Approach to College Advising

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Abstract

School counselors provide the main source of college advising for low-income high school students, but are woefully understaffed in high-need schools. I conduct a randomized evaluation of a college planning curriculum, which relies on high school teachers rather than counselors. I find that the program shifts the composition of students enrolling in college toward those who are better academically prepared, and thus more likely to persist. Enrollments increase among high-achieving, low-income students, who persist through to earn an Associate's degree, though are no more likely to earn a Bachelor's degree. Enrollments decrease among low-achieving students, who in the program's absence would have enrolled and then quickly dropped out. Based on the increase in Associate's degrees, the estimated earnings impact of the program exceeds its minimal cost.

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I. Introduction

The decision of whether and where to enroll in college is complex, with uncertain costs and returns that vary substantially across students, institutions, time, and field of study (Oreopoulos & Petronijevic, 2013; Stange, 2015; Altonji & Zimmerman, 2019; Andrews et al., 2022). High-income parents can help their children with this decision and the application process, but children from economically disadvantaged families, whose parent(s) may not have attended college or even graduated high school, must rely on in-school support typically provided by school counselors. School counselors can be highly effective (Mulhern, 2022), but are woefully understaffed in high-need schools, often with student-counselor ratios on the order of 1000-to-1 (Executive Office of the President, 2014). As a result, many high-achieving students from economically disadvantaged families either do not enroll in college, or enroll in a less-selective and under-resourced college at which they have a greater probability of dropping out (Hoxby & Avery, 2013). At the same time, many low-achieving high school graduates armed with limited information about whether they will enjoy and succeed in college enroll to learn whether college is right for them, only to quickly drop out after realizing that it is not (Stange, 2012; Stinebrickner & Stinebrickner, 2012). Both of these phenomena contribute to the high college dropout rate in the U.S., particularly among children from economically disadvantaged families (Bailey & Dynarski, 2011; Denning et al., 2022).

Economists and education researchers have devised and evaluated interventions to help students navigate the complex college enrollment decision and application process. These seminal studies show large increases in college enrollment and/or degree completion from policies ranging from FAFSA assistance at H&R Block (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2012), to application assistance provided in-school by current undergraduates (Carrell & Sacerdote, 2017), to intensive college advising provided outside of school through philanthropically-funded programs like The Bottom Line (Barr & Castleman, 2021; Castleman & Goodman, 2017; Castleman, Deutschlander, & Lohner, 2020). These interventions represent creative work-around solutions to a systemic failure of school-provided college advising for low-income students. However, they may face challenges to implement at scale, because they are either offered outside of school, require partnering with an outside organization, rely on non-school personnel, and/or require substantial increases in school funding. While hiring many high-

quality counselors at disadvantaged schools might fix the problem on a more systemic level (Mulhern, 2022), such a solution is unlikely given the necessary increases in school funding.

This paper evaluates an approach to school-based college advising that relies on existing high school teachers, as opposed to counselors, and requires very little additional school funding. Specifically, I conduct a randomized control trial (RCT) in 62 Michigan high schools to estimate the effects of a college planning curriculum for high school seniors on postsecondary enrollment, persistence, and degree receipt. The curriculum teaches about two- and four-year postsecondary opportunities, benefits of attending college, costs and challenges of enrolling and persisting, and strategies to apply to and persist through college. The curriculum is built into seniors' class schedules either as a new, stand-alone course, as part of homeroom or a senior advisory period, or by incorporating it into an existing class such as Senior English. I partner with the non-profit Michigan College Access Network (MCAN) to develop the curriculum and materials, and with the Michigan Department of Education (MDE) for data access and assistance with project implementation. Course instructors participate in a one-day training by MCAN staff, and then implement the curriculum with no further assistance from MCAN or any other outside entity. After conducting a pilot of the intervention in five high schools in 2015-16, I implemented the RCT using a pairwise block randomization among a sample of 62 (non-pilot) schools enrolling 6,704 seniors during 2016-17, allowing an examination of postsecondary enrollment, persistence, field of study, grades earned, and degree receipt through six years after the intervention.

To preview the results, I find that the intervention shifts the composition of students enrolling in college toward those who are more academically prepared for college, and thus more likely to succeed. High-achieving students, as defined by having above median baseline GPA and scores on the (mandatory) SAT, are nearly 3 percentage points (4 percent) more likely to enroll, 3.5 percentage points (7 percent) more likely to persist through their third year in college, and 3.1 percentage points (8 percent) more likely to earn a postsecondary degree within six years after the intervention. The increase in degree receipt is primarily due to a 2.4 percentage point (19 percent) increase in Associate's degree receipt (with only a statistically insignificant half a percentage point increase in Bachelor's degree receipt).

The intervention *decreases* postsecondary enrollment among low-achieving students (those with below median GPA or SAT scores) by 4.4 percentage points (9.5 percent). However, there is no decline in the number of such students persisting past the first year of college, nor

earning a degree, suggesting that the marginal low-achieving students prevented from enrolling would have quickly dropped out in the absence of the intervention. These effects, including the differences in enrollment, persistence, and degree receipt by student achievement, are all statistically significant at conventional levels even after adjusting for multiple hypothesis testing following Benjamini and Hochberg (1995), Benjamini and Yekutieli (2001), and Anderson (2008). By shifting the composition of college enrollees toward higher-achieving students, the intervention increases the overall number of students persisting through college and earning a degree, though these smaller increases among the overall sample are less precisely estimated. There is a marginally significant 2.5 percentage point (8 percent) increase in the likelihood of enrolling and persisting to the third year of college among all students and 1.3 percentage point (15 percent) increase in Associate's degree receipt.

What might explain the heterogeneous effects of the college planning curriculum by student achievement? The curriculum emphasizes the notion of "undermatch" – that students should attend the most selective institution possible, because less-selective institutions have fewer resources and thus lower graduation rates. For example, during one two-week segment of the curriculum, students identify their GPA and SAT/ACT score, and then find colleges for which they would likely qualify, as well as the graduation rates at these institutions. One plausible explanation for the heterogeneity by student achievement is that the curriculum's emphasis on "undermatch," and on institutions' graduation rate as a signal of students' graduation likelihood, may cause some low-achieving students who only qualify for non-selective institutions to update their perceived chance of graduating from college, and choose not to enroll. While this could plausibly explain the decreased enrollment among low-achieving students, one caveat is if the "undermatch" aspect of the curriculum was important, one might expect increases in enrollment at selective colleges and "match" or "reach" institutions among high-achieving students. This was not the case – the marginal high-achieving students mostly enroll at two-year and "safety" institutions, with no increase at selective, "match," or "reach" institutions, consistent with the increase in Associate's but not Bachelor's degree attainment.

To understand how the intervention affects inequality in educational attainment, I examine heterogeneity by student economic disadvantage. Importantly, the improvements in postsecondary outcomes among high-achieving students are driven by economically disadvantaged, high-achieving students, who see large increases in enrollment (4.0 percentage

points, 6 percent), persistence (5.4 percentage points, 13 percent), and Associate's degree receipt (2.9 percentage points, 25 percent). However, these results also come with the caveat that the analysis is somewhat underpowered when splitting the sample by both achievement and economic disadvantage: The differences between high-achieving, economically disadvantaged and high-achieving, non-economically disadvantaged students are not statistically significant. Turning to the enrollment reduction among low-achieving students, it appears to be concentrated among non-economically disadvantaged students: low-achieving, economically disadvantaged students see no enrollment decline, and, in-fact, see suggestive increases in persistence.

Finally, I explore other possible mechanisms for the increases in persistence and degree receipt besides the shift in enrollment composition. I find that the intervention induces low-achieving, economically disadvantaged students away from enrolling only at a community college and other "safety" institutions, increasing their exposure to four-year and "match" institutions. Also, the increased enrollment among high-achieving, economically disadvantaged students is driven by increased full-time enrollment, and by students majoring in high-earning fields, such as STEM, business, and economics. Lastly, I find suggestive evidence from survey data that the intervention improves students' "college knowledge."

While the college planning curriculum appears to have little effect on Bachelor's degree receipt, researchers have found substantial earnings returns to receiving an Associate's degree (e.g., Jepsen, Troske, & Coomes, 2014; Kane & Rouse, 1995). I estimate the implied earnings benefit of the program using only the increase in Associate's degrees, and ignoring any other possible benefits in terms of increased persistence or future increases in Bachelor's degrees. Bahr et al. (2015) use Michigan unemployment insurance data to estimate the earnings returns to Associate's degrees in Michigan. Combining their estimates with the effect of the college planning curriculum on Associate's degrees, I calculate that the program increases the net present value of lifetime earnings by $2,176-$2,931 for the overall sample, or by $4,016-$5,410 if focusing the program on high-achieving students. I estimate that the small financial cost of the intervention, which is limited to the one-day training for instructors, is less than $8 per student. Thus, while the program's earnings return is not large, it is greater than the small financial cost.

The college planning curriculum requires little additional school funding; however, its main (non-financial) cost is displaced learning time in other subjects. Unfortunately, learning during twelfth grade is difficult to assess given that state tests are implemented during junior

year. Nevertheless, two facts suggest any such learning loss may be small. First, one symptom of lost learning would be if students have lower persistence rates or perform worse in their college classes. There is no evidence that this is the case: the program boosts persistence rates, and treated and control students have similar college grades. Second, the teachers whose class time was displaced by the curriculum would likely be the most vocal about this issue. But, in a final survey of course instructors – most often English teachers who had incorporated the curriculum into Senior English – there was near-universal satisfaction with the program, and little concern about lost learning time in other subjects.[1] Ultimately, I cannot convincingly measure the cost of lost learning time, and so the benefits of the intervention in terms of postsecondary enrollment, persistence, and degree receipt can be thought of as "net" of any such learning loss.

This paper contributes to two related economics literatures. The first studies the option value of schooling as a model of the college enrollment and dropout decision (Stange, 2012; Stinebrickner & Stinebrickner, 2012). Given students' limited information about whether they will enjoy and succeed in college, some make the rational decision to enroll for the option value of continuing, but quickly drop out after learning about college and their ability. These students are ex-ante better off enrolling, but ex-post better off having never enrolled. The college planning curriculum reducing the number of low-achieving students enrolling in college, but not the number persisting past the first year, is consistent with this model, suggesting that the program helped alleviate information problems prior to these students entering college. This finding can also help interpret the results of recent studies showing a null effect of light-touch information interventions (Bettinger et al., 2012; Bergman et al, 2019; Bird et al., 2021; Phillips & Reber, 2022; Hyman, 2020). One explanation for the null result is that while the interventions may have boosted enrollment for some students, the interventions may also have reduced enrollment for others by helping them learn prior to college entry that they would likely drop out.

The second related literature examines strategies to boost college enrollment and persistence by providing students with information and assistance. This literature tends to categorize interventions into "boots-on-the-ground" strategies versus extremely light-touch interventions, such as text-message campaigns and mailings. The appeal of these light-touch

[1] For example, one question (Appendix Figure XI, question 9) asked whether the instructor felt the curriculum was displacing more valuable instruction in another course or time spent on other learning. From "1" to "5", where "1" was not at all and "5" was very much so, the majority of instructors responded a "1", and the mean was a 1.8.

strategies is that they are easy to scale and very inexpensive. However, while some such interventions have found small, cost-effective increases in college entry and persistence (Hoxby & Turner, 2013; Castleman & Page, 2015; Barr & Turner, 2018; Page & Gelbach, 2017), many have not (Bettinger et al., 2012; Bergman, Denning, & Manoli, 2019; Bird, Castleman, Denning, Goodman, & Lamberton, & Rosinger, 2021; Phillips & Reber, 2022; Hyman, 2020). The college planning curriculum combines the advantages of the two types of interventions by using a boots-on-the-ground, in-person approach, but with the scalability and small financial costs of the lightest-touch information interventions.

The two closest studies to this one are Oreopoulos and Ford (2019) and Kautz and Zanoni (2024). Oreopoulos and Ford (2019) implement an RCT evaluating a series of three workshops throughout senior year in which students in Canada learn about and receive assistance applying to college. The authors find promising impacts on enrollment, but due to data limitations, cannot examine effects on persistence. My paper extends Oreopoulos and Ford (2019) to examine a more intensive intervention in the U.S for which I can evaluate effects on persistence and degree receipt. In a similar study, Kautz and Zanoni (2024) use a difference-in-differences approach to evaluate a college planning program, OneGoal, finding large increases in college enrollment and persistence. My study's main contribution over Kautz and Zanoni (2024) is the use of an RCT, as well as the ability to examine postsecondary degree receipt through six years after the program.

This study comes with several caveats and issues to consider when interpreting the results and evaluating program scale-up. First, while I interpret the heterogeneity by student achievement as consistent with the option-value story – that low-achieving students are learning that college is not for them – there are other possible explanations. For example, it could be that schools with lower-achieving students implement the intervention less effectively than schools with higher-achieving students. I test for this, and while the results are relatively imprecise, I find little evidence of heterogeneity by school-level student achievement. Another possible explanation is that schools offered the curriculum only to high-achieving students, and the low-achieving students interpreted this as a signal that they should not enroll in college. Based on principal survey responses, schools varied in their enrollment strategies: some schools did prioritize higher-achieving students, while others excluded the highest achieving students. Many schools let any interested student into the program. Across all treated schools, 63% of seniors enrolled, while the fraction of students who I categorize as high-achieving students is 40%,

suggesting that even if students were perfectly sorted into the intervention by achievement (which is not what happened), 38% (= 23% / 60%) of low-achieving students would have received the curriculum. Ultimately, I cannot conclusively say why the intervention shifted the composition of enrollees toward more prepared students, and I acknowledge that the option-value story where students update their graduation likelihood is just one plausible explanation.

A second caveat is that when considering program scale-up, at least two possible hurdles exist: the one-day teacher training that we offered during the summer could be a non-trivial barrier, and also a small share of the curriculum is Michigan-specific (e.g., descriptions of Michigan colleges and their graduation rates) and would have to be adjusted. A third caveat, also related to scale-up and generalizability, is that it is possible that the relatively small subset of all Michigan high schools that volunteered to participate were those that anticipated the greatest benefit. Finally, on a more positive note, one additional possible long-run benefit of the program is that removing college advising from overburdened high school counselors could allow them to devote more time toward other important topics like mental health and academic challenges. While caution is prudent in generalizing this paper's results to a widespread expansion of the policy, the college planning curriculum represents a promising alternative to schools seeking greater postsecondary outcomes, but without the funds to hire additional counselors nor the capacity to partner with outside organizations.

II. The Intervention

I implement and evaluate a college planning curriculum that takes place over the approximately eighteen weeks of a typical public high school fall semester (early September through mid-January). The 31 treatment schools in this project were randomly assigned to offer the curriculum during fall 2016. In this section, I describe the program structure and curriculum content. In Section IV, I describe the randomized control trial design and implementation.

To encourage school participation and increase scalability, schools were allowed substantial flexibility in how they structured the intervention. For example, the number and length of class sessions each week were left to schools' discretion, though I requested that the program meet twice or more per week for a minimum of 90 total minutes per week. Over half of treated schools decided that the most feasible way to fit the curriculum into the senior schedule was to incorporate it into Senior English (43% of schools) or another course that was part of the

existing twelfth grade schedule (11%), such as Senior Finance (see Appendix Figure Ia). Another 21% of the schools taught the curriculum during homeroom or a senior advisory period. The remaining 25% of schools created a new stand-alone course. Among these schools, mean contact hours per week was about two and half hours, well over the suggested 90-minute minimum.

Schools chose which students would receive the curriculum, but were told they must enroll at least half of their seniors. In practice, 63 percent of seniors across all treated schools were enrolled. However, there was substantial heterogeneity: seven of the 31 treated schools offered the curriculum to fewer than 50 percent of their seniors, while six schools offered it to greater than 90 percent. Appendix Table 1 reports how schools' share of seniors treated correlates with student demographics and other school characteristics. Rural schools were substantially more likely to enroll a high fraction of their seniors in the program, while urban schools were more likely to enroll a smaller fraction of their seniors.

Schools' strategies for choosing which seniors to enroll were varied: many schools enrolled all students who were taking a particular course, such as Senior Honors English. One school enrolled all students *except* those enrolled in AP English. Another school invited students who considered themselves "college-bound," as well as by teacher and parent requests. Another invited the top 100 seniors ranked by GPA. Many schools simply offered the course to all seniors and let those enroll who wanted to and who could fit it into their schedule. As explained further in Section IV, I focus on the Intent-to-Treat (ITT) effect of the intervention for all seniors in treated schools. I view the variation in schools' decisions about who to enroll as a feature of this study, not a bug: allowing schools this flexibility should help with scalability, and the ITT estimate captures the effect of the intervention accounting for this wide array of schools' possible choices about who to enroll, which may help with external validity.

Schools were allowed to choose whether the curriculum was graded or ungraded (e.g., pass/fail), though I encouraged schools to grade it to maximize the chance that students would engage seriously with the material. Essentially all schools offered it graded other than the 21% offering it during homeroom or a senior advisory period. The schools that embedded the curriculum into another course typically included the related material in that course's grade.

Schools were asked to cap class sizes at or as close to 25 students as possible, though I recognized that this would not be feasible for some of the larger, more disadvantaged schools. Appendix Figure Ib shows a cumulative distribution function of class size across class sections,

noting that most schools had multiple class sections offering the curriculum. About two-thirds of class sections kept at or near the 25-student limit, while about a third of the sections had larger enrollments in the upper-20s to mid-30s. In communications with school staff, it appeared that the larger class sizes were not due to a lack of prioritizing the curriculum, but rather reflected the grim reality of the student / staffing ratios at these schools.

Principals were instructed to choose instructors from existing teachers, counselors, or other staff at the school. In practice, English teachers were the most common choice of instructor (53%), followed by other types of teachers (28%), with Social Studies being the most common after English (see Appendix Figure Ic). Only seven percent of course instructors were counselors. Thirteen percent of instructors were other non-teacher, non-counselor staff and administrators, such as a "Dean of Students," "Special Services Coordinator," or "Intervention Officer." Based on principal survey responses, some factors that went into the decision of who to teach the curriculum were who had good knowledge about college application issues, was well-liked by students, could effectively teach the material, and had an available slot in their schedule.

All instructors participated in one 8-hour training covering pedagogy and curriculum. The training was offered in-person on three separate Saturdays around the state during June 2016. A make-up session was held in centrally-located Lansing, Michigan, during late August 2016 for any instructor that was unable to attend one of the June sessions. All treated schools had at least one instructor attend a training. A sample training agenda is included as Appendix Figure II.

The curriculum runs from September through January of senior year (see Appendix Figure III). Weeks 1 through 3 focus on explaining the costs and benefits of attending, different college types, and the match between students' qualifications and preferred colleges. Weeks 4 through 9 guide students through the college application process in time to meet typical deadlines, with the goal of completing at least three applications (one reach, one safety, and one match).[2] Weeks 10 through 14 cover searching and applying for financial aid, and budgeting and managing finances in college. Weeks 15-18 cover career exploration, resume building, and final steps needed for enrollment and success during the first year and beyond, including accepting an offer of admission, registering for orientation and placement exams, choosing a smart first-year course schedule, and deciding on a college major. While much of the curriculum focused on

[2] Teachers worked with qualifying students to apply for application fee waivers. Fee waivers were not provided as part of the program, so middle- and high-income students had to pay the application fees themselves.

application steps to four-year colleges, the curriculum also emphasized community college enrollment, and taught about the process of transferring to four-year colleges in Michigan. A goal of the curriculum was for it to be portable across states, with only a few necessary changes to specific content areas (e.g., the community college to four-year college transfer process).

To develop the curriculum, I partnered with the Michigan College Access Network (MCAN), a non-profit focused on increasing postsecondary access and success in Michigan. MCAN took nearly full responsibility for developing the curriculum, with feedback from Michigan Department of Education (MDE) staff and myself. Neither MCAN nor their national network had previously offered an intervention similar to this. Thus, MCAN staff essentially developed the curriculum from scratch, though a large part of the development process consisted of collecting existing content from their prior work and other sources, and assembling it into a coherent 12th grade fall semester curriculum. MCAN provided instructors with all components necessary for implementation, such as curriculum, lesson plans, slides, class handouts, and assignments. An example lesson plan, "Lesson 2: Match and Fit," is attached as Appendix Figure IV, and class handout on the FAFSA completion process as Appendix Figure V.[3]

III. Data

III.A Data Sources

This project's main data sources are administrative microdata owned by the Michigan Department of Education (MDE) and Michigan's Center for Educational Performance and Information (CEPI). Postsecondary enrollment and degree receipt data come from the National Student Clearinghouse (NSC), which contains information on almost all undergraduates nationwide (Dynarski et al., 2015). The data describe when and where students are enrolled, which we match to data from the Integrated Postsecondary Education Data System (IPEDS) to obtain information on college sector and selectivity. The NSC also provides information on whether students are enrolled full-time or part-time, and whether and when they earn a degree.

The second source of postsecondary information is Michigan's Student Transcript and Academic Record Repository (STARR). STARR provides transcript data for all Michigan two-

[3] Note the prominent disclaimer at the bottom of most course materials stating that the materials are the property of MCAN and cannot be used without their permission. We included this because I was concerned that control schools would get their hands on the materials and offer the curriculum during fall 2016 in spite of a being assigned to offer it during fall 2017. To my knowledge, no control school defied their assigned treatment status in this way.

and four-year public colleges and universities. 83% of the students in my sample who attend postsecondary schooling do so at an in-state public institution. STARR provides more detailed information than is available in the NSC, such as students' grades and declared major.

Information on student characteristics and enrollment during grade 12 come from the Michigan Student Data System (MSDS), which identifies the school in which a student is enrolled, as well as key demographics such as sex, race, and eligibility for free or reduced-price lunch. It also contains students' cumulative high school grade point average (GPA), attendance rates, performance on state standardized tests, and performance on the SAT college entrance exam, which was mandatory and provided in-school for free for students in this cohort.

In addition to the administrative data, I implemented various surveys to gather qualitative data on the student, instructor, and principal experience with the program. While critical to understand and improve the project's fidelity and implementation, these data are less central to the evaluation of the effects of the curriculum on postsecondary outcomes, and so I only briefly describe these survey data. Please see the online appendix for more details about these surveys, as well as the complete student course evaluation and final instructor survey.

Prior to implementing the randomized control trial (RCT) in 2016-17, I ran a pilot of the program during fall 2015 in five high schools from across the state. During the pilot, I implemented monthly student and instructor surveys to measure program usability, feasibility, and fidelity of implementation. Students and instructors were generally positive, but also provided helpful criticisms leading to improvements to the curriculum and implementation process before rolling out the RCT in fall 2016. To assess the instructor, student, and principal experience with the program during the RCT, I conducted mid-semester and end-of-semester instructor surveys, as well as end-of-semester course evaluation to students, and a final survey of principals after the program had concluded. Overall, students, instructors, and principals were quite positive about all aspects of the program and curriculum.

In addition to these surveys inquiring about the program experience, we also implemented brief student surveys to seniors in treatment and control schools during February and May 2017 (the spring after the curriculum was offered in treated schools), asking about college knowledge, FAFSA submission, college applications, and college acceptances. Unfortunately, while we aimed for near universal take-up, we ended up with valid survey responses from only 76% of seniors. More troubling than the 76% response rate is that the

response rate differed by treatment status: seniors from control group schools were 6.4 percentage points more likely to respond.[4] Given the response-rate issues with these student survey data, I only briefly mention some results from these data in Section V.D.

III.B Sample Summary Statistics

Table 1 shows sample means for pre-treatment characteristics of grade 12 students and their schools during 2016-17 in the entire state of Michigan (column 1) and the experimental sample (column 2). In the next section, I discuss columns 3, 4, and 5, which show means by treatment status, and test for balance.

The 6,704 students and 62 schools in the experimental sample are more economically disadvantaged, racially diverse, and lower-achieving than the Michigan population. 53% of the sample is economically disadvantaged (proxied for by eligibility for free or reduced-price lunch), compared to 39% of all Michigan 12th graders. The experimental sample is 56% white (non-Hispanic) and 36% black (non-Hispanic), compared to 71% and 18%, respectively among the population. Only 8% and 10% of the sample and Michigan population, respectively, are another race (e.g., Asian, American Indian) or identify as Hispanic. Students in the experimental sample are somewhat more likely to attend school in a city (23%), town (18%), or rural area (27%), and substantially less likely to attend school in a suburban area (33%) as compared to the Michigan population. To help illustrate the geographic dispersion of schools, Appendix Figure VI shows a Michigan map with treatment and control schools represented by blue- and maize-colored markers, respectively. The schools are spread throughout the state, including several in the (rural) Upper Peninsula. Four percent of students attend a charter, compared to 7% overall in Michigan. Finally, the schools are smaller than in the population, with mean grade 12 enrollment for students in the experimental sample of 170 compared to 248 among the population.

Among the Michigan population, 53% of seniors during 2015-16 enrolled in college in fall 2016, while 33% did so at a four-year college. These rates are lower for the experimental sample: only 43% enrolled, and 24% did so at a four-year college. The sample is also lower achieving in high school than the Michigan population, by SAT score (917 compared to 996), 8th grade test scores (25% of a standard deviation below the mean 8th grade score, compared to 5%

[4] This differential response is likely because control group schools were required to participate in the survey in order to offer the program in fall 2017, while the treatment schools had already completed the curriculum.

of a standard deviation above the mean), and grade 10 GPA (2.49 compared to 2.59). Their grade 11 attendance rate is nearly identical (92% of school days attended compared to 93%).

Given the heterogeneity that I find in the effects of the intervention by student achievement and economic disadvantage, it is helpful to understand whether there is a fairly even spread of disadvantaged students and high-achieving students across schools, or alternatively, whether schools are fairly segregated by student economic disadvantage and student achievement. Appendix Table 2 shows the distributions across the 62 schools in my sample of school share economically disadvantaged and school share high-achieving. The distributions of both characteristics are fairly well-spread, with little evidence of substantial segregation.

IV. Methodology

I evaluate the impacts of the college planning curriculum on students' postsecondary outcomes using a school-level randomized control trial (RCT). All Michigan high schools were invited to participate in this RCT via an email sent by the State Superintendent of Schools to principals. Only a relatively small subset of the high schools in the state opted in: 62 out of more than 800 schools (see Table 1). Half of the 62 participating high schools, the treated group, were randomly assigned to enroll a portion of their grade 12 students in the college planning curriculum during fall 2016. The other half of schools, the control group, did not offer the curriculum in fall 2016, but instead offered it in fall 2017.[5] A comparison of the postsecondary outcomes of seniors during 2016-17 across treated and control schools provides the causal effect of a school offering the program. Specifically, I use the following specification to estimate the intent-to-treat (ITT) impact of the college planning curriculum on student outcomes:

$$Y_{isb} = \beta_0 + \beta_1 TREAT_{sb} + \beta_2 X_{isb} + \delta_b + \epsilon_{isb} \quad (1)$$

where Y_{isb} is a postsecondary outcome of student *i* in school *s* in pairwise randomization block *b*, $TREAT_{sb}$ is a binary variable that represents whether school *s* in block *b* was assigned to offer the curriculum in fall 2016, X_{isb} is a vector of student- and school-level characteristics included to increase statistical precision,[6] and ϵ_{isb} is the error term, which I cluster at the school level.

[5] Randomly assigning *when* as opposed to *whether* schools were allowed to offer the curriculum was more politically acceptable to the Michigan Department of Education, and helped with recruiting schools.

[6] The student-level covariates are: dummies for female, economically disadvantaged, Black, Hispanic, and other race, as well as 8th grade test score, 11th grade SAT score, cumulative GPA as of 10th grade, and 11th grade attendance rate. Note that students' GPA is as of 10th grade, because MDE stopped collecting transcript data used for

Due to concerns about multiple hypothesis testing, I also present sharpened q-values following Benjamini and Hochberg (1995), Benjamini and Yekutieli (2001), and Anderson (2008) that control for the false discovery rate within each domain of particular types of outcomes.[7] β_1 provides the causal effect on *Y* of being in a school that offers the college planning curriculum.

To attain maximum statistical precision with the school-level randomization, I used a pairwise block design to randomly assign schools to treatment status (Raudenbush, et al. 2007; Bloom, 2005). I estimated a predicted college enrollment rate for each high school based on a quadratic trend in the fraction of seniors who enrolled in postsecondary education considering the five years prior to random assignment. I sorted schools by this predicted enrollment rate, grouped schools into pairs, and assigned treatment status within each pair. This strategy minimizes the chance of differences across treatment and control in the pre-treatment outcome and maximizes statistical precision, so long as prior school-level college enrollment rates are highly predictive of current rates (which they are in my sample). The δ_b in Equation (1) is the randomization block (i.e., pair) fixed effect, which is necessary to include, given that randomization is conducted within block.

Although randomly assigning students to the intervention within schools would increase statistical precision, I chose a school-level design for two reasons. First, it would have been more logistically and politically challenging to implement student-level randomization. Second, with student-level randomization, spillovers could occur in which treated students share their increased college knowledge with control students, attenuating the estimated effects of the program. These spillovers between participating and non-participating students within a school are a desired aspect of the treatment that I want to capture as part of the treatment effect.

These potential spillovers are also a main reason why I focus on the ITT estimate of the curriculum. Because not all seniors in the treated schools will receive the curriculum, Equation (1) estimates an ITT estimate of the effect of being in a high school that is randomly assigned to offer the college planning curriculum, rather than the effect of a student actually receiving it. This ITT estimate combines the effect for students who enroll in the curriculum and the effect for

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the GPA calculation as of 2015-16, when these students were in grade 11. The school-level covariates are: dummies for suburban, town, rural, and charter, as well as the number of grade 12 students, fraction of 2015-16 seniors enrolled in any college in fall 2016, and fraction enrolled in a four-year college.

[7] Thank you to Anderson (2008) for providing code to calculate the q-values. I classify the outcomes within the following domains corresponding to Tables 2 – 9: Enrollment and Persistence (3 outcomes), Degree Receipt (3), College Choice (4), College Match (4), Enrollment Intensity (4), and College Major and GPA (4).

students who do not. It is the ideal parameter in this context for two reasons. First, as mentioned above, any spillover effects experienced by non-enrolled students receiving assistance from enrolled students, or experiencing any general increases in college-going culture in the school due to the program, are an important part of the school-level treatment included in the ITT parameter. Second, it is the parameter of policy interest, as it arguably reflects the likely real-world situation where the curriculum is made available, but not forced upon, every student.

Randomization worked well and student and school characteristics are generally balanced across treated and control schools. Table 1, columns 3 and 4 show sample means by treatment status. Column 5 shows regression-adjusted differences, reporting the coefficient on *TREAT*, and its standard error, from a regression of each characteristic on *TREAT* and the randomization block fixed effects, clustering the standard error at the school level. Looking to column 5, only two of the nineteen characteristics in Table 1 are statistically significant: students in treated schools are slightly less likely to be female, and are substantially more likely to live in a suburban area. There are no statistically significant differences in baseline college-going rates, SAT scores, 8th grade test scores, grade 11 GPA, and grade 11 attendance rates. If anything, the coefficients on all of these baseline achievement and college-going outcomes are negative, which is the opposite direction we would expect if we were concerned about the greater propensity for treated schools to be in suburban areas that tend to enroll higher-achieving students.

V. Results

V.A Effects on Enrollment, Persistence and Degree Receipt by Baseline College-Readiness

I begin by examining whether the college planning curriculum impacts students' enrollment and persistence through college. I measure enrollment within four years after the intervention to capture students who do not enroll immediately after graduating high school. The postsecondary data extend through six academic years after the experiment (i.e., through 2022-23), allowing me to examine whether students who enroll within four years of the intervention persist to their third year of college. To examine persistence to year two, I create a dummy equal to one if a student enrolls in college (within four years) and is still enrolled during the academic year after they initially enroll. For persistence to year three, I create a dummy equal to one if a student enrolls (within four years), and is still enrolled as of two academic years after their initial college entry year. Note that this analysis does not condition on enrolling, i.e., the sample is not

restricted to those who enroll – rather I examine dependent variables that are dummies equal to one if the student enrolls within four years and then persists to the relevant year. I also examine several other measures of persistence, for example, total numbers of semesters attended (see Figures I and II), as well as dummies for enrollment by year and continuous enrollment through each year (see Appendix Table 3), all showing a similar pattern of results.[8]

I find a fairly precisely estimated zero effect of the college planning curriculum on college enrollment (Table 2, column 1, row 1) among the overall sample of students. The coefficient is -0.007 (SE=0.014), allowing me to rule out an increase of about 2 percentage points with 95% confidence. However, there appear to be increases in persistence, albeit imprecisely estimated, which grow over time. For example, while statistically insignificant, students are 1.4 percentage points more likely to enroll and persist to year 2. Students are 2.5 percentage points more likely to enroll and persist to year 3 (marginally significant; SE=1.3). This effect represents an 8.3% increase in enrolling and persisting through three years of postsecondary schooling, given the control mean of 29.9%.

I find that the null effect of the college planning curriculum on enrollment, but increase in persistence, appears to be due to a shift in the composition of college enrollees toward those who are more academically prepared for college. Following Hoxby and Avery (2013) and Hoxby and Turner (2013), I consider students as high-achieving if they have both a high SAT score and a high GPA. GPA is measured prior to grade 12 so avoids any possible effects of the intervention on contemporaneous GPA during senior year. The SAT was required for all students as part of the 11th grade test students take for accountability purposes. I categorize students as high-achieving if they have an above median GPA and above median SAT score, both estimated among all Michigan twelfth-graders. Students are considered low-achieving if they have either a below median GPA or below median SAT score.[9]

High-achieving students are 2.9 percentage points (SE=1.3), or 4%, more likely to enroll in postsecondary schooling due to the intervention (Table 2, column 2). Low-achieving students were 4.4 percentage points (SE=1.9), or 9.5%, *less* likely to enroll (column 3). These results

[8] The effects on enrollment by year in Appendix Table 3 (e.g., enrollment in year 1 after the intervention; enrollment in year 2, etc.) demonstrate the importance of not only focusing on immediate enrollment. The increases in enrollment among high-achieving, ED students appear to be due to increases in enrollment occurring after the first year following the intervention, with no detectable increase during year 1 after the intervention.

[9] I show in Appendix Table 4 that the results by student achievement are similar when I use only SAT scores, and not GPA, to measure students as high- vs low-achieving.

suggest that the college planning curriculum caused an upward shift in the achievement level of college enrollees by reducing the number of low-achieving students and increasing the number of high-achieving students. Turning to effects on persistence, there is zero effect on enrollment and persistence to year two (-0.3 percentage points, SE=1.6) or year three (1.4 percentage points, SE=1.3) among low-achieving students, in spite of the large enrollment reduction. This suggests that the marginal low-achieving students who the intervention caused not to enroll would have quickly dropped out in the absence of the intervention. On the other hand, the marginal high-achieving students induced into college by the intervention persisted through college: high-achieving students experienced a 3.7 percentage point (SE=1.9), or 6.4%, increase in enrolling and persisting to year two, and a marginally significant 3.5 percentage point (SE=2.0), or 7.0%, increase in enrolling and persisting to year three.

In Table 2, below the clustered standard errors in parentheses, I include in brackets sharpened q-values (e.g., Benjamini & Hochberg, 1995) that control for multiple inference. All of the effects that I have described for high- and low-achieving students are statistically significant according to the q-values, but tend to be one significance level less precise. For example, most of the point estimates are significant at the 95% level using the clustered standard errors, but only at the 90% level using the q-values. Column 4 in Table 2 shows p-values from a test of equality of the point estimates across high- and low-achieving students (columns 2 and 3), with the q-values for these tests below in brackets. According to both the p-values and q-values, the effects on enrollment are highly significantly different by achievement, as are the effects on enrolling and persisting to year 2, while the effects on enrolling and persisting to year 3 are not.[10]

As another way to illustrate the effects of the program on college persistence, I plot in Figure I enrollment and persistence rates for the control group and treatment groups by semester. For example, the first square marker plots the control group mean of enrolling in at least one semester during the four years after the experiment (equivalent to the enrollment measure in Table 2, row 1). The subsequent square markers plot control group means for enrolling in at least two semesters, at least three semesters, through enrolling in at least six semesters. I then add the estimated treatment effect to the control mean to show the predicted outcome for the treatment group (circular markers), along with whiskers representing the 90% confidence interval.

[10] The increase in enrolling and persisting to year 3 among the overall sample is statistically insignificant after adjusting for multiple inference, with a q-value of 0.172

Focusing first on the overall sample, Figure Ia shows a declining rate of enrollment across semesters among the control group, from nearly 57% enrolling in at least one semester to just over 30% in at least six semesters. Consistent with the point estimates from Table 2, the treatment group experiences a slightly smaller college dropout rate, with a marginally significant approximately two percentage point greater fraction enrolling and persisting through at least five or six semesters. As in Table 2, Figure Ib shows that high-achieving students in the treatment group are more likely to enroll than control group students, and this effect persists across semesters, with high-achieving students seeing statistically significant effects across nearly every number of semesters. Low-achieving students (Ic) in treated schools are less likely than their control group counterparts to enroll, but have a lower dropout rate into semesters two and three, leading to an identical rate of enrolling in at least three or more semesters.

Given sheepskin effects in higher education (Jaeger & Page, 1996), an important concern is whether the intervention increases postsecondary degree receipt in addition to persistence through college. I observe degree receipt, both Associate's and Bachelor's degrees, through six years after the intervention. Among the overall sample (Table 3, column 1), there is a marginally significant increase in Associate's degree receipt of 1.3 percentage points (SE=0.7), or 15.5%. High-achieving students see a marginally significant 3.1 percentage point (SE=1.6), or 7.7%, increase in the likelihood of earning any degree within six years (column 2). This is almost entirely driven by a 2.4 percentage point (SE=1.0), or 18.8%, increase in Associate's degree receipt, with only a 0.5 percentage point (insignificant) increase in Bachelor's degree receipt. The intervention has no effect on degree receipt among low-achieving students (column 3).[11]

Why might the college planning curriculum have such different effects for high-achieving and low-achieving students given that all students were exposed to the same curriculum? The curriculum emphasizes the notion of "undermatch" – that students should attend the most selective institution possible, because less-selective institutions have fewer resources, and thus lower graduation rates. For example, one slide from the lesson "Match and Fit" (see Appendix Figure VII), shows two cartoon images of Charlie Brown, one attending University of Michigan (UM), with a 90% 6-year graduation rate, and one attending Eastern Michigan University (EMU), with a 38% graduation rate. The next slide shows Charlie Brown that

[11] After adjusting for multiple inference, the increases in any degree and Associate's degree among high-achieving students remain significant, but the increase in Associate's among the overall sample does not (q-value: 0.183).

attended UM with a graduation cap and gown, and Charlie Brown that attended EMU with no cap or gown, suggesting that students are likely to graduate if they attend a selective institution like UM, but unlikely to graduate if they attend a less selective institution like EMU.

As another example, during that same two-week period in the curriculum covering "Match and Fit", students complete in-class activities (Appendix Figures VIII and IX) where they write on a worksheet their own GPA and SAT/ACT scores, then navigate to various websites to find and add to their worksheet the average GPA and SAT/ACT at "match" colleges, as well as the retention and graduation rates at these schools. These examples illustrate that one plausible explanation for the pattern of results by achievement is that the curriculum's emphasis on "undermatch" and on the notion that less selective institutions are under-resourced, with low graduation rates, may cause some low-achieving students to update their perceived chance of graduating from college, choosing not to enroll as a result.

Another important dimension of heterogeneity other than student achievement is that, as described in Section II, there was substantial variation across treated schools in how they implemented the college planning curriculum (e.g., stand-alone course versus incorporating into an existing course; enrolling nearly all seniors versus a smaller share of seniors). While these differences in implementation were not randomly assigned, it is worth descriptively exploring heterogeneity by implementation variation to provide suggestive evidence about optimal program design. I find limited evidence of any difference in the effects of the program by whether it is offered as a stand-alone course versus incorporated into a pre-existing course, or by instructor type (see Appendix Table 5). However, the program appears to be more effective in treated schools with a *smaller* fraction of seniors treated. This is perhaps surprising given that the ITT design compares all seniors in treated to control schools, so that a greater fraction treated would typically lead to a greater ITT estimate. However, this assumes no difference in effectiveness by fraction treated. The results suggest that it was actually more effective to treat fewer students, with student and teacher survey responses providing a possible explanation why. Their responses suggest that students who were required to be in the program, but knew that they were not going to college, were frustrated about being there, and were disruptive and reduced the effectiveness for those students who were interested in attending college.[12]

[12] For example, student responses on the final student course evaluation to which topic they found *least* useful (see question 5 in Appendix Figure VIII) included: "All because I'm not going to college. I shouldn't have had to do these

Of course, the results in Appendix Table 5 are merely descriptive, and may simply reflect that the types of schools with a smaller share of seniors treated (e.g., urban schools) were more effective in implementing the program. However, the results are at least suggestive that schools seeking to replicate the program consider being deliberate about which seniors may benefit the most from the program, as opposed to simply enrolling as many students as possible.

V.B Effects on Postsecondary Outcomes by Student Economic Disadvantage

In order to understand whether and how the intervention affects inequality in educational attainment, it is important to assess how the effects discussed so far interact with student economic disadvantage. As reported so far, I observe improvements in outcomes among high-achieving students. Achievement in high school is positively correlated with student economic advantage, raising the possibility that the effects are concentrated among advantaged students, with little or no improvements for economically disadvantaged students.

I find the opposite: I find that the increases in enrollment, persistence, and degree receipt among high-achieving students are concentrated among economically disadvantaged (ED), high-achieving students. Similarly, the pattern found among the overall sample – no effect on enrollment, but a suggestive increase in persistence – is clearer and more precisely estimated (even after adjusting for multiple inference) among the sample of ED students. ED students see no enrollment effect, but a statistically significant 2.9 percentage point (SE=1.3), or 10.4%, increase in the probability of enrolling and persisting to year 2, and a 3.6 percentage point (SE=1.1), or 17.7%, increase in enrolling and persisting to year 3 (Table 4, column 1). The point estimates for non-ED students (column 2) also grow slightly from enrollment to persistence but are smaller in magnitude and statistically insignificant. The differences by ED status in the effects on persistence are significant according to the clustered standard errors, but not after adjusting for multiple inference (Table 4, column 3).

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things. It wasted my time on focusing on what I wanted to do after high school and passing my difficult classes"; "All of it because I am joining the military"; "Most of it because I don't plan on going to college"; "Collage [sic] applications are little value to me because I'm not going to collage"; and "being forced to do college things when im [sic] not applying is such a pain in the a$$$." Similarly, teachers responded about how we could improve the course (see question 11 in Appendix Figure IX): "I would concentrate on those students who were planning college or training after school. Those students who just said they were getting a job didn't put forth much effort, and made it difficult for those students really interested in the material."

Figures Id and Ie mirror these findings. Figure Id focuses on ED students, showing a steep dropout rate among the control group from 50% ever enrolling to just over 20% enrolling in at least six semesters. The treatment group, while seeing no difference in initial enrollment, sees a statistically significant difference of about three percentage points emerge by semester three, remaining fairly constant through six semesters. As in Table 4, there is no effect on enrollment or persistence for non-ED students.

In Appendix Table 6, I explore to what extent the heterogeneity I find by student achievement and economic disadvantage is due to student-level heterogeneity versus school-level heterogeneity, i.e., differences across schools with high levels of disadvantaged students and high-achieving students. I show results for four samples of students: high-achieving (column 1), low-achieving (column 2), ED (column 3), and non-ED (column 4). To explore school-level heterogeneity, I add to the specification an interaction of Treat with a dummy for above median school share high-achieving (columns 1 and 2) or school share ED (columns 3 and 4). Thus, the coefficient on Treat in column 1, for example, shows the effect for high-achieving students in low-achieving schools, and the coefficient on the interaction term shows any additional effect in high-achieving schools. I find little evidence that the heterogeneity by student characteristics is driven by school-level heterogeneity, with no statistically significant coefficients on the interaction term for high-achieving (column 1) or ED students (column 3) across six enrollment, persistence, and degree receipt outcomes. There is some evidence that among non-ED students (column 4) the intervention is more effective in schools with a higher share of ED students; there is a positive, significant coefficient on the interaction term for three of the six outcomes.

After examining effects separately by student achievement and by economic disadvantage, Table 4, columns 4-9, split the sample by the interaction of achievement and economic disadvantage. While splitting the sample into four groups – high-achieving ED; high-achieving non-ED; low-achieving ED; and low-achieving non-ED – reduces statistical power, doing so is particularly important given the importance of boosting the postsecondary attainment rates of high-achieving, economically disadvantaged students (Hoxby and Turner, 2013).

I find a marginally significant 4.0 percentage point (SE=2.3), or 5.7%, increase in enrollment among high-achieving, ED students (Table 4, column 4). This increase does not attenuate, and, if anything, appears to grow over time: these students are 6.7 percentage points (SE=2.4), or 13.2%, more likely to enroll and persist to year two, and 5.4 points (SE=2.5), or

12.6%, more likely to enroll and persist to year three. Turning to Table 5, these students also experience a 2.9 percentage point (SE=1.1), or 25%, increase in Associate's degree receipt. I find smaller and statistically insignificant increases in enrollment and persistence among high-achieving, non-ED students (Table 4, column 5). There is a large enrollment reduction (6 percentage points; SE=2.5) among low-achieving, non-ED students (column 8), and a statistically insignificant 3 percentage point decline (SE=2.2) among low-achieving, ED students. There is some evidence of increased persistence among this latter group of low-achieving, ED students, who experience a 3.2 percentage point (SE=1.2), or 26.7%, greater likelihood of enrolling and persisting to year 3. While the effects on enrollment, persistence, and Associate's degree receipt among the high-achieving, ED sample are all statistically significant even after adjusting for multiple inference, the differences across groups are not.

Figure II shows the results by these four subgroups visually. High-achieving, ED students (Figure IIa) are consistently more likely to enroll and persist, with most of the point estimates statistically significant at the 10% level. The same pattern emerges for the high-achieving, non-ED students (Figure IIb), though the differences tend to be smaller and less precisely estimated. Low-achieving, ED students (Figure IIc) are 3 percentage points less likely to enroll than control group students, but are around one or two percentage points more likely to enroll in at least three semesters through at least six semesters. Finally, among low-achieving, non-ED students (Figure IId), there are large declines in initial enrollment and enrolling in at least two semesters, but the declines dissipate in semesters 3 through 5, and become near zero by semester 6.

In summary, the increases in enrollment, persistence, and degree receipt among high-achieving students appear to be driven by increases among ED, high-achieving students. Those increases are large enough, along with some evidence of increased persistence among low-achieving ED students, that there are large, statistically significant increases in persistence among the overall sample of ED students. These increases may be due to the high-achieving students' greater academic preparation, but in the following sections, I investigate additional possible mechanisms, for example, whether the intervention is changing where students enroll, increasing the intensity with which students enroll (i.e., from part-time to full-time), changing students' academic performance in college, or, finally, increasing students' "college knowledge."

V.C Effects on College Choice and Match

One channel through which the intervention could increase persistence is by affecting where students enroll. Persistence rates vary dramatically across institutions, with the increased college drop-out rate and slowing time-to-degree in the U.S. over the last few decades due in part to differences across colleges in characteristics such as instructor quality, resources for student support, and peer effects (Bound, Lovenheim, & Turner, 2013).

I report effects on enrollment by college type in Table 6. The three mutually exclusive and collectively exhaustive dependent variables are indicators for: 1) whether a student enrolls *only* in a four-year institution or institutions during the four years after the experiment, 2) whether a student enrolls *only* in two-year institutions during that period, and, 3) whether a student enrolls in both, either first a community college and then a four-year institution, or vice versa. The college planning curriculum increases the fraction of students enrolling in both a two-year and four-year institution by 2.1 percentage points (SE=0.5), or 27%. Drilling into the four subgroups by prior achievement and ED, we see that this effect is concentrated among low-achieving, ED students who experience a 3.2 percentage point (SE=0.9) increase.[13] This represents a near doubling of the enrollment rate in both a two- and four-year college among this group (CM=3.4). In Appendix Table 7, I show that this effect is evenly split between increases in students attending a two-year and then four-year institution, and students attending a four-year and then two-year institution. These students also see a large reduction (4.3 percentage points, SE=1.5) in the fraction of students enrolling only in a two-year college (Table 6).

Putting these results together, it appears that the intervention causes some low-achieving, ED students, who in the absence of the intervention would have enrolled only in a community college, to instead successfully transition from a community college to a four-year institution. This result is consistent with the program's curricular content, which specifically teaches students about the community college to four-year institution transfer process.[14] Recall from

[13] From here on I present results for the whole sample and by the four subgroups of ED interacted with achievement (e.g., high achieving, ED students). See Appendix Tables 8 and 9 for effects on college choice, student-college match, enrollment intensity, major, and GPA, separately ED vs non-ED and low vs high baseline achievement.

[14] For example, see Appendix Figure XII, which shows two slides taken from early in the curriculum materials, when students are learning about different college and degree types. In the first slide, students learn about what an Associate's degree is, with the slide specifically mentioning that one of the types of Associate's degrees can qualify a student for a "Michigan Transfer Agreement," which allows community college students who satisfy certain course and credit requirements to transfer to a participating four-year institution and receive two years of credit. The following slide describes the detailed course and credit requirements necessary to complete a Transfer Agreement.

Tables 4 and 5 that low-achieving, ED students saw a 3.2 percentage point (SE=1.2) increase in enrollment and persistence to year three, but no increase in Associate's degree receipt. The increase in students attending a community college and then transitioning to a four-year institution may explain part of the null effect on Associate's degree receipt. While transferring to a four-year college will appear as increased persistence through college, most students transferring from a community college to a four-year institution forego earning an Associate's degree in the process (NSC Research Center, 2015). The program also seems to induce some low-achieving, ED students who would have only enrolled in a community college to instead initially enroll in a four-year institution, but then ultimately transition to a community college. The null effect on Associate's degrees for low-achieving, ED students suggests that the students attending a four-year and then two-year institution do not ultimately earn an Associate's degree, at least within the six years after the intervention that I observe.

In addition to heterogeneity by college level (i.e., two- vs four-year), the match between student and college is also important: low-income students who "undermatch" to colleges that are less selective than the students are qualified to attend are more likely to dropout than students who enroll in a "match" or "reach" college, which will typically have more resources and student support (Hoxby & Avery, 2013; Hoxby & Turner, 2013). I next examine the effect of the college planning curriculum on the match between student academic preparation and college quality. I consider a "safety" college for a student to be either a two-year college, regardless of a student's SAT score, or a four-year college where the student's SAT score is above the 75th percentile of enrolled students at that school (taken from IPEDS). I consider a "match" college to be a four-year institution where the students' SAT score is between the 25th and 75th percentile. Finally, I consider a "reach" school one where the student's SAT score is below the 25th percentile.

I show in Table 7, column 1, that the college planning curriculum increases the fraction of students who during the four years after the experiment enroll in *both* a safety and non-safety (either a match or reach) college by 2.8 percentage points (SE=0.9). There is a similar-sized, though imprecise, decrease in the fraction of students who enroll *only* in a safety college (2.4 percentage points, SE=1.5). As seen to some extent with college choice, this suggests that students who in the absence of the intervention would have only enrolled in a community college or a low-quality four-year institution, instead also enroll at a better-fit college.

Looking by student achievement and economic disadvantage, this pattern is concentrated among low-achieving, ED students, who experience a 2.5 percentage point (SE=1.2) increase in enrollment at both a safety and non-safety college, and 5.0 percentage point decrease (SE=2.1) in enrollment only at a safety college. The increase in enrollment among high-achieving, ED students is driven by a 6.4 percentage point (SE=2.8) increase in ever enrolling at a safety college (evenly split between enrolling only in a safety and enrolling in both a safety and non-safety). The reduction in enrollment among low-achieving, non-ED students is driven by a large reduction in enrollment only at a safety college (-5.4 percentage points, SE=2.5).

What can explain this pattern of results, where low-achieving students are less likely to enroll in a safety college, but high-achieving students are more likely? The curriculum emphasizes the notion of "undermatch," teaching that community colleges and non-selective four-year institutions have fewer resources and thus lower graduation rates. Consistent with this messaging, it seems that the low-achieving students prevented from enrolling by the program are those who would have enrolled at these types of institutions. This can also be seen in Appendix Table 10, which explores results by college quality as measured using the Barron's College Selectivity Index, finding that the reduction in enrollment among low-achieving students is driven by students who would have enrolled in a non-selective institution.

On the other hand, in spite of the "undermatch" messaging, the increased enrollment among high-achieving students is primarily at safety institutions. This suggests that while the intervention was successful at moving these students from no college to college, it was unsuccessful from the standpoint of "undermatch," with these marginal students mostly enrolling at community colleges and less selective four-year institutions (this can also be seen in Appendix Table 10). This may help explain why there was no impact on Bachelor's degree receipt – had the intervention induced the marginal high-achieving students from no college to instead attend a selective institution like the University of Michigan, perhaps there would have been more of a positive impact on Bachelor's degree receipt, and not only on Associate's degrees.

V.D Effects on Enrollment Intensity, Major, GPA, and College Knowledge

Another channel through which the college planning curriculum may increase postsecondary persistence is by shifting enrollees away from part-time and toward full-time enrollment. While there is no curricular content focusing specifically on enrollment intensity,

students often enroll part-time due to financial constraints. A major focus of the course is to help students learn about and apply for financial aid. If the course was successful at helping students receive aid, this could feasibly reduce the need for students to enroll only part-time.[15]

I report in Table 8 whether the effects of the program on college enrollment are driven by changes in full-time enrollment, part-time enrollment, or both. High-achieving, ED students experience a 4.9 percentage point (SE=1.8), or almost 9%, increase in the likelihood of ever enrolling full-time during the sample period. This is driven entirely by an increase in enrolling both full- and part-time during the four years after the experiment, with no increase in enrolling only full-time. This result is consistent with two possible explanations. First, the intervention might be inducing marginal high-achieving, ED students from no enrollment into enrolling both part- and full-time. Second, it may be inducing the marginal enrollee into enrolling only part-time, and inducing the inframarginal part-time enrollee into enrolling both part-time and full-time. Either way, the substantial increase in the likelihood of ever enrolling full-time could help to explain the increased persistence rates for this group.

For students who enroll at an in-state, public institution (i.e., Michigan community college or public four-year universities), I observe data from their college transcripts through the STARR database. Among the students in my sample who enroll in college, 83% of them ever enroll in an in-state community college or public four-year university, allowing me to observe them in STARR. I examine whether treatment status affects this percentage, presenting results in Appendix Table 11, and find no effect of the curriculum among the whole sample on either the likelihood that a student ever enrolls at an in-state, public institution, or alternatively, only enrolls in an out-of-state or private institution – thus, no difference by treatment status in the percentage of all college enrollees who are observed in STARR. However, looking by student achievement and economic disadvantage, some interesting patterns emerge. The reductions in enrollment among low-achieving students, both ED and non-ED, are driven by reductions in students enrolling only at out-of-state or private institutions.[16]

[15] I do not observe whether students receive financial aid. However, one of most common responses by students to a question on the final course evaluation about which topic(s) they found most valuable (see Question 6 in Appendix Figure X) was the four weeks spent on financial aid and applying for scholarships.

[16] This may seem surprising, as these types of institutions represent the most expensive way for students to test out whether college is right for them. On the other hand, if these students have imperfect information about their fit for college, they may also have imperfect information about college affordability and how it varies across institutions.

Appendix Table 11 also shows that the increased enrollment among high-achieving, ED students is driven by enrollment at in-state, public institutions. On the other hand, the increases among high-achieving, non-ED students are driven by enrollment at out-of-state and private institutions. While interesting in their own right, these patterns lead to differences by treatment status in the percentages of college enrollees who ever enroll in a public, in-state institution (i.e., who I can observe in STARR). Thus, effects estimated using the STARR data among the four subgroups by student achievement and economic disadvantage may be biased and should be interpreted as merely suggestive. Acknowledging the suggestive nature of this analysis, I examine the effect of the intervention on students' declared major and GPA in college. After presenting the results, I conduct a bounding exercise, which shows that even under the most conservative assumptions about differential attrition, the pattern of results stands.

The first outcome I examine is student major. The college planning curriculum covers career exploration for two weeks near the end of the curriculum. One main objective during this topic is for students to identify a high-growth occupation of interest and college majors that can prepare them for that occupation.[17] It is possible that this emphasis on high growth occupations and related major exploration could affect the fields in which students study. Following Dynarski, Hyman, and Schanzenbach (2013), I categorize science, technology, engineering, mathematics (STEM), economics, and business fields as high-earning, and all others as low-earning. I consider two mutually exclusive and collectively exhaustive categories of enrollment: ever enrolling in a high-earning field of study, and only enrolling in a low-earning field.[18]

The college planning curriculum increases the fraction of high-achieving, ED students enrolling in a high-earning field by 4.7 percentage points (SE=2.1), or 10.7%. There is no change in the fraction enrolling in a low-earning field (0.1 points, SE=2.0). This suggests either that the program induces the marginal high-achieving, ED student to enroll in college and do so in a high-earning field, or that it induces the inframarginal student to shift from a low-earning to a

[17] See Appendix Figure XIII, which shows the lesson plan for this topic. Students navigate to the "Pure Michigan Talent Connect" website to find a high growth occupation that interests them. They then navigate to the College Board's Big Future website to explore which college majors can lead to this career.

[18] I use two-digit Classification of Instructional Programs (CIP) codes to classify majors. See Appendix Table 12 for a description of the codes and their classification as high- or low-earning. About 14% of students never have a declared major. For these students, I use the CIP code corresponding to each course they completed to create a share of courses taken that are high-earning, weighting by the number of credits earned for each course, and following the same coding scheme as for majors. I designate students with no declared major as enrolling in a high-earning field of study if the majority of their courses were high-earning courses, and as enrolling in a low-earning field if not.

high-earning field. Either way, the curriculum increasing the fraction of high-achieving, ED students enrolling in college, majoring in a high-earning field, and persisting through to an Associate's degree, is promising that they will see increased earnings due to the intervention.

The final postsecondary outcome that I examine is students' academic performance in college. While the curriculum shifts college enrollees toward higher baseline academic achievement, the sign of any effect on students' GPA in college is ambiguous. For example, the marginal students induced into college may face barriers to academic performance in college not faced by the inframarginal student, and thus may underperform relative to their inframarginal peers. Similarly, if the curriculum displaces learning in other subjects during senior year, this could manifest as students earning lower grades in college. On the other hand, it is also possible that the intervention could improve the academic performance of inframarginal enrollees by teaching students strategies to succeed in college, ultimately raising college GPA.

I consider two mutually exclusive, collectively exhaustive dependent variables: whether a student enrolls in college and earns a cumulative GPA above the sample median, and whether the student enrolls and earns below the median. I find no pattern of effects on enrollment by college GPA. The increase in enrollment among high-achieving, ED students is split evenly across those enrolling and earning a high GPA (4.0 points, SE=2.3) and those enrolling and earning a low GPA (3.1 points, SE=2.5). Similarly, the decreased enrollment among low-achieving, non-ED students is split evenly. Appendix Table 13 reports results from two alternative approaches to examining effects by college GPA: examining effects directly on GPA among those who enroll in college; and dividing GPA into above and below a 2.0 (or C), which is the usual threshold for being in good academic standing. Using both of these approaches, the main take-away holds: the intervention does not appear to affect students' academic performance in college.

I conduct an informal bounding exercise to examine whether the effects on majoring in a high-earning field and on college GPA are due to the difference by treatment status in the likelihood of being observed in the STARR dataset. Consider the 4.7 percentage point increase in enrolling and majoring in a high-earning field for high-achieving, ED students (Table 9, col 2, row 1). The concern is that rather than increasing the number of students enrolling and majoring in a high-earning field, instead the treatment may be shifting students already doing so out of a private or out-of-state institution into an in-state public institution. Thus, it would appear as if there is an increase, but rather the intervention is just shifting high-earning majors from an

unobserved to an observed institution. The intervention reduces the number of high-achieving, ED students enrolling only at a private or out-of-state institution by 1.5 percentage points (Appendix Table 11, col 2, row 3). If all of those students were high-earning majors, and switching to an in-state public, then 1.5 of the 4.7 percentage points would be due to this threat. This suggests that the lower bound for the increase in the number of students enrolling and majoring in a high-earning field is 3.2 percentage points. This represents most of the 4.0 percentage point enrollment increase for this group (Table 4). I do a similar calculation for the fraction enrolling and earning a high GPA, calculating a lower bound of 2.5 percentage points, which again represents over half of the 4.0 percentage point enrollment increase.

One final mechanism through which the intervention may have boosted persistence rates is through increased knowledge about how to persist toward earning a degree. While I prefer not to put much weight on results from the student surveys given incomplete and differential response rates by treatment status, one of the only survey outcomes for which there appears to be an effect of the program is students' comfort and knowledge about postsecondary opportunities and the college application process. Students are asked to rank their level of comfort and knowledge on a scale from one to five. The intervention increases the likelihood of students choosing a four or five (i.e., comfortable or very comfortable) by 7.5 percentage points (SE=2.6), or 52%, among high-achieving, economically ED students (see Appendix Table 14). This is the student group that sees the largest increases in college entry and persistence, suggesting that some of these effects may be due to increased college knowledge.

VI. Cost-Benefit Calculations

In this section, I estimate the labor market impacts of the college planning curriculum based on its effect on degree receipt. I then compare this estimate to the program's (minimal) financial cost. Given the null effects of the intervention on Bachelor's degree receipt, I focus exclusively on the effect of the program on Associate's degree receipt for the entire sample. I view this calculation as conservative, given that there may still be some small positive effect of the curriculum on Bachelor's degree receipt that emerges after my sample period. I only observe six-year Bachelor's degree receipt for those students who enrolled immediately in college after the intervention. Yet, I find in Appendix Table 3 that the increased enrollment among high-achieving students does not emerge until year two after the intervention. This suggests that those

students induced into college by the intervention may still experience an increase in Bachelor's degree receipt that occurs after the six year period that I observe.

Conservatively focusing only on the effect on Associate's degrees, recall that the college planning curriculum increases Associate's degree receipt in the overall sample by 1.3 percentage points (Table 3). Bahr et al. (2015) use Michigan unemployment insurance data to show that earning an Associate's degree in Michigan increases an individual's annual earnings by $9,753 (in 2022 dollars). This suggests an average increase in annual earnings of $126.79 (= $9,753 x 0.013) due to the college planning curriculum. Assuming forty years of earnings for a worker, the net present value of this increase in lifetime earnings ranges from $2,176 (assuming a 5% discount rate) to $2,931 (3% discount rate). Given the larger 2.4 percentage point increase in Associate's degree receipt among high-achieving students, if the curriculum were offered only to those students, the benefit would be nearly twice as large, between $4,016 and $5,410.

While these net present benefits in lifetime earnings are arguably only modest in size, and vary substantially based on the assumed discount rate, they are clearly larger than the program's minimal financial cost. The only cost of the intervention to schools is the one-day training for instructors during the summer prior to the intervention. We paid each instructor $350 to attend the training. There was an average of two instructors and 183 twelfth graders (see Table 1) per treated school, suggesting a cost per student of less than four dollars ($700 / 183 = $3.83). Conservatively doubling that to account for the time of the training instructor (which in our case was an Michigan College Access Network staff member), would bring the cost per student to less than eight dollars. This tiny per-student cost is dwarfed by the thousands of dollars of net present benefit from the curriculum, suggesting a favorable benefit-cost ratio for the program.

VII. Conclusion

School counselors provide the main source of college advising for low-income high school students, but are woefully understaffed in high-need schools (Executive Office of the President, 2014). Using a randomized control trial in 62 Michigan high schools, I design and evaluate a college planning curriculum for high school seniors taught by teachers, as opposed to counselors, and that requires almost no additional school funding. The intervention shifted the composition of postsecondary enrollees toward students who were more college-ready, as measured by high school GPA and SAT scores. This led to no impact on the overall number of

students enrolling in college, but increased the number of students persisting through college and earning an Associate's degree. These effects were driven by economically disadvantaged, high-achieving students, who saw large increases in enrollment, persistence, and degree receipt.

My analysis suggests that in addition to increasing persistence rates by shifting college enrollment toward higher-achieving high school graduates, the intervention also: 1) shifted students away from enrolling only at a community college, increasing their exposure to four-year institutions, 2) increased full-time enrollment, and 3) increased "college knowledge". While my study design does not allow me to pin down the precise contribution of each of these mechanisms in improving the persistence rate, I show that the college planning curriculum produces substantial improvements in college outcomes using a "boots-on-the-ground" in-person approach, but with the near zero financial costs of the lightest-touch information interventions. Based on the increase in Associate's degree receipt, the program's likely earnings impact exceeds its minimal financial costs. While I cannot measure the amount of learning loss due to displaced class time in other subjects, the improvements in college outcomes suggest that there are important benefits of the program net of any learning loss.

When thinking about the welfare effects of the program, an important question is whether the low-achieving students who were prevented from enrolling in college and quickly dropping out were better or worse off by not enrolling. On the one hand, these students avoided paying for a year of college and entered the labor market a year early. On the other hand, they missed out on any labor market returns that a single year or less of college might have bestowed on them. I estimate the cost of a year of college and foregone earnings for these students during 2017-18 as $63,798.[19] However, it is more challenging to estimate the labor market returns to a single year or less of college for non-completers. There are very few papers that are able to do this causally, and a recent review of the literature on the returns to schooling describes this as an open question in the literature (Lovenheim & Smith, 2022). To provide at least some guidance on this question, I calculate that the annual earnings return from a year or less of college (assuming a 4% discount rate and 40-year career) would have to be about $3,200 for it to approximately equal the $63,798

[19] The College Board's "Trend in College Pricing" (Ma et al., 2017) shows that the average full-time undergraduate expenses for a private or out-of-state public institution (the institution types in which most of the decreased enrollments among low-achieving students are concentrated) during 2017-18 is $50,920. Using a sample from the American Community Survey (ACS) of 18-19 year-olds in Michigan who graduated high school and are not currently in school, I find that mean annual income, including individuals regardless of whether they are employed, is $12,878. Thus, the total cost of a year of college and foregone earnings is $63,798 (=$50,920 + $12,878).

cost of college and foregone earnings. For reference, the mean difference in annual income between a young worker (age 20-35) with a high school degree in Michigan and one with less than a year of college is $2,675.[20] The causal return is likely even smaller, suggesting that these low-achieving students may be better off having never attended college.

While acknowledging the uncertainly about the welfare effects on the low-achieving students, and also the importance of potential learning loss as a cost, it's worth reemphasizing that the program's near zero financial cost is an important strength of the intervention. Schools serving large numbers of economically disadvantaged students are rarely in the financial position to hire additional counselors or implement a new college-going intervention, even if it is relatively inexpensive on a per-pupil basis. The college planning curriculum represents a promising alternative to schools seeking greater postsecondary outcomes, but without the funds to hire additional counselors nor the capacity to partner with outside organizations.

References

Altonji, Joseph & Zimmerman, Seth (2019). The costs of and net returns to college major. In *Productivity in Higher Education*. Edited by Caroline Hoxby and Kevin Stange. National Bureau of Economic Research, 133-176.

Anderson, Michael (2008). Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abcedarian, Perry Preschool, and Early Training projects. *Journal of the American Statistical Association*, 103: 1481-1495.

Andrews, Rodney J., Imberman, Scott A., Lovenheim, Michael F., & Stange, Kevin M. (2022). The returns to college major choice: Average and distributional effects, career trajectories, and earnings variability. *National Bureau of Economic Research Working Paper* 30331.

Bahr, Peter, Dynarski, Susan, Jacob, Brian, Kreisman, Daniel, Sosa, Alfredo, & Wiederspan, Mark (2015) Labor market returns to community college awards: Evidence from Michigan. University of Michigan Education Policy Initiative (EPI) Working Paper 01-2015.

[20] I again use a sample from the ACS in Michigan, but this time keep all young people (age 20-35) who are not currently in school, and calculate mean annual income for those with a high school degree ($23,166) and those with less than a year of college ($25,841). I focus on those with less than a year of college, because the next highest education category in the ACS includes those with one *or more* years of college.

Barr, Andrew, & Turner, Sarah (2018). A letter of encouragement: Does information increase post-secondary enrollment of UI recipients? *American Economic Journal: Economic Policy*, 10(3): 42-68.

Barr, Andrew C. & Castleman, Benjamin L. (2021). The bottom line on college advising: Large increases in degree attainment. *EdWorkingPaper,* 21-481.

Benjamini, Yoav & Hochberg, Yosef (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society*, 57 (1): 289-300.

Benjamini, Yoav & Yekutieli, Daniel (2001). The control of the false discovery rate in multiple testing under dependency. *The Annals of Statistics*, 29(4): 1165-1188.

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

Bergman, Peter, Denning, Jeffrey T., & Manoli, Dayanand, (2019) Is information enough? The effect of information about education tax benefits on student outcomes. *Journal of Policy Analysis and Management*, 38(3): 706-731.

Bird, Kelli A., Castleman, Benjamin L., Denning, Jeffery T., Goodman, Joshua, Lamberton, Cait, & Rosinger, Kelly O. (2021). Nudging at scale: Experimental evidence from FAFSA completion campaigns. *Journal of Economic Behavior & Organization*, 183: 105-128.

Bloom, Howard S. (2005). Randomizing groups to evaluate place-based programs." In H. S. Bloom (Ed.), *Learning more from social experiments: Evolving analytic approaches* (pp. 115–172). New York: Russell Sage.

Bound, John, Lovenheim, Michael F., & Turner, Sarah (2010). Why have college completion rates declined? An analysis of changing student preparation and collegiate resources. *American Economic Journal: Applied Economics,* 2(3): 129-57.

Carrell, Scott & Sacerdote, Bruce (2017). Why do college-going interventions work? *American Economic Journal: Applied Economics*, 9(3): 124-151.

Castleman, Benjamin L., Deutschlander, Denise & Lohner, Gabrielle (2020). Pushing college advising forward: Experimental evidence on intensive advising and college success. *EdWorking Paper,* 20-326.

Castleman, Benjamin L. & Goodman, Joshua (2018). Intensive college counseling and the enrollment and persistence of low-income students. *Education Finance and Policy,* 13(1): 19-41.

Castleman, Benjamin L. & Page, Lindsay C. (2015). Summer nudging: Can personalized text messages and peer mentor outreach increase college going among low-income high school graduates? *Journal of Economic Behavior and Organization*, 115: 144-160.

Denning, Jeffrey, Eide, Eric, Mumford, Kevin, Patterson, Richard, & Warnick, Merrill (2022). Why have college completion rates increased?" *American Economic Journal: Applied Economics*, 14(3): 1-29.

Dynarski, Susan, Hemelt, Steven, & Hyman, Joshua (2015). The missing manual: Using national student clearinghouse data to track postsecondary outcomes. *Educational Evaluation and Policy Analysis*, 37(1): 53S-79S.

Dynarski, Susan, Hyman, Joshua, & Diane Whitmore Schanzenbach (2013). Experimental evidence on the effect of childhood investments on postsecondary attainment and degree completion. *Journal of Policy Analysis and Management*, 32(4): 692-717.

Executive Office of the President (2014) "Increasing College Opportunity for Low-Income Students – Promising Models and a Call to Action." Washington D.C.

Hemelt, Steven, Stange, Kevin M., Furquim, Fernando, Simon, Andrew, & Sawyer, John E. (2021). Why is math cheaper than English? Understanding cost differences in higher education. *Journal of Labor Economics,* 39(2): 397-435.

Hoxby, Caroline & Avery, Christopher (2013). The missing "one-offs": The hidden supply of high-achieving, low income students. *Brookings Papers on Economic Activity*, 1-65.

Hoxby, Caroline & Turner, Sarah (2013). Expanding college opportunities for high-achieving, low income students. *Stanford Institute for Economic Policy Research*.

Hyman, Joshua (2020). Can light-touch college-going interventions make a difference? Evidence from a statewide experiment in Michigan. *Journal of Policy Analysis and Management*, 39(1): 159-90.

Jaeger, David & Page, Marianne (1996). Degrees matter: New evidence on sheepskin effects in the returns to schooling. *The Review of Economics and Statistics*, 78(4): 733-740.

Jepsen, Christopher, Troske, Kenneth & Coomes, Paul (2014). The labor-market returns to

community college degrees, diplomas, and certificates. *Journal of Labor Economics*, 32(1): 95-121.

Kane, Thomas, & Rouse, Cecilia (1995). Labor market returns to two-year and four-year schools. *American Economic Review*, 85(3): 600-614.

Kautz, Tim & Zanoni, Wladimir (2024). Measurement and development of noncognitive skills in adolescence: Evidence from Chicago public schools and the OneGoal program. *Journal of Human Capital*, 18(2): 272-304.

Lovenheim, Michael & Smith, Jonathan (2022) Returns to different postsecondary investments: Institution type, academic programs, and credentials. *National Bureau of Economic Research Working Paper* 29933.

Ma, Jennifer, Baum, Sandy, Pender, Matea, & Welch, Meredith (2017). *Trends in college pricing 2017*. New York: The College Board.

Mulhern, Christine (2022). Beyond teachers: Estimating individual school counselors' effects on educational attainment. *American Economic Review*, 113(11): 2846-93.

National Student Clearinghouse Research Center (2015). *Snapshot Report: Degree Attainment – Outcome of Students who Transferred From Two-Year to Four-Year Institutions*, https://nscresearchcenter.org/wp-content/uploads/SnapshotReport8-GradRates2-4Transfers.pdf

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

Oreopoulos, Philip & Petronijevic, Uros (2013). Making college worth it: A review of returns to higher education. *The Future of Children,* 23(1): 41-65.

Page, Lindsay C. & Gehlbach, Hunter (2017). How an artificially intelligent virtual assistant helps students navigate the road to college. *AERA Open*, 3: 1-12.

Phillips, Meredith & Reber, Sarah (2022). Does virtual advising increase college enrollment? Evidence from a random-assignment college access field experiment. *American Economic Journal: Economic Policy*. 14(3): 198-234.

Raudenbush, Stephen W., Martinez, Andres, & Spybrook, Jessica (2007). Strategies for improving precision in group-randomized experiments. *Educational Evaluation and Policy Analysis*, 29(1): 5-29.

Stange, Kevin (2012). An empirical investigation of the option value of college enrollment.

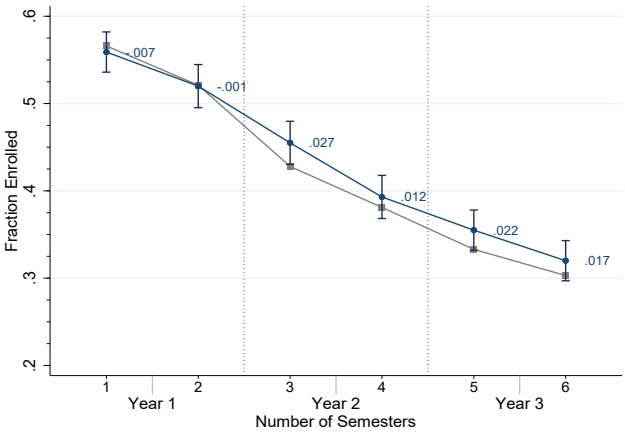
American Economic Journal: Applied Economics, 4 (1).

Stange, Kevin (2015). Differential pricing in undergraduate education: Effects on degree production by field. *Journal of Policy Analysis and Management*, 34(1): 107-135.

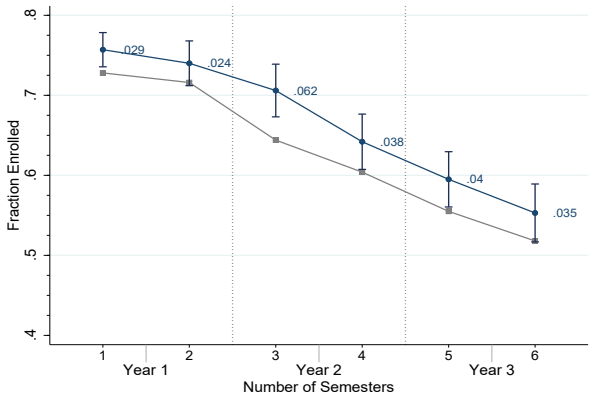
Stinebrickner, Todd & Ralph Stinebrickner (2012). Learning about academic ability and the college dropout decision. *Journal of Labor Economics*, 30(4): 707-748.

Figure I. Number of Semesters Enrolled, By Achievement and Economic Disadvantage

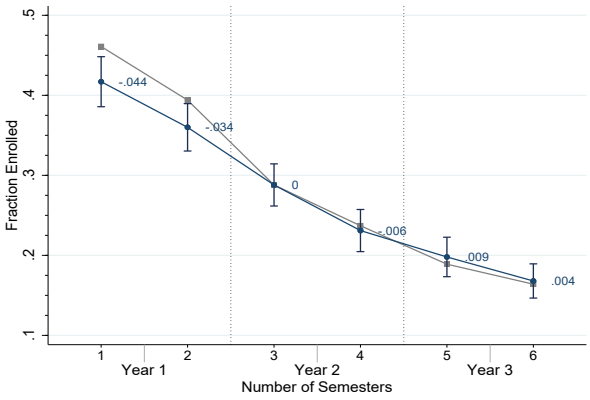
(a) All



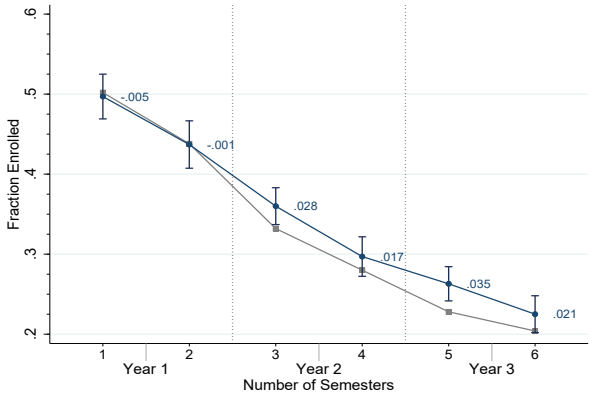
(b) High-Achieving



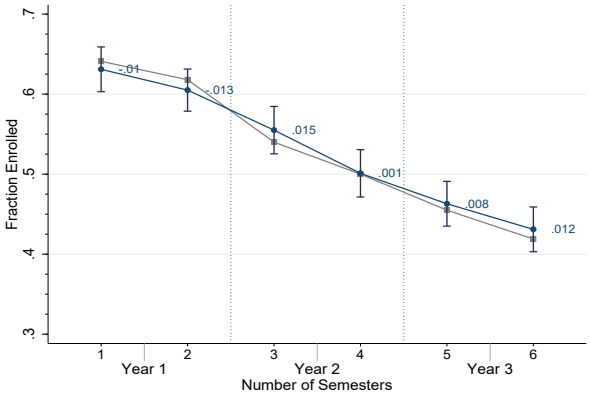
(c) Low-Achieving



(d) Economically Disadvantaged (ED)



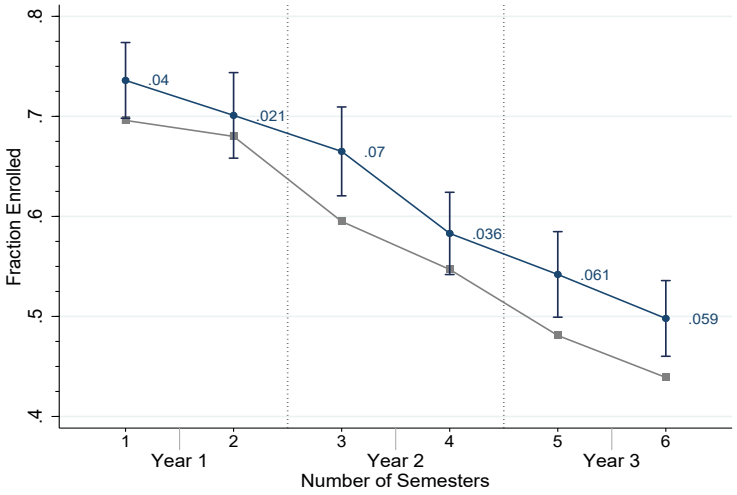
(e) Non-ED



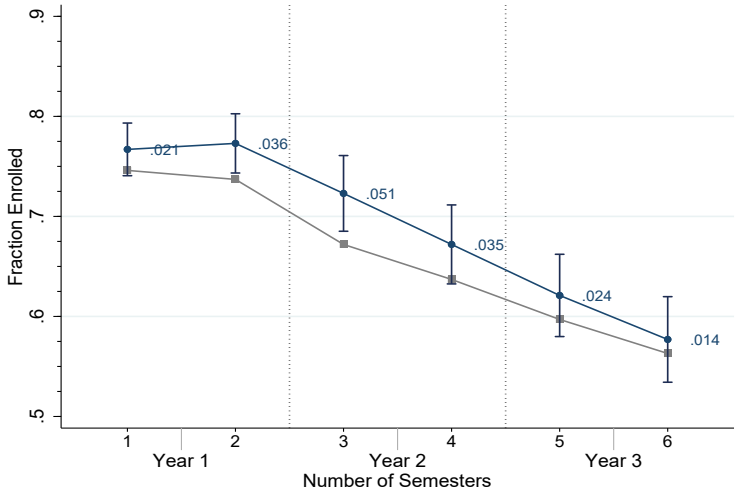
Notes: The control group is the gray line with square markers. Each point plots the fraction of control group students enrolled for at least the given number of semesters. For example, for semester two, each point plots the fraction of control group students enrolled for at least two semesters. The treatment group (blue line, circular markers) points add the estimated coefficient to the control group point, with the whiskers denoting the 90% confidence interval.

Figure II. Number of Semesters Enrolled, By Achievement-Economic Disadvantage Interaction

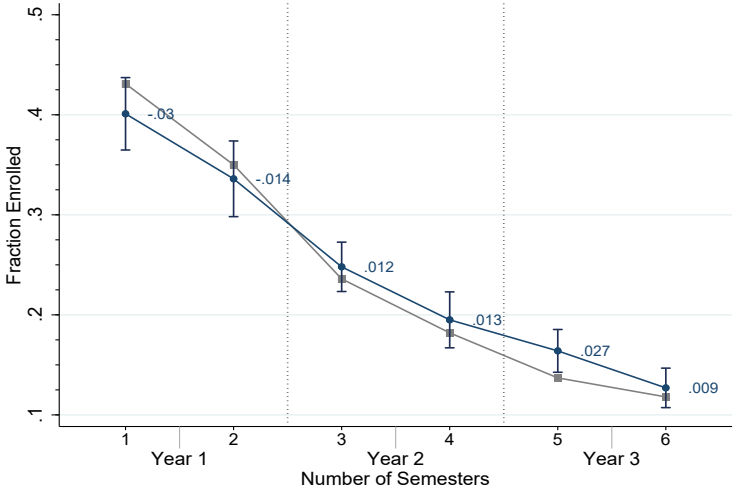
(a) High-Achieving, ED



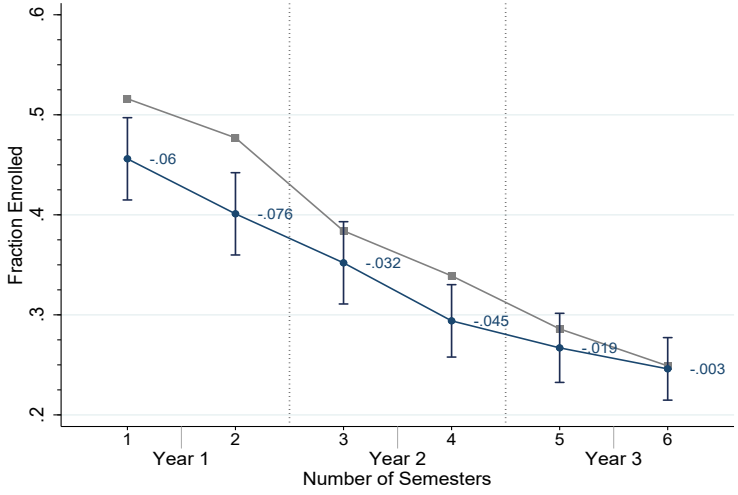
(b) High-Achieving, Non-ED



(c) Low-Achieving, ED



(d) Low-Achieving, Non-ED



Notes: The control group is the gray line with square markers. Each point plots the fraction of control group students enrolled for at least the given number of semesters. For example, for semester two, each point plots the fraction of control group students enrolled for at least two semesters. The treatment group (blue line, circular markers) points add the estimated coefficient to the control group point, with the whiskers denoting the 90% confidence interval.

Table 1. Sample Means and Balance

	All Michigan	RCT Sample	Treatment	Control	Regression-Adjusted Difference	
	(1)	(2)	(3)	(4)	(5)	
Student Demographics						
Female	0.495	0.499	0.490	0.509	-0.026**	(0.010)
Economically Disadvantaged (ED)	0.389	0.530	0.523	0.539	0.039	(0.042)
White	0.714	0.564	0.601	0.518	0.003	(0.083)
Black	0.181	0.356	0.314	0.406	-0.005	(0.083)
Hispanic	0.059	0.052	0.052	0.052	0.003	(0.012)
Other Race/Ethnicity	0.046	0.028	0.032	0.024	0.000	(0.006)
School Characteristics						
City	0.200	0.225	0.198	0.258	0.029	(0.083)
Suburb	0.453	0.327	0.425	0.208	0.182**	(0.080)
Town	0.121	0.181	0.159	0.207	-0.127	(0.084)
Rural	0.226	0.267	0.218	0.328	-0.084	(0.092)
Charter	0.065	0.041	0.023	0.062	-0.000	(0.025)
Grade 12 Enrollment	248	170	183	154	21.939	(22.937)
School College-Going (Baseline)						
Fraction Attend Any College	0.532	0.431	0.434	0.426	-0.022	(0.026)
Fraction Attend 4-Year College	0.334	0.241	0.238	0.245	-0.025	(0.025)
Student Achievement						
Grade 11 SAT Score	996	917	918	916	-18.490	(17.517)
Grade 8 State Test Score	0.049	-0.253	-0.262	-0.243	-0.098	(0.068)
Has Grade 8 Test Score	0.841	0.857	0.862	0.851	0.008	(0.012)
Grade 10 GPA	2.587	2.490	2.492	2.487	-0.087	(0.068)
Grade 11 Attendance Rate	0.930	0.918	0.924	0.912	-0.007	(0.011)
Number of Students	117,717	6,704	3,663	3,041		
Number of Schools	835	62	31	31		

Notes: The sample for column 1 is all Michigan grade 12 students during 2016-17. The sample for columns 2-5 is the experimental sample including 6,704 seniors during 2016-17 in 62 Michigan high schools. All of the means in this table are student-weighted, including the school characteristics. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. All students in this cohort in Michigan take the SAT exam in school during grade 11. College enrollment information is for seniors during 2015-16 who attend college during fall 2016. Grade 8 state test score is average math and reading scores standardardized for the entire Michigan 8th grade cohort to mean zero and standard deviation one. Column 5 reports the coefficient and standard error from a regression of the characteristic on an indicator for treatment, as well as randomization block fixed effects (discussed in Section IV of the paper), clustering the standard error at the school level.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 2. Effects on Enrollment and Persistence, By Student Achievement

	All Students	High-Achieving	Low-Achieving	P-Value (2)=(3)
	(1)	(2)	(3)	(4)
Enroll	-0.007	0.029**	-0.044**	
	(0.014)	(0.013)	(0.019)	0.000
	[0.618]	[0.069]	[0.078]	[0.001]
	0.566	*0.728*	*0.461*	
Enroll and Persist to Year 2	0.014	0.037**	-0.003	
	(0.015)	(0.018)	(0.016)	0.013
	[0.498]	[0.069]	[0.843]	[0.020]
	0.375	*0.576*	*0.244*	
Enroll and Persist to Year 3	0.025*	0.035*	0.014	
	(0.013)	(0.020)	(0.013)	0.252
	[0.172]	[0.082]	[0.461]	[0.252]
	0.299	*0.500*	*0.169*	
Observations	6,704	2,663	4,041	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Column 4 reports p-values (and q-values in brackets) from the test that the coefficients in columns 2 and 3 are equal. College enrollment in row 1 is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Persistence to year 2 (3) is defined as still enrolled one (two) year(s) after initial enrollment. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 3. Effects on Degree Receipt, By Student Achievement

	All Students	High-Achieving	Low-Achieving	P-Value (2)=(3)
	(1)	(2)	(3)	(4)
Earn Postsecondary Degree	0.006	0.031*	-0.010	
	(0.011)	(0.016)	(0.010)	0.008
	[0.591]	[0.081]	[0.819]	[0.025]
	0.213	*0.403*	*0.089*	
Earn Associate's Degree	0.013*	0.024**	-0.001	
	(0.007)	(0.010)	(0.008)	0.029
	[0.183]	[0.055]	[0.916]	[0.044]
	0.084	*0.128*	*0.055*	
Earn Bachelor's Degree	-0.005	0.005	-0.003	
	(0.008)	(0.014)	(0.005)	0.585
	[0.591]	[0.708]	[0.819]	[0.586]
	0.155	*0.327*	*0.043*	
Observations	6,704	2,663	4,041	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Column 4 reports p-values (and q-values in brackets) from tests of equality across columns 2 and 3. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 4. Effects on Enrollment and Persistence, by Student Economic Disadvantage and Achievement

	Economic Disadvantage		P-Value	High-Achieving		P-Value	Low-Achieving		P-Value
	ED	Non-ED	(1)=(2)	ED	Non-ED	(4)=(5)	ED	Non-ED	(7)=(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Enroll	-0.005	-0.010		0.040*	0.021		-0.030	-0.060**	
	(0.017)	(0.017)	0.805	(0.023)	(0.016)	0.453	(0.022)	(0.025)	0.219
	[0.753]	[0.817]	[0.805]	[0.088]	[0.270]	[0.454]	[0.370]	[0.056]	[0.220]
	0.502	*0.641*		*0.696*	*0.746*		*0.431*	*0.516*	
Enroll and Persist to Year 2	0.029**	-0.004		0.067***	0.022		0.014	-0.042	
	(0.013)	(0.019)	0.037	(0.024)	(0.022)	0.116	(0.013)	(0.026)	0.025
	[0.048]	[0.817]	[0.112]	[0.019]	[0.296]	[0.350]	[0.370]	[0.178]	[0.039]
	0.278	*0.488*		*0.508*	*0.616*		*0.194*	*0.337*	
Enroll and Persist to Year 3	0.036***	0.008		0.054**	0.022		0.032***	-0.019	
	(0.011)	(0.017)	0.086	(0.024)	(0.025)	0.338	(0.012)	(0.021)	0.006
	[0.006]	[0.817]	[0.130]	[0.044]	[0.029]	[0.454]	[0.370]	[0.359]	[0.018]
	0.203	*0.411*		*0.430*	*0.539*		*0.120*	*0.260*	
Observations	3,552	3,152		1,006	1,657		2,546	1,495	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Columns 3, 6, and 9 report p-values (and q-values in brackets) from tests of equality across columns 1-2, 4-5, and 7-8, respectively. College enrollment in row 1 is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Persistence to year 2 (3) is defined as still enrolled one (two) year(s) after initial enrollment. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 5. Effects on Degree Receipt, by Student Economic Disadvantage and Achievement

	Economic Disadvantage		P-Value	High-Achieving		P-Value	Low-Achieving		P-Value
	ED	Non-ED	(1)=(2)	ED	Non-ED	(4)=(5)	ED	Non-ED	(7)=(8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Earn Postsecondary Degree	0.007	0.000		0.034*	0.022		-0.004	-0.026	
	(0.010)	(0.015)	0.677	(0.019)	(0.018)	0.596	(0.009)	(0.017)	0.185
	[0.527]	[0.982]	[0.782]	[0.125]	[0.957]	[0.982]	[0.349]	[0.265]	[0.314]
	0.122	*0.319*		*0.297*	*0.463*		*0.058*	*0.148*	
Earn Associate's Degree	0.010	0.019		0.029***	0.029*		-0.006	-0.000	
	(0.007)	(0.012)	0.467	(0.011)	(0.017)	0.970	(0.007)	(0.015)	0.730
	[0.458]	[0.342]	[0.782]	[0.030]	[0.957]	[0.982]	[0.285]	[0.976]	[0.731]
	0.062	*0.108*		0.117	0.134		0.042	0.078	
Earn Bachelor's Degree	-0.006	-0.010		-0.005	-0.005		0.000	-0.013	
	(0.008)	(0.012)	0.781	(0.020)	(0.015)	0.981	(0.005)	(0.010)	0.209
	[0.527]	[0.613]	[0.782]	[0.786]	[0.957]	[0.982]	[0.753]	[0.265]	[0.314]
	0.080	*0.242*		*0.233*	*0.380*		*0.024*	*0.078*	
Observations	3,552	3,152		1,006	1,657		2,546	1,495	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Columns 3, 6, and 9 report p-values (and q-values in brackets) from tests of equality across columns 1-2, 4-5, and 7-8, respectively. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 6. Effects of College Planning Curriculum on College Choice

	All Students	High-Achieving		P-Value	Low-Achieving		P-Value
		ED	Non-ED	(2)=(3)	ED	Non-ED	(5)=(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Enroll Only in 4-Year College	-0.022	0.009	-0.013		-0.018	-0.033**	
	(0.016)	(0.031)	(0.022)	0.490	(0.019)	(0.015)	0.465
	[0.274]	[0.771]	[0.577]	[0.905]	[0.329]	[0.103]	[0.538]
	0.276	*0.407*	*0.501*		*0.133*	*0.188*	
Enroll Only in 2-Year College	-0.006	0.022	0.019		-0.043***	-0.028	
	(0.011)	(0.024)	(0.018)	0.905	(0.015)	(0.024)	0.537
	[0.580]	[0.771]	[0.481]	[0.905]	[0.010]	[0.383]	[0.538]
	0.212	*0.149*	*0.126*		*0.264*	*0.261*	
Enroll in 2-Year and 4-Year College	0.021***	0.009	0.014		0.032***	0.001	
	(0.005)	(0.019)	(0.014)	0.846	(0.009)	(0.010)	0.026
	[0.002]	[0.771]	[0.481]	[0.905]	[0.003]	[0.936]	[0.079]
	0.077	*0.140*	*0.118*		*0.034*	*0.067*	
Observations	6,704	1,006	1,657		2,546	1,495	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Columns 4 and 7 report p-values (and q-values in brackets) from tests of equality across columns 2-3 and 5-6, respectively. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Enrollment in only a 4-year college, only a 2-year college, and both a 2-year and 4-year college are mutually exclusive and collectively exhaustive groups. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 7. Effects of College Planning Curriculum on Student-College Match

	All Students	High-Achieving		P-Value	Low-Achieving		P-Value
		ED	Non-ED	(2)=(3)	ED	Non-ED	(5)=(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ever Enroll in Safety College	0.004	0.064**	0.056*		-0.024	-0.037	
	(0.017)	(0.028)	(0.029)	0.803	(0.022)	(0.024)	0.619
	[0.820]	[0.099]	[0.242]	[0.837]	[0.376]	[0.175]	[0.826]
	0.504	*0.545*	*0.624*		*0.424*	*0.485*	
Ever Enroll in Match or Reach College	0.012	0.005	-0.007		0.009	-0.006	
	(0.010)	(0.025)	(0.022)	0.698	(0.015)	(0.016)	0.459
	[0.314]	[0.837]	[0.733]	[0.837]	[0.546]	[0.714]	[0.826]
	0.231	*0.389*	*0.371*		*0.112*	*0.180*	
Enroll in Safety College Only	-0.024	0.032	0.040		-0.050**	-0.054**	
	(0.015)	(0.033)	(0.027)	0.836	(0.021)	(0.025)	0.895
	[0.231]	[0.440]	[0.285]	[0.837]	[0.074]	[0.126]	[0.895]
	0.383	*0.352*	*0.412*		*0.376*	*0.383*	
Enroll in Safety and Match / Reach College	0.028***	0.032	0.016		0.025**	0.017	
	(0.009)	(0.024)	(0.012)	0.516	(0.012)	(0.011)	0.541
	[0.018]	[0.374]	[0.285]	[0.837]	[0.074]	[0.175]	[0.826]
	0.121	*0.192*	*0.212*		*0.047*	*0.103*	
Observations	6,704	1,006	1,657		2,546	1,495	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Columns 4 and 7 report p-values (and q-values in brackets) from tests of equality across columns 2-3 and 5-6, respectively. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Safety colleges are either a 2-year college or a 4-year college where the student's SAT score is above the 75th percentile of enrolled students at that school. Match colleges are a 4-year institution where the student's SAT score is between the 25th and 75th percentile. Reach colleges are where the student's SAT score is below the 25th percentile. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 8. Effects of College Planning Curriculum on College Enrollment Intensity

	All Students	High-Achieving		P-Value	Low-Achieving		P-Value
		ED	Non-ED	(2)=(3)	ED	Non-ED	(5)=(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ever Enroll Full-Time	0.015	0.049***	0.025		-0.001	-0.024	
	(0.013)	(0.018)	(0.020)	0.330	(0.013)	(0.021)	0.235
	[0.353]	[0.035]	[0.517]	[0.440]	[0.940]	[0.387]	[0.235]
	0.391	*0.568*	*0.642*		*0.210*	*0.313*	
Enroll Part-Time and Full-Time	0.025*	0.055**	0.013		0.023*	-0.022	
	(0.015)	(0.024)	(0.033)	0.227	(0.012)	(0.016)	0.002
	[0.353]	[0.051]	[0.701]	[0.440]	[0.105]	[0.387]	[0.007]
	0.293	*0.400*	*0.503*		*0.143*	*0.252*	
Enroll Part-Time Only	-0.003	-0.011	0.020		-0.019	0.019	
	(0.013)	(0.018)	(0.018)	0.145	(0.018)	(0.018)	0.041
	[0.800]	[0.727]	[0.517]	[0.440]	[0.396]	[0.387]	[0.083]
	0.154	*0.128*	*0.086*		*0.206*	*0.156*	
Enroll Full-Time Only	-0.011	-0.006	0.012		-0.024***	-0.002	
	(0.008)	(0.021)	(0.019)	0.475	(0.009)	(0.012)	0.141
	[0.353]	[0.790]	[0.701]	[0.475]	[0.026]	[0.897]	[0.188]
	0.098	*0.167*	*0.139*		*0.067*	*0.061*	
Observations	6,704	1,006	1,657		2,546	1,495	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Columns 4 and 7 report p-values (and q-values in brackets) from tests of equality across columns 2-3 and 5-6, respectively. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Full-time and part-time enrollment status comes from the National Student Clearinghouse (NSC) designation. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Table 9. Effects of College Planning Curriculum on College Major and GPA

	All Students	High-Achieving		P-Value	Low-Achieving		P-Value
		ED	Non-ED	(2)=(3)	ED	Non-ED	(5)=(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. College Major							
Enroll and Major in High-Earning Field	-0.009	0.047**	-0.017		-0.023	-0.016	
	(0.008)	(0.021)	(0.019)	0.020	(0.017)	(0.023)	0.785
	[0.837]	[0.102]	[0.775]	[0.079]	[0.725]	[0.495]	[0.785]
	0.351	0.439	0.520		0.241	0.295	
Enroll and Major in Low-Earning Field	0.005	0.001	0.029*		-0.002	-0.029	
	(0.008)	(0.020)	(0.016)	0.335	(0.017)	(0.020)	0.290
	[0.837]	[0.979]	[0.290]	[0.350]	[0.888]	[0.320]	[0.423]
	0.186	0.229	0.209		0.157	0.182	
Panel B. GPA							
Enroll in College and Earn High GPA	-0.006	0.040*	-0.002		-0.002	-0.020	
	(0.012)	(0.023)	(0.022)	0.106	(0.011)	(0.019)	0.317
	[0.837]	[0.160]	[0.914]	[0.212]	[0.888]	[0.380]	[0.423]
	0.251	0.348	0.525		0.090	0.162	
Enroll in College and Earn Low GPA	0.002	0.031	0.003		-0.011	-0.038*	
	(0.013)	(0.025)	(0.019)	0.349	(0.018)	(0.021)	0.186
	[0.854]	[0.292]	[0.914]	[0.350]	[0.888]	[0.320]	[0.423]
	0.252	0.284	0.174		0.268	0.292	
Observations	6,704	1,006	1,657		2,546	1,495	

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Sharpened q-values that adjust for multiple inference (Benjamini and Hochberg, 1995) are reported in brackets. Control means are in italics below the q-values. Columns 4 and 7 report p-values (and q-values in brackets) from tests of equality across columns 2-3 and 5-6, respectively. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). High-earning fields include STEM, business, and economics (see text for more detail). High and low (college) GPA are above and below median, respectively. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Online Appendix: Survey Descriptions

In this appendix, I provide more details about the various surveys fielded as part of this project.

Prior to implementing the randomized control trial (RCT) in 2016-17, I ran a pilot of the program during fall 2015 in five high schools. The five schools included two rural high schools, two larger urban high schools, both in Detroit, and one charter high school also in Detroit. During the pilot, I implemented monthly student and instructor surveys to measure curriculum usability (e.g, whether instructors struggled to teach any particular curricular content, or felt ethically or otherwise uncertain, unwilling, or uncomfortable teaching any particular curricular content), feasibility (e.g., whether instructors felt that the time requirements of the program, including class preparation, instruction, and grading were manageable, or whether students felt that the program could successfully fit into their schedules, and that homework assignments requiring information from parents/guardians, such as FAFSA completion, were successfully completed), and fidelity of implementation (e.g., whether the instructor covered and spent the expected amount of time on all components, objectives, and activities). Students and instructors were generally positive, but also provided helpful criticisms leading to improvements to the curriculum and implementation process before rolling out the RCT in fall 2016.

Mid-semester and final instructor surveys were implemented during the RCT roll-out when treatment schools were offering the program. These surveys asked instructors questions about how valuable they felt each lesson was, how difficult it was to teach, whether it required an appropriate amount of outside time for students, and whether students had difficulty completing their assignments. We also implemented an end-of-semester course evaluation to students, asking, for example, how valuable each of the topics covered in the curriculum were. Finally, we conducted a principal survey after the intervention had concluded, asking about how students were selected to receive the curriculum, how instructors were chosen to teach the curriculum, whether the principal was happy with the decision to offer this program, and any advice on implementing the curriculum in the future. Overall, students, instructors, and principals were quite positive about all aspects of the program.

In addition to these surveys inquiring about the program experience, we also implemented brief student surveys to seniors in all schools (treatment and control) during

February and May 2017 (the spring after the intervention was offered in treated schools), asking about college knowledge, FAFSA submission, college applications, and college acceptances. Unfortunately, while we aimed for near universal take-up, we ended up with valid survey responses from only 76% of seniors, due to a mix of not reaching 10% of seniors, 10% of seniors opting out (which we had to allow to meet IRB protocols), and 4% of students entering nicknames and dates-of-birth on their survey that we could not match to our administrative records. More troubling than the 76% response rate for evaluating the effects of the curriculum on student outcomes from the survey data is that the response rate differed by treatment status: seniors from control group schools were 6.4 percentage points more likely to respond. This differential response is likely because control group schools were required to participate in the survey in order to offer the program in fall 2017. While the survey was also required for the treatment schools, there was little binding incentive left for them to rigorously implement it, given that they were finished with the curriculum that year and had already gained access to the course materials for possible use in future years. Given the response-rate issues with these student survey data, I only briefly mention some results from these data in Section V.D, and present a full table of results in Appendix Table 14.

Online Appendix:
Additional Tables

Appendix Table 1. School Mean Characteristics by Share of Seniors Treated (Among Treatment Schools)

	Share of Seniors Exposed to Treatment				Bivariate Regression: Y=Shared Treated	
	Q1: Less Than 50%	Q2: 50% to 64%	Q3: 64% to 85%	Q4: 85% and Higher		
	(1)	(2)	(3)	(4)	(5)	
Student Characteristics (School Means)						
Economically Disadvantaged (ED)	0.525	0.543	0.577	0.502	-0.186	(0.389)
White	0.604	0.624	0.798	0.722	0.318	(0.201)
Black	0.267	0.324	0.115	0.210	-0.248	(0.222)
Hispanic	0.091	0.041	0.055	0.037	-0.991**	(0.459)
Other Race/Ethnicity	0.038	0.011	0.032	0.032	-1.142	(2.523)
Grade 11 SAT Score	917	898	926	916	0.000	(0.001)
Grade 10 GPA	2.53	2.18	2.44	2.48	0.025	(0.099)
School Characteristics						
City	0.375	0.000	0.250	0.000	-0.365**	(0.147)
Suburb	0.250	0.429	0.000	0.375	0.026	(0.108)
Town	0.375	0.143	0.125	0.000	-0.234	(0.139)
Rural	0.000	0.429	0.625	0.625	0.312***	(0.083)
Charter	0.125	0.143	0.000	0.000	-0.369*	(0.205)
Grade 12 Enrollment	159	106	84	122	0.000	(0.001)
Number of Students	1,271	740	675	977		
Number of Schools	8	7	8	8		

Notes: The sample is all 31 treated schools. Sample means in columns 1-4 are calculated at the school level. Student demographics are school shares. Student SAT and GPA are school means. Column 5 presents point estimates and robust standard errors from school-level bivariate regressions of share treated on each characteristic.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 2: Distribution of Share ED and High-Achieving Across Schools

	Share ED	Share High-Achieving
Mean	0.511	0.424
Std. Dev	0.180	0.177
Percentiles		
1%	0.169	0.061
5%	0.286	0.111
10%	0.315	0.151
25%	0.361	0.286
50%	0.485	0.446
75%	0.632	0.578
90%	0.800	0.619
95%	0.813	0.667
99%	0.889	0.766

Notes: Table shows the distribution across the 62 schools in the sample of schools' share of students who are economically disadvantaged (ED) and who are high-achieving, as defined in the text.

Appendix Table 3. Effects on Alternative Measures of Persistence, by Student Achievement and Economic Disadvantage

	All Students	High-Achieving	Low-Achieving	ED	Non-ED	High-Achieving		Low-Achieving	
						ED	Non-ED	ED	Non-ED
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Enrolled During…									
Year 1	-0.020	0.008	-0.051***	-0.011	-0.020	0.019	0.008	-0.035*	-0.065**
	(0.015)	(0.021)	(0.016)	(0.017)	(0.020)	(0.025)	(0.027)	(0.019)	(0.025)
	0.497	*0.662*	*0.390*	*0.431*	*0.574*	*0.629*	*0.680*	*0.359*	*0.448*
Year 2	0.019	0.048**	-0.003	0.025*	0.012	0.068***	0.034	0.007	-0.022
	(0.015)	(0.020)	(0.017)	(0.013)	(0.020)	(0.023)	(0.023)	(0.013)	(0.027)
	0.387	*0.579*	*0.262*	*0.299*	*0.490*	*0.513*	*0.617*	*0.221*	*0.339*
Year 3	0.026*	0.041**	0.014	0.039***	0.006	0.065**	0.021	0.034**	-0.023
	(0.014)	(0.020)	(0.015)	(0.013)	(0.018)	(0.026)	(0.025)	(0.013)	(0.021)
	0.320	*0.515*	*0.193*	*0.223*	*0.433*	*0.439*	*0.559*	*0.145*	*0.283*
Enrolled Through…									
Year 2	0.007	0.035	-0.014	0.021*	-0.005	0.051**	0.029	0.005	-0.047*
	(0.015)	(0.023)	(0.013)	(0.011)	(0.022)	(0.021)	(0.031)	(0.010)	(0.025)
	0.342	*0.531*	*0.219*	*0.252*	*0.446*	*0.469*	*0.567*	*0.173*	*0.303*
Year 3	0.020	0.040	0.008	0.031***	0.007	0.050*	0.033	0.024***	-0.019
	(0.013)	(0.024)	(0.010)	(0.010)	(0.019)	(0.025)	(0.030)	(0.009)	(0.019)
	0.261	*0.449*	*0.139*	*0.168*	*0.370*	*0.378*	*0.491*	*0.092*	*0.227*
Observations	6,704	2,663	4,041	3,552	3,152	1,006	1,657	2,546	1,495

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. Enrolled during year 1, 2, and 3 are dummies for whether the student is enrolled in college during the first, second, and third year following the intervention, respectively. Enrolled through year 2 and 3 are dummies for whether the student is enrolled during the first year after college continuously through the second and third year, respectively. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 4. Effects By Achievement As Measured by SAT Scores Only

	High-SAT & GPA	Low-SAT or GPA	High-SAT	Low-SAT
	(1)	(2)	(3)	(4)
Enroll	0.029**	-0.044**	0.014	-0.044**
	(0.013)	(0.019)	(0.014)	(0.018)
	0.728	*0.461*	*0.640*	*0.470*
Enroll and Persist to Year 2	0.037**	-0.003	0.028*	-0.005
	(0.018)	(0.016)	(0.016)	(0.018)
	0.576	*0.244*	*0.468*	*0.253*
Enroll and Persist to Year 3	0.035*	0.014	0.028*	0.006
	(0.020)	(0.013)	(0.015)	(0.015)
	0.500	*0.169*	*0.393*	*0.176*
Earn Postsecondary Degree	0.031*	-0.010	0.018	-0.022*
	(0.016)	(0.010)	(0.013)	(0.013)
	0.403	*0.089*	*0.304*	*0.094*
Earn Associate's Degree	0.024**	-0.001	0.022**	-0.010
	(0.010)	(0.008)	(0.009)	(0.012)
	0.128	*0.055*	*0.104*	*0.057*
Earn Bachelor's Degree	0.005	-0.003	-0.002	-0.008
	(0.014)	(0.005)	(0.011)	(0.007)
	0.327	*0.043*	*0.239*	*0.045*
Observations	2,663	4,041	3,290	3,414

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. In columns 1 and 2, high- and low-achieving students are defined as in the main analysis: using SAT scores and high school GPA. In columns 3 and 4, achievement is defined using SAT scores only.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 5: Effects on Enrollment by Treatment Implementation Heterogeneity

	All Students					High-Achieving Students					Low-Achieving Students				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Treat	-0.015	0.016	0.226***	0.237***	0.100***	0.009	0.053**	0.175***	0.179***	0.074***	-0.050*	-0.010	0.290***	0.312***	0.131***
	(0.018)	(0.022)	(0.035)	(0.037)	(0.029)	(0.016)	(0.022)	(0.034)	(0.036)	(0.027)	(0.026)	(0.028)	(0.047)	(0.047)	(0.036)
Stand-Alone	0.037			0.042	0.013	0.083**			0.087***	0.073**	0.025			0.017	-0.001
	(0.035)			(0.031)	(0.031)	(0.034)			(0.029)	(0.034)	(0.046)			(0.040)	(0.041)
English Teacher		-0.046		-0.034*	-0.051**		-0.051		-0.034	-0.051**		-0.069*		-0.055**	-0.074**
		(0.031)		(0.018)	(0.023)		(0.031)		(0.021)	(0.023)		(0.040)		(0.024)	(0.031)
Fraction Treated			-0.393***	-0.399***				-0.244***	-0.259***				-0.569***	-0.567***	
			(0.061)	(0.059)				(0.052)	(0.051)				(0.079)	(0.078)	
Frac Treat, Q2					-0.060*					-0.019					-0.126***
					(0.031)					(0.030)					(0.045)
Frac Treat, Q3					-0.152***					-0.031					-0.261***
					(0.049)					(0.043)					(0.053)
Frac Treat, Q4					-0.187***					-0.145***					-0.256***
					(0.042)					(0.031)					(0.060)

Notes. The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each column represents a separate regression. Standard errors, in parentheses, are clustered at the high school level. Treat is a dummy for being in one of the 31 treated schools. Stand-alone and English Teacher are dummies for being in a treatment school that offered the program as a stand-alone course and taught by an English teacher, respectively. Fraction treated is an interaction between Treat and the fraction of seniors in the school who enrolled in the program. Column 5 splits fraction treated into quartiles, where the lowest fraction treated (q1) is omitted.

*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 6. Effects by Student-Level and School-Level Achievement and Economic Disadvantage

		Student Achievement		Student Economic Disadvantage	
		High-Achieving	Low-Achieving	ED Students	Non-ED
Dependent Variable	Independent Variable	(1)	(2)	(3)	(4)
Enroll	Treat	-0.008	-0.077**	-0.002	-0.068**
		(0.025)	(0.036)	(0.026)	(0.033)
	Treat*School-Level Char	0.061	0.056	-0.003	0.135**
		(0.052)	(0.075)	(0.056)	(0.054)
Enroll and Persist to Year 2	Treat	0.015	-0.008	0.042	-0.041
		(0.032)	(0.029)	(0.027)	(0.034)
	Treat*School-Level Char	0.037	0.003	-0.023	0.084
		(0.059)	(0.058)	(0.049)	(0.061)
Enroll and Persist to Year 3	Treat	0.054	0.014	0.057**	-0.049
		(0.035)	(0.024)	(0.026)	(0.033)
	Treat*School-Level Char	-0.044	-0.010	-0.041	0.135**
		(0.057)	(0.047)	(0.044)	(0.065)
Earn Postsecondary Degree	Treat	0.023	0.016	0.017	-0.024
		(0.025)	(0.017)	(0.024)	(0.028)
	Treat*School-Level Char	0.007	-0.057	-0.019	0.059
		(0.053)	(0.042)	(0.040)	(0.053)
Earn Associate's Degree	Treat	-0.005	0.007	0.013	-0.008
		(0.018)	(0.014)	(0.015)	(0.019)
	Treat*School-Level Char	0.049	-0.018	-0.007	0.064*
		(0.033)	(0.036)	(0.024)	(0.038)
Earn Bachelor's Degree	Treat	0.013	0.017**	0.018	-0.024
		(0.026)	(0.008)	(0.017)	(0.022)
	Treat*School-Level Char	-0.023	-0.044**	-0.049	0.035
		(0.050)	(0.017)	(0.031)	(0.042)
Observations		2,663	4,041	3,552	3,152

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Two point estimates are reported from each regression: the first is from Treat, the second is from the interaction of Treat with a dummy for the school having an above median share of high-achieving students in columns 1 and 2, and with a dummy for the school having an above median share of students who are economically disadvantaged (ED) in columns 3 and 4. Standard errors, in parentheses, are clustered at the high school level.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 7. Enrolling First in a 2-Year and Then in a 4-Year Institution (and Vice Versa)

	All Students	High-Achieving		Low-Achieving	
		ED	Non-ED	ED	Non-ED
	(1)	(2)	(3)	(5)	(6)
Enroll Only in 4-Year College	-0.022	0.009	-0.013	-0.018	-0.033**
	(0.016)	(0.031)	(0.022)	(0.019)	(0.015)
	0.276	*0.407*	*0.501*	*0.133*	*0.188*
Enroll Only in 2-Year College	-0.006	0.022	0.019	-0.043***	-0.028
	(0.011)	(0.024)	(0.018)	(0.015)	(0.024)
	0.212	*0.149*	*0.126*	*0.264*	*0.261*
Enroll in 2-Year and 4-Year College	0.021***	0.009	0.014	0.032***	0.001
	(0.005)	(0.019)	(0.014)	(0.009)	(0.010)
	0.077	*0.140*	*0.118*	*0.034*	*0.067*
First in 2-Year, Then in 4-Year	0.002	-0.005	-0.003	0.014**	-0.016*
	(0.005)	(0.015)	(0.011)	(0.007)	(0.009)
	0.037	*0.048*	*0.064*	*0.015*	*0.036*
First in 4-Year, Then in 2-Year	0.016***	0.014	0.015	0.014***	0.015***
	(0.003)	(0.013)	(0.012)	(0.004)	(0.005)
	0.041	*0.092*	*0.054*	*0.019*	*0.031*
Observations	6,704	1,006	1,657	2,546	1,495

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Enrollment in only a 4-year college, only a 2-year college, and both a 2-year and 4-year college are mutually exclusive and collectively exhaustive groups. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 8. Effects on College Choice and Match by Student Achievement and Disadvantage (Separately)

	All Students	High-Achieving	Low-Achieving	ED	Non-ED
	(1)	(2)	(3)	(4)	(5)
Panel A: College Choice					
Enroll in Any College	-0.007	0.029**	-0.044**	-0.005	-0.010
	(0.014)	(0.013)	(0.019)	(0.017)	(0.017)
	0.566	*0.728*	*0.461*	*0.502*	*0.641*
Enroll Only in 4-Year College	-0.022	-0.002	-0.031**	-0.010	-0.023
	(0.016)	(0.021)	(0.015)	(0.020)	(0.016)
	0.276	*0.467*	*0.152*	*0.206*	*0.358*
Enroll Only in 2-Year College	-0.006	0.023	-0.036***	-0.021*	0.004
	(0.011)	(0.015)	(0.014)	(0.012)	(0.016)
	0.212	*0.135*	*0.263*	*0.233*	*0.188*
Enroll in 2-Year and 4-Year College	0.021***	0.009	0.023***	0.025**	0.010
	(0.005)	(0.009)	(0.006)	(0.010)	(0.008)
	0.077	*0.126*	*0.046*	*0.062*	*0.095*
Panel B: College Match					
Ever Enroll in Safety College	0.004	0.055**	-0.027	0.001	0.000
	(0.017)	(0.022)	(0.019)	(0.019)	(0.021)
	0.504	*0.595*	*0.445*	*0.456*	*0.560*
Ever Enroll in Match or Reach College	0.012	0.006	0.000	0.010	0.015
	(0.010)	(0.013)	(0.012)	(0.015)	(0.014)
	0.231	*0.378*	*0.136*	*0.186*	*0.284*
Enroll in Safety College Only	-0.024	0.026	-0.050***	-0.024	-0.024
	(0.015)	(0.020)	(0.016)	(0.019)	(0.018)
	0.383	*0.390*	*0.379*	*0.370*	*0.398*
Enroll in Safety and (Match or Reach) College	0.028***	0.029**	0.023***	0.025*	0.024**
	(0.009)	(0.011)	(0.008)	(0.014)	(0.010)
	0.121	*0.205*	*0.067*	*0.086*	*0.162*
Observations	6,704	2,663	4,041	3,552	3,152

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Enrollment in only a 4-year college, only a 2-year college, and both a 2-year and 4-year college are mutually exclusive and collectively exhaustive groups. Safety colleges are either a 2-year college or a 4-year college where the student's SAT score is above the 75th percentile of enrolled students at that school. Match colleges are a 4-year institution where the students' SAT score is between the 25th and 75th percentile. Reach colleges are where the student's SAT score is below the 25th percentile. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 9. Effects on Enrollment Intensity, Major, and GPA, by Achievement and Disadvantage (Separately)

	All Students	High-Achieving	Low-Achieving	ED	Non-ED
	(1)	(2)	(3)	(4)	(5)
Panel A: Enrollment Intensity					
Ever Enroll Full-Time	0.015	0.031*	-0.004	0.019	0.007
	(0.013)	(0.015)	(0.015)	(0.012)	(0.017)
	0.391	*0.615*	*0.246*	*0.305*	*0.491*
Enroll Part-Time and Full-Time	0.025*	0.032	0.009	0.039***	0.007
	(0.015)	(0.024)	(0.013)	(0.013)	(0.020)
	0.293	*0.465*	*0.181*	*0.212*	*0.388*
Enroll Part-Time Only	-0.003	0.010	-0.007	-0.022	0.016
	(0.013)	(0.014)	(0.016)	(0.016)	(0.014)
	0.154	*0.101*	*0.188*	*0.185*	*0.118*
Enroll Full-Time Only	-0.011	-0.002	-0.013*	-0.020*	0.001
	(0.008)	(0.015)	(0.007)	(0.011)	(0.011)
	0.098	*0.150*	*0.065*	*0.093*	*0.103*
Panel B. College Major					
Enroll and Major in High-Earning Field	-0.002	0.005	-0.023*	0.004	-0.023
	(0.010)	(0.016)	(0.013)	(0.013)	(0.015)
	0.320	*0.466*	*0.243*	*0.267*	*0.406*
Enroll and Major in Low-Earning Field	-0.005	0.024*	-0.021	-0.010	0.013
	(0.010)	(0.014)	(0.013)	(0.013)	(0.014)
	0.246	*0.261*	*0.217*	*0.235*	*0.234*
Panel C. GPA					
Enroll in College and Earn High GPA	-0.008	0.013	-0.009	0.007	-0.016
	(0.009)	(0.017)	(0.012)	(0.015)	(0.017)
	0.331	0.460	0.115	0.159	0.359
Enroll in College and Earn Low GPA	0.001	0.015	-0.027	0.006	-0.004
	(0.009)	(0.013)	(0.017)	(0.016)	(0.015)
	0.235	*0.214*	*0.277*	*0.272*	*0.228*
Observations	6,704	2,663	4,041	3,552	3,152

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Full-time and part-time enrollment status comes from the National Student Clearinghouse (NSC) designation. High-earning fields include STEM, business, and economics (see text for more detail). High and low (college) GPA are above and below median, respectively. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 10. Effects of College Planning Curriculum on Selectivity Using Barron's Selectivity Index

	All Students	High-Achieving		Low-Achieving	
		ED	Non-ED	ED	Non-ED
	(1)	(2)	(3)	(4)	(5)
Ever Enroll in Non-Selective College	0.006	0.075**	0.035	-0.021	-0.052**
	(0.016)	(0.029)	(0.036)	(0.021)	(0.023)
	0.434	*0.465*	*0.497*	*0.374*	*0.449*
Ever Enroll in Selective College	0.016	0.003	0.024	0.014	0.011
	(0.011)	(0.022)	(0.024)	(0.015)	(0.017)
	0.275	*0.462*	*0.532*	*0.105*	*0.162*
Enroll in Non-Selective College Only	-0.023*	0.037	-0.003	-0.044**	-0.070***
	(0.012)	(0.027)	(0.022)	(0.018)	(0.026)
	0.291	*0.233*	*0.214*	*0.326*	*0.355*
Enroll in Both a Non-Selective and Selective College	0.030***	0.038	0.039	0.023**	0.019
	(0.011)	(0.023)	(0.027)	(0.011)	(0.013)
	0.143	*0.231*	*0.283*	*0.047*	*0.095*
Observations	6,704	1,006	1,657	2,546	1,495

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Selectivity determined according to the Barron's College Selectivity Index. "Selective" colleges are those in any of the top four categories (i.e., most competitive, highly competitive, very competitive, and competitive). "Non-Selective" colleges are those listed as less competitive or non-competitive, the latter includes community colleges and unranked four-year colleges. Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 11. Effect of College Planning Curriculum on Being Observed in STARR Dataset

	All Students	High-Achieving		Low-Achieving	
		ED	Non-ED	ED	Non-ED
	(1)	(2)	(3)	(4)	(5)
Ever Enroll in Any Institution	-0.007	0.040*	0.021	-0.030	-0.060**
	(0.014)	(0.023)	(0.016)	(0.022)	(0.025)
	0.566	*0.696*	*0.746*	*0.431*	*0.516*
Ever Enroll in In-State Public Institution	0.005	0.056*	-0.019	-0.005	-0.018
	(0.014)	(0.029)	(0.024)	(0.021)	(0.028)
	0.459	*0.577*	*0.612*	*0.349*	*0.404*
Only Enroll in Out-of-State or Private Institution	-0.012	-0.015	0.040**	-0.025**	-0.042***
	(0.009)	(0.019)	(0.017)	(0.011)	(0.010)
	0.107	*0.119*	*0.134*	*0.082*	*0.112*
Percent of College Enrollees Observed in STARR					
Control Group	81.1%	82.9%	82.0%	80.0%	78.3%
Treatment Group	83.0%	86.0%	77.3%	85.8%	84.6%
Observations	6,704	1,006	1,657	2,546	1,495

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. College enrollment is measured within the four years after the experiment (i.e., through 2020-21). For the percent of college enrollees observed in STARR, the control group is simply the control mean of the fraction ever enrolled in an in-state public divided by the fraction ever enrolled in any insitution. The treatment group percentage is calculated by adding or subtracting the treatment effect for each of those two outcomes from each of the two control means, and then dividing (e.g., 83.0% = 100 * [(0.459 + 0.005) / (0.566-0.007)]). Student economic disadvantage (ED) is proxied by eligibility for free or reduced-price lunch. High-achieving students have above median high school GPA and SAT score. Low-achieving students have below median GPA or SAT score.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 12: Classification of Instructional Programs (CIP) Codes

CIP Code Description	High-Earning
AGRICULTURAL SCIENCES	Yes
AGRICULTURAL/ANIMAL/PLANT/VETERINARY SCIENCES	Yes
AGRICULTURE, AGRICULTURE OPERATIONS	Yes
ARCHITECTURE AND RELATED SERVICES	No
AREA, ETHNIC, CULTURAL, GENDER	No
BASIC SKILLS AND DEVELOPMENTAL/REMEDIAL	No
BIOLOGICAL AND BIOMEDICAL SCIENCES	Yes
BUSINESS, MANAGEMENT, MARKETING	Yes
CITIZENSHIP ACTIVITIES	No
COMMUNICATION, JOURNALISM, AND RELATED	No
COMMUNICATIONS TECHNOLOGIES/TECHNICIANS	Yes
COMPUTER AND INFORMATION SCIENCES	Yes
CONSERVATION AND RENEWABLE NATURAL RESOURCES	No
CONSTRUCTION TRADES	No
CULINARY, ENTERTAINMENT	No
EDUCATION	No
ENGINEERING TECHNOLOGIES AND ENGINEERING	Yes
ENGINEERING TECHNOLOGIES/TECHNICIANS	Yes
ENGINEERING	Yes
ENGINEERING/ENGINEERING-RELATED TECHNOLOGIES	Yes
ENGLISH LANGUAGE AND LITERATURE/LETTERS	No
FAMILY AND CONSUMER SCIENCES/HUMAN SCIENCES	No
FOREIGN LANGUAGES, LITERATURES, AND LINGUISTICS	No
HEALTH PROFESSIONS AND RELATED CLINICAL	Yes
HEALTH PROFESSIONS AND RELATED PROGRAMS	Yes
HEALTH PROFESSIONS AND RELATED SCIENCES	Yes
HEALTH PROFESSIONS RESIDENCY/FELLOWSHIP	Yes
HEALTH-RELATED KNOWLEDGE AND SKILLS	Yes
HISTORY	No
HOMELAND SECURITY, LAW ENFORCEMENT	No
LEGAL PROFESSIONS AND STUDIES	No
LEISURE AND RECREATIONAL ACTIVITIES	No
LIBERAL ARTS AND SCIENCES, GENERAL STUDIES	No
LIBRARY SCIENCE	No
MARKETING OPERATIONS/MARKETING	No
MATHEMATICS AND STATISTICS	Yes
MECHANIC AND REPAIR TECHNOLOGIES/TECHNICIANS	Yes
MILITARY SCIENCE, LEADERSHIP AND OPERAT	Yes
MILITARY TECHNOLOGIES AND APPLIED SCIENCES	Yes
MULTI/INTERDISCIPLINARY STUDIES	No
NATURAL RESOURCES AND CONSERVATION	No
PARKS, RECREATION, LEISURE, AND FITNESS	No
PARKS, RECREATION, LEISURE, FITNESS	No
PERSONAL AND CULINARY SERVICES	No
PERSONAL AWARENESS AND SELF-IMPROVEMENT	No
PHILOSOPHY AND RELIGIOUS STUDIES	No
PHYSICAL SCIENCES	Yes
PRECISION PRODUCTION	Yes
PSYCHOLOGY	No
PUBLIC ADMINISTRATION AND SOCIAL SERVICES	No
RESIDENCY PROGRAMS	No
SCIENCE TECHNOLOGIES/TECHNICIANS	Yes
SOCIAL SCIENCES	No
THEOLOGY AND RELIGIOUS VOCATIONS	No
TRANSPORTATION AND MATERIALS MOVING	No
VISUAL AND PERFORMING ARTS	No
VOCATIONAL HOME ECONOMICS	No

Notes: This table provides a list of all of the 2-Digit (broadest) CIP codes in the STARR data, and which ones I assign as high- vs low-earning. For Social Sciences, I code the more detailed codes for Economics as high-earning, and the rest of social sciences as low-earning.

Appendix Table 13. Effects on College GPA, Using Different Measures of High- vs Low-GPA

	All Students	High-Achieving		Low-Achieving	
		ED	Non-ED	ED	Non-ED
	(1)	(2)	(3)	(5)	(6)
Panel A. Cutoff: Median GPA (2.55)					
Enroll and Earn Above Median	-0.006	0.040*	-0.002	-0.002	-0.020
	(0.012)	(0.023)	(0.022)	(0.011)	(0.019)
	0.251	*0.348*	*0.525*	*0.090*	*0.162*
Enroll and Earn Below Median	0.002	0.031	0.003	-0.011	-0.038*
	(0.013)	(0.025)	(0.019)	(0.018)	(0.021)
	0.252	*0.284*	*0.174*	*0.268*	*0.292*
Panel B. Dep. Var = Continuous GPA					
GPA (Sample: Only Those Who Enroll)	-0.024	-0.033	0.009	0.092	-0.095
	(0.051)	(0.080)	(0.044)	(0.087)	(0.090)
	2.341	*2.564*	*2.949*	*1.657*	*2.033*
Panel C. Cutoff: Good Standing (2.0)					
Enroll and Earn 2.0 or Higher	0.002	0.048**	-0.014	0.010	-0.015
	(0.013)	(0.023)	(0.018)	(0.016)	(0.023)
	0.331	*0.465*	*0.603*	*0.157*	*0.246*
Enroll and Earn Less than 2.0	-0.006	0.023	0.014	-0.023*	-0.043**
	(0.011)	(0.022)	(0.015)	(0.014)	(0.018)
	0.171	0.167	0.096	0.201	0.208
Observations	6,704	1,006	1,657	2,546	1,495

Notes: The sample is 6,704 seniors during 2016-17 in 62 Michigan high schools. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. College enrollment is measured as ever enrolling during the four years after the experiment (i.e., through 2020-21). Panel A replicates Table 9, Panel B. Panel B shows results from regressions where the dependent variable is college GPA and the sample is those who enroll in an in-state public institution. Panel C is similar to Panel A, except that the threshold for high- vs. low- (college) GPA is 2.0, which is the standard cutoff for good standing.
*** = significiant at 99% level; ** = 95% level; * = 90% level

Appendix Table 14. Effects of College Planning Curriculum on Student Survey Responses

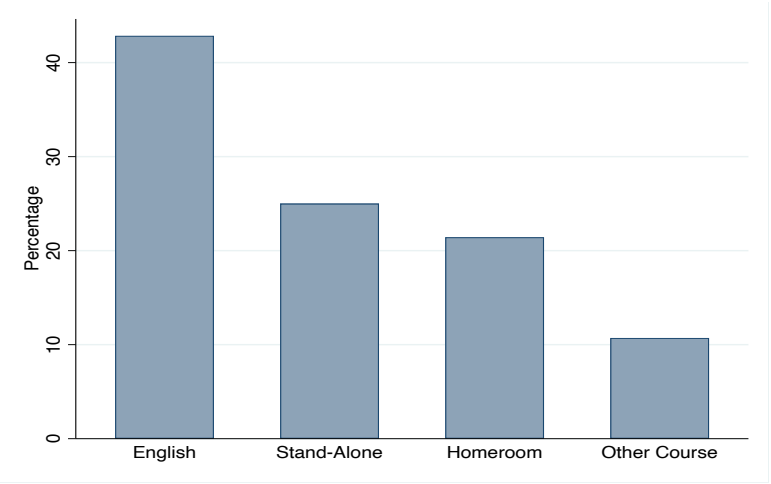
	All Students	High-Achieving	Low-Achieving	ED	Non-ED	High-Achieving		Low-Achieving	
						ED	Non-ED	ED	Non-ED
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Responded to Survey	-0.064*	-0.054	-0.066**	-0.058*	-0.071*	-0.023	-0.069	-0.073**	-0.062*
	(0.034)	(0.041)	(0.030)	(0.032)	(0.039)	(0.029)	(0.052)	(0.034)	(0.032)
	0.774	*0.803*	*0.755*	*0.759*	*0.790*	*0.792*	*0.809*	*0.748*	*0.768*
Was Taught About College In School	-0.000	-0.002	0.005	-0.012	0.012	*-0.016*	*0.004*	*-0.014*	*0.021*
	(0.012)	(0.018)	(0.013)	(0.013)	(0.016)	(0.027)	(0.024)	(0.014)	(0.018)
	0.827	*0.851*	*0.810*	*0.822*	*0.833*	*0.858*	*0.847*	*0.808*	*0.814*
College Application Comfort/Knowledge	0.040	-0.001	0.063	0.043	0.028	0.100	-0.033	-0.003	0.122*
(1-5 Likert Scale)	(0.034)	(0.053)	(0.047)	(0.042)	(0.039)	(0.070)	(0.063)	(0.052)	(0.065)
	3.3	*3.4*	*3.2*	*3.3*	*3.3*	3.433	3.356	3.266	3.169
Comfortable / Knowledgable About	0.014	0.015	0.015	0.032**	-0.005	0.075***	-0.020	0.010	0.031*
College Applications	(0.008)	(0.016)	(0.012)	(0.013)	(0.012)	(0.026)	(0.021)	(0.011)	(0.018)
(= 4 or 5 on Likert Scale)	*0.130*	*0.135*	*0.126*	*0.138*	*0.121*	*0.145*	*0.130*	*0.135*	*0.109*
Completed the FAFSA	-0.005	-0.001	-0.012	-0.017	0.013	*-0.027*	*0.023*	*0.008*	*0.005*
	(0.015)	(0.020)	(0.022)	(0.019)	(0.019)	(0.019)	(0.019)	(0.023)	(0.036)
	0.709	*0.820*	*0.632*	*0.688*	*0.731*	*0.889*	*0.859*	*0.752*	*0.723*
Applied to Four-Year College or Planning	0.004	0.009	0.008	-0.010	0.020	-0.019	0.027**	-0.010	0.025
to Attend Two-Year College	(0.011)	(0.011)	(0.013)	(0.016)	(0.013)	(0.018)	(0.013)	(0.017)	(0.021)
	0.886	0.925	0.859	0.884	0.888	0.936	0.919	0.864	0.850
Applied to Four-Year College	-0.020	-0.027	-0.009	-0.035**	0.011	-0.095***	0.028	-0.007	-0.004
	(0.014)	(0.021)	(0.018)	(0.017)	(0.019)	(0.022)	(0.028)	(0.022)	(0.027)
	0.701	*0.814*	*0.623*	*0.686*	*0.718*	*0.832*	*0.803*	*0.629*	*0.611*
Num. Four-Year College Applications	-0.024	-0.127	0.012	-0.097	0.148	-0.383**	0.199	-0.001	0.111
	(0.070)	(0.133)	(0.061)	(0.072)	(0.094)	(0.151)	(0.147)	(0.050)	(0.101)
	2.1	*2.7*	*1.7*	*2.1*	*2.0*	*3.066*	*2.415*	*1.791*	*1.593*
Admitted to Four-Year College	0.001	0.003	-0.005	0.012	0.010	*-0.033*	*0.042*	*0.030*	*-0.042*
	(0.019)	(0.029)	(0.017)	(0.023)	(0.024)	*(0.041)*	*(0.036)*	*(0.026)*	*(0.031)*
	0.521	*0.744*	*0.360*	*0.455*	*0.593*	*0.721*	*0.757*	*0.348*	*0.382*
Plan to Enroll in Four-Year College	0.008	0.003	-0.003	0.002	0.022	*-0.030*	*0.031*	*-0.005*	*0.006*
	(0.016)	(0.020)	(0.018)	(0.021)	(0.022)	(0.032)	(0.025)	(0.027)	(0.032)
	0.370	*0.594*	*0.209*	*0.292*	*0.456*	*0.530*	*0.630*	*0.196*	*0.232*
Observations	5,078	2,113	2,965	2,640	2,438	794	1,319	1,846	1,119

Notes: The sample for all but the top row is the 5,078 (76%) of the sample who responded to the survey. Each point estimate is from a separate regression. Standard errors, in parentheses, are clustered at the high school level. Control means are in italics below standard errors. The dependent variables (listed as row titles) are from students' responses to survey taken during spring of senior year.
*** = significiant at 99% level; ** = 95% level; * = 90% level

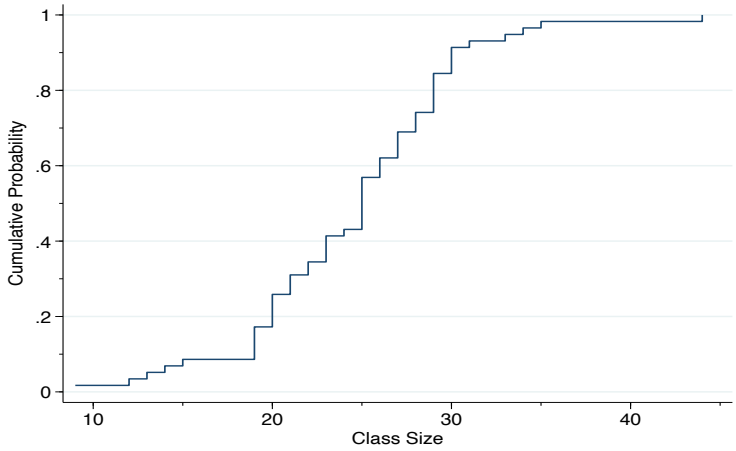
Online Appendix:
Appendix Figures and Sample College Planning Curriculum Materials

Appendix Figure I. College Planning Curriculum Schedule, Class Size, and Staffing

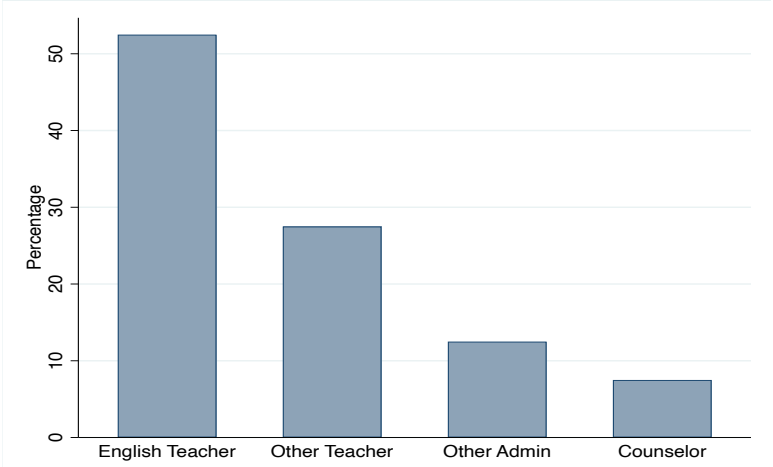
(a) How Was Curriculum Fit Into Seniors' Schedule?



(b) Class Size



(c) Which Staff Taught the Curriculum?



Notes: These figures describe various aspects of the college planning curriculum implementation. Figure (a) describes whether it was incorporated into Senior English, scheduled as a stand-alone elective course, combined with homeroom or a senior advisory period, or incorporated into another class other than English. Figure (b) shows the distribution of class sizes. Figure (c) shows whether it was taught by an English teacher, other type of teacher, other staff / administrator, or a guidance counselor.

Appendix Figure II. Sample Training Agenda

MICHIGAN
COLLEGE ACCESS NETWORK

Teaching Students to Apply – College Planning Course
Training Agenda

Brighton, MI – June 2, 2016

9:00 - Breakfast, Welcome, and Introductions

9:15 - MCAN Overview/How We Define College
Christi Taylor, Michigan College Access Network

10:00 - Career Pathways
Joan Helwig, Huron and Tuscola College Access Networks

11:30 – Match and Fit
Patrick Cooney, Michigan Future Schools

12:30 – Lunch/Curriculum Overview

2:00 – College Admissions
Andrew Zellers, Eastern Michigan University

3:00 – Financial Aid and the FAFSA
Kristen Hooper, Washtenaw Community College

4:45 - Wrap Up and Next Steps

Appendix Figure III. College Planning Curriculum Outline

College Process Timeline	Curriculum Schedule	Topic(s)	Objectives	Assignments/Student Products
Pre-application Planning	Week 1	Welcome and Introduction / Course Overview (College 101)	• Students will become familiar with the structure and expectations of the course • Students will learn key postsecondary education terminology • Students will learn the benefits of attending college	• Begin filling out "Application Readiness Document" to identify the family and background information that students will need in order to submit a college application.
	Week 2	Match and Fit Part 1	• Students will be familiar with the concept of a college match. • Students will identify their own academic credentials and personal preferences and determine how they compare to colleges of their choice.	• Completed Preference Statement • Match Maker Handout. Students should work through classifying all the colleges in which they have expressed interest, and doing additional research to fill any categories (match, reach, or safety) that did not get filled with the student's initial list.
	Week 3	Match and Fit Part 2	• Evaluate individuals' initial thoughts on future work-life balance • Students will develop a Career/Life Plan • Students will think more deeply about match and fit	• Completed "12th Grade Career/Life Plan" handout • Completed "Fit Finder" handout and revised college list (if necessary) based on their research into Match and Fit • List of five colleges (including at least one match, reach, and safety) to which they are interested in applying
	Week 4	Application Process	• Students will describe the key components of a college application. • Students will review sample applications. • Students will identify how prepared they are to submit college applications.	• College Application Steps. Each student should receive College Application Steps handouts and begin to fill one out for each college they will apply to.
	Week 5	Letters of Recommendation	• Understand the importance of having a good recommender. • Understand the process of selecting individuals to make their recommendations. • Understand the process of making a recommendation request.	• List of potential recommenders • Request for recommendation letters

	Week 6	Admissions Essays Part 1	• Learn to identify topic/requirements of personal statements/admissions essays • Begin to write admissions essays	• Freewrite paper • As a take home assignment, students should turn their freewrite exercise into polished essay drafts
	Week 7	Admissions Essays Part 2	• Edit and finalize personal statements/essays	• Peer review worksheets • Revise essay drafts
Application Period	Week 8	Apply	• Begin completing college applications with the intention of applying to at least three colleges by the end of Week 11.	• Online application(s) in progress. • Confirmation page for completed application(s).

	Week 9	Apply	• Successfully complete at least three college applications.
			  ○ Send off additional information (transcripts, letters of recommendation, etc.)
			  ○ Application fees
				• College application(s) in progress/complete. Confirmation page for completed application(s).

Scholarships, Aid, and Budgeting	Week 10	Financial Aid Overview Part 1	• Financial aid terms and procedures. • How to complete the FSA ID • Resources for securing financial aid • Materials needed to complete the FAFSA • Official FAFSA site exploration • Describe the FAFSA process	• Create an FSA ID • List of items and information they will need in order to file the FAFSA
	Week 11	Financial Aid Overview Part 2	• Description of the FAFSA (what is it?) • Importance of FAFSA to financial aid options • Steps to completing FAFSA and financial aid process • Explain what the FAFSA does and its importance to paying for higher education • Describe the steps in the FAFSA completion process through the acceptance of an award letter	• FAFSA Process Game
	Week 12	Scholarships Part 1	• Students will identify scholarship sources and search websites • Students will become familiar with searching for scholarships • Students will begin to apply for scholarship funds	• Scholarship Tracker. Each student should identify a list of potential scholarship opportunities.
	Week 13	Scholarships Part 2	• Students will continue searching and applying for scholarships.	• Completed scholarship applications
	Week 14	Budgeting in College	• Identify multiple sources of money • Rate different uses of money as 'need to have' or 'want to have' • Outline several benefits of saving money.	• Summer Financial Budget • Semester Financial Budget

			• Have students practice creating a budget in preparation for college.	
Enrollment and Matriculation	Week 15	Career Exploration Part 1	• Students will explore careers of interest and high growth occupations in Michigan. • Students will identify the postsecondary educational steps needed to enter their career of interest.	• Completed "Pure Michigan Talent Connect" and "My High School and Beyond Plan" handouts listing postsecondary goals, career interests, and five identified colleges and majors. • Update "Application Readiness Document" to identify the high school and academic information that students will need in order to submit a college application.
	Week 16	Career Exploration Part 2	• Customize a goal statement to align with the requirements of a job posting. • Write concise and effective descriptions of personal and academic credentials. • Use action words to create effective descriptions of personal experiences. • Create a written resume that effectively presents top assets to another person.	• Completed Resume Worksheet • Update "Application Readiness Document" with academic and extracurricular information. • Finish creating a resume.
	Week 17	Accepting Admission and Financial Aid	• How to think through the final decision on a school • Components of a financial aid package • Student choices and responsibilities in regards to a financial aid package	• College Enrollment Checklist
	Week 18	Final Steps	• Identify important summer steps toward college. • Identify their top ten educational achievements of 9th – 12th grade. • Predict their top ten educational and/or career accomplishments that they will achieve in the next ten years.	• Summer Steps worksheet • Achievements list

Pre-Application Planning

Lesson 2 – Match and Fit

LEARNING GOALS/OUTCOMES

- Students will be familiar with the concept of college match and fit
- Students will identify their own academic credentials and personal preferences and determine how they compare to colleges of their choice

MATERIALS NEEDED

- **Student Handouts:**
  - Application Readiness Handout
  - Match Maker Handout
  - Fit Finder Handout
- **Computer with internet access and projector to show video**

CLASSROOM ACTIVITIES

1. **View Big Future Video on How to Choose Colleges to Apply To** (Scroll down to the bottom right) https://bigfuture.collegeboard.org/find-colleges/how-find-your-college-fit

2. **Define Match and Fit.** Write the following definitions on the board. Have students brainstorm some things they should be looking for when determining match and fit. Some examples are also included for you to contribute if they don't get mentioned.

    a. Match: How does selectivity align with your academic achievements?
        i. You should apply to at least one reach school (your GPA/test scores fall below the average), match school, and safety school (your GPA/test scores fall well above the average)
        ii. Example: What is the institution's average admitted ACT score or GPA and how does that compare to yours?
    b. Fit: How does an institution align with your social, academic, and financial needs? Examples include:
        i. Academics and scores: How large a role do academics play in campus life? What is the academic rigor?
        ii. Size and environment: Do you prefer large lecture halls or small classes? What physical campus size are you looking for?
        iii. Sports and activities: Are athletics part your desired college experience?
        iv. Cost of attendance: Factoring in financial aid (both grants and loans), is cost of attendance reasonable for you?
        v. Majors: While you student may not have decided on a major yet, you might have a broad idea of their intended field of study (especially from filling out your "My Initial High School and Beyond Plan.") Are relevant majors offered?

3. **Introduce Students to Match.** Distribute the "Match Maker" handout and have students reference their "Application Readiness Document." Explain to students the various categories of match (reach, safety, match). Using the list of colleges they identified on their "My High School and Beyond Plan" worksheet and their academic credentials recorded on the "Application Readiness Document," students should begin to classify each school on their list, using the "Match Maker"

handout. In order to determine this, students should be referred to various institutions' incoming student web pages or College Scorecard (see activity 6). As a best practice, students should apply to at least one of each type of college – match, reach, and safety. If students do not have each category filled from their list of colleges, they should research additional colleges that fall into their missing categories.

4. **Introduce students to Fit.** Distribute the "Fit Finder" worksheet and give students time to think about the social and recreational opportunities they want in a college. Students should think about their values and what type of college they would like to attend.

5. **Introduce Priority Deadlines.** Some colleges (especially selective ones) have a priority application deadline, typically around November 1, that gives greater consideration to students who apply by this date, but will still accept applications after the date. Very few colleges in Michigan have these deadlines, but students should identify whether their colleges of interest have early deadlines when doing their research and keep this deadline in mind.

6. **Introduce College Scorecard.** The US Department of Education has created a great tool to help students research colleges to determine the best match and fit. Have students visit the College Scorecard website at https://collegescorecard.ed.gov/ and research some colleges of interest.

7. **Review the NACAC guide to determining the right college fit.** It can be found here: http://www.nacacnet.org/studentinfo/articles/pages/determining-the-right-college-fit.aspx

8. **Students identify what they are looking for in a college.** Students should break into groups and begin discussing what they are looking for in a college using the values they identified on their "Fit Finder" handout. They should do additional research on components of college fit and fill out worksheet specifics at home. Students may need to revise their list of colleges based on their findings.

STUDENT PRODUCTS

- **Completed Match Maker and Fit Finder handouts.**

HOMEWORK ACTIVITIES

- **Match Maker handout.** Students should work through classifying all the colleges in which they have expressed interest, and doing additional research to fill any categories (match, reach, or safety) that did not get filled with the student's initial list.
- **Complete Fit Finder handout if it doesn't get completed in class.**

ADJUSTING FOR TIME

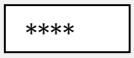
- **If you have time left over:** Complete the Lesson 2 Supplemental Activity found in the Course Materials folder. Complete the Fit Finder research in class.
- **If you are short on time:** Cut activity #8 – "Students identify what they are looking for in a college," and have them do this research individually at home. Students can also explore College Scorecard on their own at home.

Budgeting, Scholarships, and Aid

Week 14 – The FAFSA Process – Handout

THE FAFSA PROCESS

FAFSA Preparation



Apply for an FSA ID

Gather tax and other information

January begins FAFSA Process;

FAFSA Filing

Fill out FAFSA online at www.fafsa.gov

Submit FAFSA with FSA ID and send electronically

AFTER Filing

SAR

Federal Processor Determines EFC

Student receives report

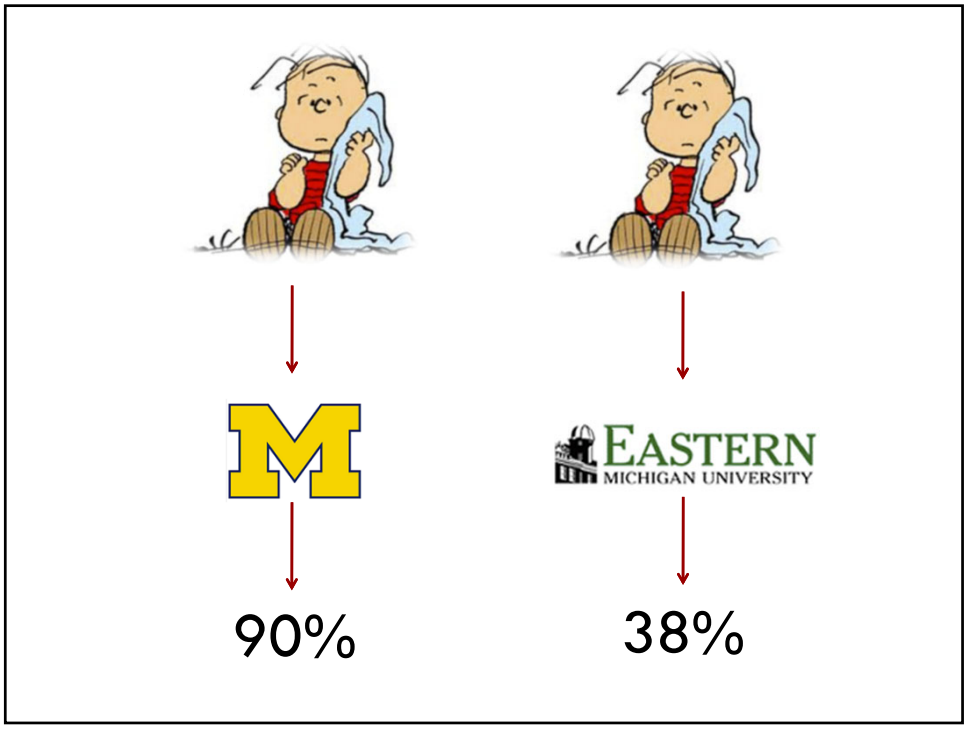
Results sent to Colleges

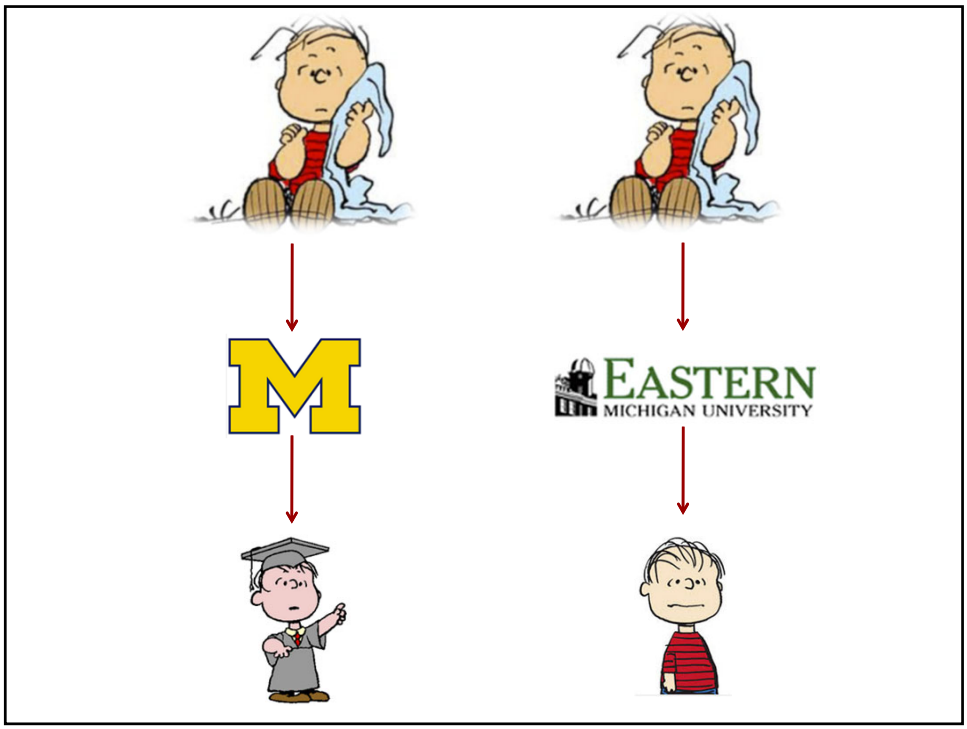
Financial aid disbursed to College/university

Appendix Figure VI. The 62 Participating Schools

Notes: This figure shows a Michigan map with treatment and control schools represented by blue- and maize-colored markers, respectively.

Appendix Figure VII: Sample Slides from "Match and Fit"





Appendix Figure VIII: Class Worksheet

Pre-Application Planning

Lesson 2 – Match and Fit – Handout

MATCH MAKER WORKSHEET

Part I: What are my academic credentials?
Using your resume, your transcript, your Application Readiness Worksheet, and help from your teacher (if necessary), identify the following:

Cumulative High School GPA:	
Composite ACT score:	
Composite SAT score (optional):	

Part II: What are the admissions criteria for my preferred colleges?
Return to the "My High School and Beyond Plan Worksheet" and recall your list of top 5 preferred colleges. Use the colleges' websites to identify the admissions criteria for each of the five colleges. What are their minimum/average GPA and standardized test score requirements? List these on the chart below.

Preferred Colleges	Minimum GPA	Average GPA	Minimum ACT/SAT	Average ACT/SAT
1.				
2.				
3.				
4.				
5.				

Part III: How do I compare?
Compare your credentials to the admissions criteria and identify whether each school is one of the following for you:

Match School: A match school is one where your academic credentials fall well within the school's average range for the most recently accepted class. List your match schools below:

1. _____
2. _____
3. _____
4. _____

Pre-Application Planning

Lesson 2– Match and Fit – Handout

FIT FINDER

Academics are only one component to keep in mind when selecting a college. You also want to make sure you attend a college that fits your lifestyle and social needs. The following list (adapted from The College Board) has things to consider when looking for a college that is a good fit. Circle the things that are most important to you.

- *Size (Do you want small, intimate classes or large lecture halls?)*
- *Location (Urban, suburban, or rural?)*
- *Distance from home (Do you want to be close to home – possibly even close enough to commute – or as far away as possible?)*
- *Available majors and classes (Think about potential majors. Are these offered?)*
- *Housing options (Do you want to live in a dorm, in an apartment, or at home with family?)*
- *Makeup of the student body (How much does diversity factor into your college choice? How do students similar to you demographically fare at a particular college?)*
- *Available extracurricular activities (Are you looking to play a sport? Start a club? Are you interested in Greek life?)*
- *Campus atmosphere (Do you think you would belong and feel comfortable at this college?)*

To find this information about your colleges of interest, look on college websites, on College Results Online at http://www.collegeresults.org/ or on College Scorecard at https://collegescorecard.ed.gov/. Record your findings for each college on the tables below. Also use the links provided on the NACAC guide to determining the right college fit: http://www.nacacnet.org/studentinfo/articles/pages/determining-the-right-college-fit.aspx

College 1 Name:	
How many students are enrolled here?	
Distance from home (use Google maps):	
Do they offer your major(s) of interest?	
What are their housing options?	
What is their student body makeup? How many men vs. women? What percentage of their students are minorities? What percentage of their minority students graduate?	
What extracirriculars are available?	
What are the retention and graduation rates for your demographic?	
What are the employment rates for graduates like you?	
What are the career services available to you?	

Appendix Figure X: Final Student Course Evaluation

Student Course Evaluation

Please complete this anonymous course evaluation in order to help us redesign this college planning course before offering it at other Michigan high schools. Your feedback is extremely valuable! We will not share your responses with your teacher or any school staff.

Course Information
Your High School's name:

How many days a week and for approximately how many minutes per day did this course meet?

Thoughts on Course Topics
We want to know how valuable you thought each of the course topics were so that we can decide how to change the design of the course curriculum.

The below table includes all of the class topics that you learned about in the order in which they appeared throughout the semester. In the column labeled "Value Rating", please type in each row a "1", "2", "3", "4", "5", or "NA", where **"5" indicates "Very valuable"**, a **"1" indicates "Not at all valuable,"** and the other numbers are in-between. An "NA" indicates that you do not remember this topic or do not believe your teacher covered this topic.

Please also feel free to add in any comments about each topic in the last column. Comments would be particularly helpful to us if you rate activities as not valuable (a 1 or a 2). Don't worry about formatting of the table, grammar, spelling, etc.

	Value Rating	Additional Thoughts / Comments
Lesson 1: Course Introduction and College 101		
Lesson 2: Match and Fit		
Lesson 3: The Application Process		
Lesson 4: Letters of Recommendation		
Lesson 5: Admissions Essays		
Lesson 6: College Applications		
Lesson 7: Financial Aid Overview		
Lesson 8: Scholarships		
Lesson 9: Budgeting in College		

Lesson 10: Career Exploration		
Lesson 11: Accepting Admission and Financial Aid		
Lesson 12: Final Steps		

Please underline the appropriate number for each of the following questions and provide any explanations and comments that could be helpful to us:

1. In general, how valuable do you think the time spent in class during this course was to you?

1	2	3	4	5
Not at all useful				Very useful

Comments:

2. In general, how valuable do you think the homework assignments during this course were to you?

1	2	3	4	5
Not at all useful				Very useful

Comments:

3. To what extent did you find the time requirements for this course outside of class to be manageable?

1	2	3	4	5
Not manageable				Completely manageable

Comments:

4. To what extent were you unable to successfully complete course assignments because you did not know the necessary information about yourself or your family, and/or were not able to get the information from your parent or guardian?

1	2	3	4	5
Very unable				Not at all unable

Comments:

5. Please describe one topic, activity, or assignment that you thought was of particularly **little** value to you, and why.

6. Please describe one topic, activity, or assignment that you thought was of particularly **great** value to you, and why.

7. If you had to change one aspect of the course to improve the course's usefulness, what would it be, and why?

8. Feel free to provide any other comments or thoughts about the course here.

Thank you so very much for providing your feedback about how to improve this course!!

Appendix Figure XI: Final Instructor Survey

Final Instructor Survey

Thank you so much for completing your mid-semester feedback survey a couple months ago! It was incredibly helpful as we prepare to redesign this course for other high schools in Michigan. Please complete this final survey in order to help us learn about the effectiveness of the second half of this course. We are not sharing your completed survey with your principal or anyone else at your school.

Course Information
Your name:

Your job title / position:

High School name:

How many class sections of the course do you teach?

On which days do these sections meet and for how many minutes?

How many students are enrolled in each section?

Thoughts on Course Material from the Second Half of the Course
We want to know how valuable you thought each of the lessons were from the first half of the course. In the column labeled "Value Rating", please type in each row a "1", "2", "3", "4", "5", or "NA", where "5" indicates "Very valuable", a "1" indicates "Not at all valuable," and the other numbers are in-between. An "NA" indicates that you weren't able to get to this lesson. It is OK if you weren't able to get to all the lessons yet – this is good information for us to know.

Please also feel free to add in any comments about each lesson in the last column. Comments would be particularly helpful to us if you rate lessons as not valuable (a 1 or a 2).

	Value Rating	Additional Thoughts / Comments
Lesson 7: Financial Aid Overview		
Lesson 8: Scholarships		
Lesson 9: Budgeting in College		
Lesson 10: Career Exploration		
Lesson 11: Accepting Admission and Financial Aid		
Lesson 12: Final Steps		

Please underline the appropriate number for each of the following questions and provide any explanations and comments that could be helpful to us:

1. In general, how valuable do you think the topics and assignments during the second half of this course were for students?

1	2	3	4	5
Not at all useful				Very useful

Comments:

2. In general, how much difficulty did you have in teaching the material in the second half of this course?

1	2	3	4	5
Not any difficulty				A lot of difficulty

Comments:

3. To what extent did you feel prepared to teach the material in the second half of this course?

1	2	3	4	5
Not at all prepared				Very prepared

Comments:

4. To what extent did you feel that managing students and ensuring they put in full effort was a struggle during the second half of this course?

1	2	3	4	5
Not at all a struggle				A big struggle

Comments:

5. To what extent did you feel that the time requirements for you outside of class for this course were manageable and within reason?

1	2	3	4	5
Not at all within reason				Very much within reason

Comments:

6. To what extent were students unable to successfully complete assignments in the second half of this course because they did not know the necessary information about themselves or their family, and/or were not able to get the information from their parent or guardian?

1	2	3	4	5
Very unable				Not at all unable

Comments:

7. To what extent did the second half of this course seem to operate as smoothly and successfully as most other courses that you have taught or are currently being taught by other instructors in the school?

1	2	3	4	5
Less smooth				More smooth

Comments:

8. To what extent do you think that the schedule of this course, as far as the duration and frequency of class sessions, is effective?

1	2	3	4	5
Does not fit well				Fits well

Comments:

9. To what extent do you think that this course is displacing another more valuable course that you could have taught or a more valuable activity that you could have engaged in if you weren't teaching this course?

1	2	3	4	5
Not displacing more valuable course				Displacing more valuable course

Comments:

10. To what extent do you think that this course had some impact on the college and/or financial aid application behavior of your students? (For example, students applied to more or different colleges or financial aid sources than they would have if they did not take the course).

1	2	3	4	5
Course likely had no impact				Course had dramatic impact

Comments:

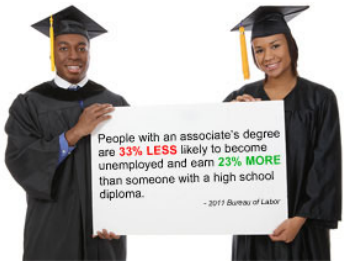
11. If you had to change one aspect of this course to improve the usefulness of the course, what would it be and why?

Please type response here:

Appendix Figure XII: Teaching About Michigan Transfer Agreements

Associate's Degree

- Usually takes 2 years to obtain
- Usually requires accumulation of 60 credits
- 30% of job openings by 2020 will require an Associate's
- 3 different types



- **Associate of Arts**
- **Associate of Science**
  - Meets general education requirements "and then some"
  - Satisfies MTA: Michigan Transfer Agreement
- **Associate of Applied Science**
  - Specialized fields
  - Only take classes relevant to your career path

Michigan Transfer Agreement (MTA) Requirements
(For students beginning fall 2014)

English Composition	1. Required 2. Select one of the three courses	1. ENG 111 2. ENG 112 or COM 111 or COM 170
Humanities & Fine Arts	2 Courses	Select from two different Disciplines *(see category below)*
Mathematics	1 Course	Select one course *(see category below)*
Sciences	2 Courses, with one course containing lab	Select from two different Disciplines *(see category below)*
Social Science	2 Courses	Select from two different Disciplines *(see category below)*
TOTAL CREDITS	**Minimum 30 credits**	**Must receive 2.0 in each course to qualify**

ENGLISH COMPOSITION
See Chart Above

HUMANITIES AND FINE ARTS

ARB	111 or Above	MU	120
ARTH	110, 111, 112	NISH	111 or Above (Excludes 150, 190, 245)
COM	220, 225, 250, 260	PHL	101, 102, 105, 109
ENG	130, 213, 215, 221, 222, 231, 232, 240, 241, 242, 244, 250, 251, 252	REL	100, 102
FR	111 or Above	RUS	111 or Above
HST	131, 132, 231, 232, 255, 270	SPAN	111 or Above
		THF	101, 250, 276

MATHEMATICS

MATH	128, 130, 140, 150, 210, 215, 225, 235
STAT	200

SCIENCES

BIO	101, 133, 151, 152, 226, 235, 236	ESC	101, 110, 121, 122, 150, 201
CEM	101, 102, 121	PHY	101, 210, 230

SOCIAL SCIENCES

ANP	110, 130, 210	PLS	141, 225
ECO	111, 112	PSY	161, 210, 241, 255, 261
GEO	111, 121	SOC	171, 175, 271

Enrollment and Matriculation

Lesson 10 – Career Exploration

LEARNING GOALS/OUTCOMES

- Students will explore careers of interest and high growth occupations in Michigan
- Students will identify potential majors postsecondary educational steps needed to enter their career of interest

MATERIALS NEEDED

- **Student Handouts:**
  - Pure Michigan Talent Connect
  - My High School and Beyond Plan
  - Application Readiness Document
- **Computer with internet access** so that students can access the Pure Michigan Talent Connect site: http://www.mitalent.org/career-exploration/ and the Big Future Major and Career Search site: https://bigfuture.collegeboard.org/majors-careers

CLASSROOM ACTIVITIES

1. **Identify student career/career pathway interests.** Divide students into small groups. In their groups, have each student take out a pen and a piece of paper and quickly jot down at least three careers or career pathways that seem interesting to them. Allow students to use the internet if time permits. When this is complete, ask the students to discuss their lists with their groups.

2. **Identify major requirements.** Distribute the "Pure Michigan Talent Connect" worksheet and have students pull out the "My High School and Beyond Plan" worksheet. With each student at a computer, have students visit http://www.mitalent.org/career-exploration/. Help students follow the directions on the worksheet to enter a potential career goal. Then, have students visit https://bigfuture.collegeboard.org/majors-careers to start connecting their career goals to their major selection. Students should review the colleges they applied to earlier in the semester and check whether their desired majors are offered at those colleges. If not, students may have other major options to get them to their career goals. They can do some additional research into major requirements.

3. **Have students research as many careers or career pathways as time allows for.** Students should research three careers plus one additional high growth career. If students do not finish their research during the class period, the lesson can be completed at home.

STUDENT PRODUCTS

- Completed "Pure Michigan Talent Connect" and "My High School and Beyond Plan" handouts to be turned in as homework including at least one high growth occupation.

HOMEWORK ACTIVITIES

1. Finish researching three careers of interest.
2. Access High Growth Occupations document from the Michigan Top 50 Jobs Report on the Pure Michigan Talent Connect website, research at least one high growth occupation using the instructions on the "Pure Michigan Talent Connect" handout and add this to their list.