

The Impact of Religious Diversity on Students' Academic and Behavioral Outcomes

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Abstract

In many countries, religion is a source of deep societal divisions, violent conflicts and political polarization. In such contexts, religiously diverse educational institutions may help break down cultural barriers through facilitating interactions between religious groups. However, evidence on how intergroup contact affects individuals' behavior is mixed, and studies focusing on contact between different religious groups are particularly sparse. This paper provides the first causal evidence on how exposure to college peers from different religious high schools affects students' behavior and learning outcomes. We use data from the American University of Beirut (AUB), a secular 4-year college in Lebanon, where students are randomly assigned to different peer groups. Prior to enrolling in AUB, students attend either Secular, Christian or Islamic high schools. These schools differ in whether they provide religious education and the religious diversity of their student body—with secular schools being the most diverse and Islamic schools the most homogeneous. We show that for students from Islamic schools, exposure to dissimilar peers improves their academic performance but makes them more likely to take classes with Muslim teachers. In contrast, diversity decreases academic performance for students coming from secular schools, and has no impact on their instructor choice. Our results indicate that for individuals coming from religiously homogeneous backgrounds, intergroup contact strengthens within-group solidarity.

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1 Introduction

Religion has a central role in shaping societies' political, social and economic experiences. It can also be a source of deep societal divisions, conflicts and segregation. For example, "Religion may be one of the most important sources of polarization in American politics" (Wilson, 2005). In many other countries such as Nigeria, Northern Ireland and Lebanon, religious divisions have led to long periods of violent conflicts and wars.

In societies that exhibit such divisions, an important question is whether intergroup contact promotes tolerance and fosters unity. A priori, the predicted impact of diversity on intergroup relations is ambiguous. Under the contact hypothesis, intergroup contact can break down negative preconceptions and improve relationships between different groups. This is expected to occur when these groups have equal status, common goals, are in non-competitive environments and are backed by social authorities or institutions that support positive contact (Williams Jr., 1947; Allport, 1954). In contrast, exposure to an outgroup may increase prejudice and strengthen within-group solidarity through making group dissimilarities more salient (Tajfel, 1982). Empirically, evidence on how intergroup contact shapes individuals' behavior is mixed, and studies on the consequences of religious diversity in particular are scarce.

In this paper, we aim to fill this gap in the literature. Specifically, we ask whether exposure to college peers from different religious school backgrounds affects students' behavioral and learning outcomes. We use data from the American University of Beirut (AUB), a private 4-year secular college located in the country of Lebanon, where first-year students are randomly assigned to peer groups. Prior to enrolling in college, Lebanese students attend either secular or religious (i.e., Christian or Islamic) high schools, which differ along two main dimensions. First, schools have some autonomy in determining certain aspects of their education, despite all high schools being required to follow the national curriculum. Religious schools devote part of their curriculum for the teaching of their corresponding religion and ideology. On the other hand, secular schools provide no religious education. Second, high schools differ in terms of their student body's religious diversity. Secular schools are the most diverse as they enroll both Muslim and Christian students, while Islamic schools are the least diverse as they are attended by Muslim students exclusively. Christian schools are in between since they mainly enroll Christians but some have a non-negligible share of

Muslim students.

While a large share of students attend religious high schools, the college we focus on offers a secular education. Importantly, AUB provides for an environment in which a significant portion of students are exposed to peers from different religious backgrounds for the first time in their lives. This is because Lebanon is characterized by a high degree of religious segregation rooted in a long history of sectarian divisions and violent conflicts between Muslims and Christians. First-year college students enroll at AUB with a declared major. At the beginning of their first year, they are randomly assigned to academic advisors who are faculty members within their major's department and whose main job is to help them select courses and develop a plan study. Students matched to the same advisor interact with each other, as we show that they take similar classes during their first year of college. This is potentially due to advisors recommending the same courses to their students. As such, we define a peer group as all students matched to the same advisor.

We examine how college students' social behavior and academic outcomes are affected by exposure to peers who attended a different type of high school. We first document that students from the most religiously diverse high schools are academically worse off when matched with the most homogeneous peers. Specifically, students coming from secular high schools experience a 3.6 percent of a standard deviation decrease in their first-year college GPA due to exposure to a one standard deviation higher proportion of Islamic versus secular peers. These effects are long-lasting as we find significant negative effects on their graduating GPA and 4-year graduation rate. However, we detect no significant impact on short- or longer-term outcomes when the counterfactual peers are from Christian high schools.

For students coming from Christian high schools, being matched to a higher proportion of dissimilar peers (i.e., secular or Islamic versus Christian peers) has no significant effects on their academic outcomes. In contrast, students from the most religiously homogeneous schools benefit from matching with more diverse peers. Indeed, students from Islamic high schools experience a significant 9.5 percent of a standard deviation increase in both their first-year and graduating GPA when matched to a one standard deviation higher proportion of Christian versus Islamic peers. Additionally, we cannot rule out that Islamic students' GPA also largely improves when they are exposed to secular as opposed to Islamic students, though these effects are statistically insignificant at conventional levels.

To understand whether diversity affects behavior towards members of other religious groups, we collect information on instructors' names for all college classes taken by students in our data. In Lebanon, a person's full name is a strong predictor of his/her religion. We cross-reference all instructor names with a pre-existing database of common Lebanese names linked to their exact religion. This enables us to examine whether exposure to religiously diverse peers changes the likelihood that students enroll in classes with instructors from a similar religion. For students from secular and Christian high schools, we find that peer diversity has no significant effect on their instructor choice. In contrast, Islamic students are 1.9 percentage points more likely to take a course with a muslim instructor when they are matched to Christian versus Islamic peers. Our results indicate that for students with religiously homogeneous backgrounds, exposure to religiously diverse peers strengthens within-group solidarity—while the behavior of students from more diverse backgrounds is unaffected.

Next, we compile two additional datasets to further substantiate the our main effects are due to religious diversity. We first collect information on each high school's characteristics such as their yearly tuition and language of instruction. This allows us to rule out that our main effects are driven by school features other than their religious focus or diversity. Indeed, we show that our results remain unchanged when we control for peers' high school characteristics such as language of instruction and their student body's academic quality, gender composition and socioeconomic background. We further collect data on the religious composition of registered voters in different Lebanese districts. We use this information to construct indices measuring the degree of religious diversity in high schools' locations, and examine whether our results are concentrated among religiously diverse or homogeneous districts. We find that secular students' academic effects are strongest for those whose high schools are located in diverse districts. In contrast, the documented effects on Islamic students' academic performance and instructor choice are driven by those whose high schools are in homogeneous districts. These findings emphasize that the impacts of intergroup contact depend on the level of diversity that students are exposed to prior to the peer interactions.

Our results contribute first to an emerging literature which finds mixed evidence regarding the impacts of intergroup contact on individuals' attitudes and behavior. A number of studies provide evidence in support of the contact hypothesis. Specifically, they show that exposure to peers or neighbors from a different race, religion or socioeconomic background improves "majority group"

members’ attitudes and behavior towards minorities—while no significant effects are detected for minority groups’ behavior towards the majority (Van Laar et al., 2005; Boisjoly et al., 2006; Barnhardt, 2009; Carrell, Hoekstra and West, 2019; Scacco and Warren, 2018; Corno, La Ferrara and Burns, 2019). In contrast, Enos (2014) documents that repeated contact causes individuals living in homogeneous communities to develop more exclusionary attitudes towards minorities. Furthermore, Mousa (2020) shows that assigning Christian soccer players to mixed-religion teams improves their behavior towards Muslim peers, but that these benefits do not extend to other social settings.

Our paper provides some of the first causal evidence that intergroup contact promotes within-group solidarity for members of the minority group. Indeed, we find that Islamic students—the minority group in our setting—are more likely to choose courses with muslim instructors when they are exposed to dissimilar peers. Our findings thus stand in contrast to most previous studies which favor the contact hypothesis.

A potential reason why our results differ from the previous literature is that we look at students who are exposed to different degrees of diversity prior to the peer interactions. Indeed, a unique aspect of our paper is that we focus on students’ religious school background—and not religion—which has the advantage of capturing students’ religion, ideology and religious diversity of their environment. Specifically, Muslim students who attended Islamic high schools are more religious, conservative and have a more religiously homogeneous environment than Muslim (or Christian) students who were enrolled in other types of schools. Our results suggest that when estimating the impacts of intergroup contact, it is important to take into account the degree of diversity that peers are exposed to prior to any interactions and not just the fixed peer characteristic (such as race or religion).

In documenting that intergroup contact reinforces within-group solidarity, our findings also complement a growing literature showing that ethnic diversity can limit economic growth and trust (Alesina and LaFerrara, 2002 and 2005), hamper national unity (Bazzi et al., 2019), as well as increase social anomie (Algan, Hémet and Laitin, 2016) and political extremism (Colussi, Isphording and Pestel, 2019).

Finally, our paper relates to an extensive literature looking at the role of fixed peer characteristics and social identity in explaining educational choices and performance (See Sacerdote, 2014 for a detailed review). This literature has primarily focused on characteristics such as peer gen-

der, race, ethnicity and socioeconomic background. However, despite religion being one of the strongest identifiers of social identity, there is no clear evidence on the link between peers’ religious background and own academic performance. We find that secular students’ course performance is harmed by exposure to Islamic peers while Islamic students’ GPA increases from having dissimilar peers. These results are in line with some previous studies showing that inter-ethnic contact worsens majority group members’ learning outcomes but promotes minorities’ academic success (Gould, Lavy and Paserman, 2009; Ohinata and Ours, 2013; Ballatore, Fort and Ichino, 2018; Corno, La Ferrara and Burns, 2019; Rao, 2019).

The rest of this paper is organized as follows. Section 2 describes the institutional setting. Section 3 introduces the data that we use. Section 4 outlines the identification strategy. Section 5 presents the main results and robustness checks. In section 6, we discuss the mechanisms driving our findings and we conclude in section 7.

2 Institutional Background

2.1 Lebanese High School System

Examining the impacts of peers from different religious backgrounds is particularly interesting in the Lebanese context. Lebanon’s history is marked by deep sectarian divisions and conflicts. From 1975 to 1990, the Lebanese civil war “involved a multifaceted and inter-religious conflict between Christians and Muslims” (Baytiyeh, 2017). After the war, a sectarian power-sharing system was put in place. This system divided governmental offices between sects. For example, the Lebanese president has to be a Christian Maronite, the prime minister a Sunni Muslim and the speaker of the parliament a Shi’a Muslim. The civil war also resulted in religious residential segregation in many areas in Lebanon and sectarian tensions are still pervasive. Further, the three main religious groups are politically and financially supported by various foreign powers, which strengthens sectarian tensions and limits the development of a national identity. Specifically, “the Shi’a are supported by and politically aligned with Iran, the Sunni are politically and financially indebted to Saudi Arabia and countries of the Arab Gulf, and Christians are politically loyal to the Vatican and France” (Baytiyeh, 2017).

Prior to enrolling in college, students in Lebanon spend three years in high school, and around

53% attend private high schools (World Bank, 2018). While all public schools are secular, private institutions provide either secular or religious education. There are two types of religious schools in Lebanon: Islamic and Christian schools. Christian schools were established in Lebanon as early as the 19th century by Catholic and Protestant missionaries from Europe and the United States. Up until the mid-70s, the vast majority of private schools were Christian schools. Both Muslims and Christians enrolled their children in these schools as they were perceived to provide a higher quality of education than the public school system. Islamic schools had a much smaller presence in the pre-civil war era compared to Christian schools. The Makassed, an Islamic Sunni association which provides educational and social services and is supported by Saudi Arabia and other Gulf countries, operated the only major network of Islamic schools in Lebanon until 1975. The emergence of Islamic political parties during the civil war brought new networks of Islamic schools that were administered and funded by those parties. Since the mid-80s, the Iran-backed Shi'a political party and militant group Hezbollah grew a large-scale network of health, social and educational centers and institutions in predominantly Shiite areas such as Nabatiyyeh, Baalbek and parts of Beirut (Cammett and Issar, 2010). Private secular schools are either local independent schools or are part of international school networks such as the French Lycées which were established by the French Secular Mission (or *Mission Laïque Française*), a non-profit organization operating schools in 39 different countries.

Religious and secular schools differ in several ways. First, all schools are required to follow a common curriculum set by the Lebanese Ministry of Education, as students have to sit for a series of national written exams at the end of their last year of high school. Those who pass the exams are awarded the *Baccalauréat* degree which is mandatory to graduate from high school and enroll in college. However, schools have some autonomy in determining certain aspects of their curriculum. While course content is set by the government, the manner in which history and civic education courses are taught can vary across schools. This is because the conflict between religious groups resulted in major disagreements over certain historical events and fundamental aspects of Lebanese identity. For example, when covering the history of Lebanon under Ottoman rule, teachers in some Sunni Islamic schools emphasize the strengths of the Ottoman Empire. On the other hand, Christian school teachers present that period in a less favorable light by highlighting the Ottoman Empire's atrocities such as its World War I embargo of Mount Lebanon—a predominantly Christian

area—which resulted in a three-year famine.

Second, religious schools devote part of their curriculum for the teaching of their religion while secular schools do not provide any religious education. Christian schools hold masses and offer a Christian education course where students are taught the Bible. Islamic schools provide Quran reading courses and hold prayers during the school day.¹ Schools also play an important role in shaping students' identity and ideology. For example, the Mahdi schools disseminate the Islamic Shi'a theology developed by Iran's Supreme Leader Ayatollah Khomeini. Furthermore, elements of Hezbollah's ideology such as its anti-Israel stance and glorification of martyrdom are part of the general discourse in these schools. In contrast, Christian and private secular schools typically propagate Western culture and ideas.

Third, schools vary in their student body's religious composition. Islamic schools are the least diverse as they have a predominantly Muslim student population. Christian schools have a long tradition of high quality education in Lebanon, making them attractive for parents from both Christian and Muslim communities. The proportion of Muslims and Christians in these schools depends on the demographic composition of each school's location. For example, a Christian school in Mount Lebanon, a predominantly Christian area, is likely to have an overwhelming majority of Christian students. In contrast, a Christian school in Beirut, which is a religiously diverse city, is more likely to have a mix of Christian and Muslim students. Secular schools have the most religiously diverse student body, but their religious composition can also vary by the school's location.

Finally, as in most settings, Lebanese schools differ along other dimensions that are not necessarily correlated to whether the school is religious or secular. Schools vary in their education quality and language of instruction, which is either English or French. Schools can also differ in the socioeconomic and gender composition of their student body. We should note that (i) the majority of schools including religious schools are not gender-segregated and, (ii) teachers and administrators in religious schools are not necessarily clerics. In section 6.1, we show that our main effects are unchanged when we control for school characteristics such as their quality, language of instruction, socioeconomic and gender composition.

In summary, schools in our setting mainly differ in (i) whether they provide a religious education,

¹For example, some Islamic schools hold prayers during the second recess.

(ii) the type of ideology they propagate and, (iii) the religious diversity of their student body. Secular schools provide no religious education, are westernized and are the most religiously diverse. Christian schools also expose students to a Western culture but are less diverse and devote part of their curriculum for the teaching of catechism. Islamic schools are homogeneous since they predominantly cater to Muslim students and they disseminate non-Western ideas as well as the teachings of Islam.

2.2 The American University of Beirut and Peer Formation

Our analysis focuses on students who first enroll in AUB as sophomores. For most students in Lebanon, the first year of college is the sophomore year as the last year of high school is equivalent to the freshman year. High school students typically apply for admission into a major and university simultaneously. Admission into AUB is based on a composite score, which is a weighted average of grades 11 and 12 high school GPA (50%) and SAT scores (50%). Furthermore, majors at AUB vary in terms of selectivity and have different admission score cutoffs.

Students enroll in the major they are admitted to at the beginning of their sophomore year. They are then assigned to an academic advisor, who is a full-time faculty member in their respective academic department. Faculty typically volunteer to become advisors, but are incentivized to do so as they are awarded extra research funds in exchange for advising and advising counts as part of their university service. The process of assigning students to advisors is coordinated by university administrators working in different faculties.² Administrators, within each faculty, receive two separate lists of students and advisors from each academic department. They then randomly assign students to their advisors. Specifically, for each academic department, they first sort students by their last name or their ID and then assign the first student to the first advisor on the advisor list, the second student to the second advisor, and so on.

Students typically have the same advisor for the entire sophomore year and they remain with them until they graduate unless a student requests a formal change of advisor or the advisor is no longer available to advise. Advisors' main roles are to (i) help students develop a plan of study—i.e., help them pick courses and develop a schedule—that will allow them to meet the requirements for

²There are 6 faculties in AUB: the Faculty of Arts and Sciences, the Faculty of Engineering and Architecture, the School of Business, the Faculty of Health Sciences, the Faculty of Agriculture and Food Services, and the School of Nursing.

graduating from their major, (ii) monitor students' academic progress and, (iii) assist students with various academic issues such as transferring to another major, selecting a minor, deciding on course withdrawals, etc...

Students assigned to the same advisor have several opportunities to interact. First, each advisor holds a mandatory group orientation session for their students at the beginning of the sophomore year. Second, advisors have to meet with students one-on-one at the beginning of each semester in order to help them select courses and develop their study plan.³ Importantly, students are given a three to four hour time block to meet with their advisors individually prior to the start of the semester; advisors typically meet with these students on a first-come first-served basis during this time block.⁴ As a result, many students assigned to the same advisor show up to office hours at the same time, and have to wait for their turn outside of the advisor's office, giving them plenty of time to interact with other advisees. Indeed, for incoming sophomore students, the group and individual advising orientation sessions are typically their first interactions with other students at the university. Finally, an advisor is likely to recommend that their students enroll in a similar set of courses during their first year, as he or she might believe that taking a specific bundle of courses is optimal for on-time degree attainment. Consequently, students assigned to the same advisor are more likely to enroll in the same courses during their sophomore year—a result that we show to be true in section 5.2.

3 Data

We use student-level administrative data acquired from both the Registrar's and Admission's offices at the American University of Beirut (AUB). The data contain detailed student-level information on course grades, semester GPA, major, gender, class (Sophomore, Junior, Senior, etc...), legacy status, high-school name and location, year of birth and SAT scores. We classify high schools into secular, Christian or Muslim schools following the official classification provided by each school. These data also contain information on academic advisors that students are matched to, such as their faculty rank, department, and gender. Our data initially included 19,087 students who en-

³Students have to attend the one-on-one meetings because during those meetings, advisors give them PINs that they need to register in courses.

⁴After the semester begins, additional weekly office hours are available to students.

tered AUB as sophomores between the academic years 2001-2002 and 2016-2017.⁵ We exclude all students who have missing baseline covariates and those whose entire peer group have missing key characteristics. Additionally, we exclude excessively low-enrolling departments that had fewer than 50 students over the whole period we study as well as newly created departments/majors that are not represented in all years of our data. Finally, we drop all students who never declared a major, as these students were never matched to a specific department. This leaves us with a final sample of 12,590 students who entered AUB as sophomores between the academic years 2001-2002 and 2016-2017. Over this entire period, students are matched to 219 distinct advisors during their sophomore year. On average, each advisor serves for 3 years, resulting in the *random* formation of 666 distinct peer groups throughout this period.

3.1 Summary Statistics

Summary statistics for students in our main sample are provided in Table 1. In column (1), we present the mean and standard deviation (in parentheses) of key variables for the entire sample. Column (2) restricts the sample to students from a secular school background, column (3) to students from a Christian school background and column (4) to students from an Islamic school background. We begin by summarizing student baseline covariates in Panel A. Female students constitute about 44% of individuals in our sample, and this proportion is more or less stable for students coming from different high school backgrounds. The average math and verbal SAT scores for all students in our sample are 649 and 536 points respectively.⁶ Compared to the scores announced by the College Board in 2019, these correspond to the 83rd and 50th percentile in the math and verbal portions of the SAT exam respectively.⁷ The SAT scores differ according to students' high school background. Students from Christian school backgrounds have the highest math SAT score—17 points higher on average than students from Islamic schools—while students from Islamic schools have a verbal SAT score about 44 points lower than those from other backgrounds. Approximately 24% of all students are legacy admits, with that number being higher for students from secular school backgrounds (27%) compared to the other two groups (20%).

⁵For results involving graduation outcomes, we also limit our sample to students entering AUB on or before 2012-2013 in order to accurately observe graduation status for all students.

⁶The difference in average performance in math and verbal SAT scores is most likely because English is a second language for most students in Lebanon. As such, math SAT tends to be a better measure of students' baseline ability.

⁷<https://collegereadiness.collegeboard.org/pdf/understanding-sat-scores.pdf>

In Panel B of Table 1, we present summary statistics for student level outcomes. The average first year GPA is 77.72 out of a possible 100 points with a standard deviation of 8 for all students in our sample. Further, we find no meaningful differences in GPA across student school background type. Out of all students who enter the university as sophomores, around 16.5% dropout after the first year, with students from secular school backgrounds dropping out at the highest rate (17.1%) compared to students from Christian school backgrounds (15.2%) and Islamic school backgrounds (16.6%). Approximately 54% of all students manage to graduate on time, but, strikingly, only 40.9% of students from Islamic school backgrounds manage to do so. Additionally, around 77% of all students graduate in 6 years—which we use as our definition of ever graduating. This likelihood is only slightly lower for students from Islamic school backgrounds (74%). This indicates that students from Islamic school backgrounds have more trouble graduating on time, than graduating in general. Finally, GPA at graduation is 79.7 points for all students in our sample with a standard deviation of 6; this does not vary significantly across groups.

We now present statistics for peer group level characteristics in panel C of Table 1. Around 30% of advisors in our sample are female and 33.5% of advisors are tenured (i.e., associate or full professors), with no significant heterogeneity across student groups. The average peer group size is 63 students with some heterogeneity in size across school background types. Finally, we present summary statistics for our three treatment variables of interest. These are the leave-one out proportion of secular, Christian, and Islamic school background peers in a student’s advisor group respectively.⁸ The average proportion of secular school peers for students in our sample is 59.3% with a standard deviation of 9.5 percentage points. Additionally, the average proportion of Christian school peers stands at 33.4% with a standard deviation of 9 percentage points, while the average proportion of Islamic school peers that students face is 7.2% with a standard deviation of 4.6 percentage points. Consistent with random assignment of peer groups, these proportions do not vary significantly across student background type.

Finally, to visualize the variation we use to identify our effects, we plot the distribution of within department and year standard deviations in the proportion of peers from a given religious school

⁸To clarify how treatment is constructed, let us take a hypothetical scenario where a secular school student is in a peer group with 11 people (including his or herself). Further, assume this student is matched with 5 other secular school students, 4 Christian school students, and 1 Islamic school student. Using our leave-one out treatment definition, the proportion of secular school peers this student is matched to will be $\frac{5}{10}$, the proportion of Christian school peers $\frac{4}{10}$, and the proportion of Islamic school peers $\frac{1}{10}$.

background. Specifically, panels A through C of Figure 1 respectively show the distribution of these standard deviations for the proportions of secular, Christian, and Islamic high school peers. The next section discusses how we leverage this variation for identification.

4 Identification Strategy

Our empirical strategy leverages the fact that sophomore students are randomly assigned a peer group, i.e. their advising group, during their first year at AUB. Importantly, the random assignment of peers to advisors—a result we confirm in section 5.1—alleviates concerns over endogenous peer formation caused by student sorting based on similar characteristics. Our main focus is on estimating how peer match, in terms of religious high school background, affects student outcomes at university. To do so, we compare students from the same department who randomly face a higher proportion of students from their same religious high school background to those who face a lower proportion—depending on the advising group they are allocated to within their department during the first semester at university. Formally, we run the following regression model for all incoming sophomore students:

$$\begin{aligned}
Y_{idat} = & \beta_0 + \beta_1 \text{Christschool}_i + \beta_2 \text{Islamschool}_i + \beta_3 \text{PropChrist}_{at} + \beta_4 \text{PropIslam}_{at} \\
& + \beta_5 \text{Christschool}_i * \text{PropChrist}_{at} + \beta_6 \text{Christschool}_i * \text{PropIslam}_{at} \\
& + \beta_7 \text{Islamschool}_i * \text{PropChrist}_{at} + \beta_8 \text{Islamschool}_i * \text{PropIslam}_{at} \\
& + X'_i \gamma + A'_a \delta + \lambda_d + \sigma_t + \theta_{dyear_t} + \epsilon_{idat}
\end{aligned} \tag{1}$$

where Y_{idat} refers to the outcome of interest for student i in department d matched to advisor or peer group a in academic year t . Christschool_i is a dummy variable that takes on values of 1 if student i attended a Christian high school and 0 otherwise. Islamschool_i is another dummy variable that takes on values of 1 if student i attended an Islamic high school and 0 otherwise. Both of these dummy variables are relative to the omitted category of Secular high schools. PropChrist_a represents the proportion of students in peer group a who attended a Christian high school and PropIslam_a represents the proportion who attended an Islamic School. To ease interpretation, all our proportion measures are standardized by year throughout. Additionally, we include interaction terms for all indicators and proportion measures. Further, we include department fixed effects λ_d

throughout since randomization occurs at the departmental level. We also include σ_t , an academic year fixed effect, that controls for unobserved changes across different years as well as department-specific linear time trends ($\theta_d year_t$) to control for any unobserved department level changes over time. Our simplest specification includes only these variables. Due to the random nature of student-advisor assignment—within a department—our peer match effects can be interpreted as causal.

Our main interest is to understand how religious school background match differentially affects students from various religious backgrounds. As reported in section 2.1, secular high schools have the most diverse student body in terms of religious composition, mainly Christian and Muslim students from various sects. This is followed by Christian schools, which are mostly but not exclusively composed of Christian students and finally Islamic schools which are exclusively composed of Muslim students. We summarize these effects through six main parameters of interest representing the three school types: (1) For students coming from secular high schools, $-\beta_3$ captures the effect of being matched to similar school background peers (secular) relative to Christian and $-\beta_4$ does so relative to Muslim peers. (2) For students coming from Christian high schools, $\beta_3 + \beta_5$ captures the effect of being matched to similar school background peers (Christian) relative to secular and $\beta_3 + \beta_5 - \beta_4 - \beta_6$ does so relative to Muslim peers. (3) For students coming from Islamic high schools, $\beta_4 + \beta_8$ captures the effect of being matched to similar school background peers (Muslim) relative to secular and $\beta_4 + \beta_8 - \beta_3 - \beta_7$ does so relative to Christian peers. In most specifications, we also add a rich set of controls that should improve precision by reducing residual variation in the outcome variable, but should not significantly alter the treatment estimates. These include a vector of student controls X'_i that contains information on students' gender, math and verbal SAT scores, GPA in the final 2 years of high school and legacy admission status as well as birth year fixed effects. The vector A'_a controls for advisor level variables including academic rank and gender. Finally, ϵ_{idat} represents our error term. Standard errors are clustered at the peer group-year (treatment) level throughout to account for correlations among students exposed to the same advisor and peer group in the same year.

5 Results

5.1 Tests of Randomization

To identify the causal effect of being matched with a higher proportion of peers from a similar or different school background, peer group formation must not be the result of students sorting on similar characteristics. While our institutional setting ensures the random assignment of sophomore students to advisors within a given department, we provide checks that confirm our data are consistent with a random process. First, we show that students' baseline characteristics are uncorrelated with their respective leave-one out proportion of Christian, Islamic or secular peers. To do so, we first test whether students' own high school background is correlated with treatment, i.e., the proportion of peers from a specific school background. Specifically, we run three separate regressions where we regress each of our three treatment proportions on a dummy variable for whether students attended a Christian, Muslim or secular high school. Following Guryan, Kroft, and Notowidigdo (2009), each regression includes a control for the department-level leave-one out mean of the proportion of Christian, Muslim and secular students respectively. This is done to correct for the mechanical relationship between students' school background and the proportion of peers from a given background, which may bias our randomization test.⁹

Columns 1, 2 and 3 of Table 2 summarize the results of these regressions. Column 1 presents estimates for three separate regressions representing the proportion of Christian, Islamic and secular peers on the likelihood students attended Christian high schools. Columns 2 and 3 present estimates for these same outcomes on the likelihood students attended Muslim and secular high schools respectively. Of the 9 estimates resulting from these regressions, we find only one statistically significant effect; students coming from Christian high schools are associated with a 0.15 percentage point increase in the proportion of Muslim peers. This estimate is statistically significant at the 5% level, though economically small. Next, we show that baseline characteristics related to student ability (SAT scores) are not associated with an increase or decrease in the proportion of peers from a specific school background. To do so, we run a series of regressions of these proportions on students' SAT scores. Columns 4 and 5 of Table 3 summarize the results of these regressions.

⁹As described in Guryan, Kroft, and Notowidigdo (2009), the problem arises because an individual cannot be matched with himself. For example, in our context, the peers for a student from a Christian school background are drawn from a group with a slightly lower proportion of students from Christian school backgrounds.

We find that students’ verbal and math SAT scores are not statistically related to any of the peer background proportions. Overall, only 1 of the 15 estimated coefficients in Table 3 is significant at the 5% level. These results are in line with our institutional setting and indicate that students who are assigned to advisor groups with a higher or lower proportion of peers from a specific religious school background are similar in terms of baseline characteristics.

To further alleviate concerns over endogenous peer group formation with respect to student ability and background, we run additional tests of randomization using re-sampling techniques similar to those conducted in Carrell and West (2010). Specifically, we randomly draw 10,000 samples of equal size within department and year for each peer group combination without replacement. For each randomly sampled peer group combination, we then calculate the sums of the verbal SAT scores, math SAT scores, number of Secular school students, number of Christian school students, and number of Islamic school students for all students in that sample. We then compute empirical p-values for each peer group based on the proportion of simulations with values less than that of the observed peer group sum. Under random assignment, all empirical p-values are equally likely to be observed so their distribution should be uniform. We test this using a χ^2 goodness of fit test.¹⁰ The results of this test are summarized in panel A of Table 3. We only reject the null hypothesis of random assignment in 3 out of 871 tests of uniformity. Finally, we regress our constructed empirical p-values on the characteristics of the advisor attached to the peer group, namely gender and academic rank. These results are reported in panel B of Table 3 and indicate no significant relationship between the p-values and advisor characteristics. Put together, results from this section indicate that students were randomly divided into advisor peer groups within their respective departments, consistent with what our institutional setting would predict.

5.2 Evidence on Peer Interactions—Course Taking Behavior

The random allocation of students to advisors results in the formation of early university peers for students matched to the same initial advisor prior to the start of their first semester at university. Our empirical strategy exploits the random assignment of students to these newly formed peer groups. As detailed in section 2, this matching process results in numerous channels for potential

¹⁰Due to the stratified nature of the random assignment, and similar to Carrell, Hoekstra and West (2019), there are not enough coefficients to run a Kolmogorov-Smirnov one-sample equality of distribution test.

early peer interactions among students matched to the same advisor. For instance, students must meet with their advisors prior to the beginning of the first semester. Notably, these meetings take place during a condensed advising period of one or two days resulting in many students grouping outside of their advisors' office waiting for their turn for one-on-one advising. Additionally, some advisors opt for small group advising sessions with their advisees. Importantly, this is the first interaction most students have with other individuals at university.

Second, students who share the same advisor are more likely to get similar advice on course sequence and selection. As a result, another potential channel for peer group interactions is inside the classroom. Before moving on to our main results, we first provide evidence of advisor group peer interactions. Specifically, while we do not have data that can speak to interactions outside the classroom, we are able to empirically test for sorting within courses at AUB, specifically with respect to peer school background. This grouping may be due to the formation of friendships while in the same peer group or advisors pushing their students to take similar classes. We provide formal evidence of classroom sorting by showing that students exposed to a higher proportion of secular or Islamic or Christian school peers within their advisor group are more likely to take courses with secular or Islamic or Christian students from that same peer group respectively. Formally, we run the following regression:

$$Y_{icdat} = \alpha_0 + \alpha_1 \text{Christschool}_i + \alpha_2 \text{Islamschool}_i + \alpha_3 \text{PropChrist}_{at} + \alpha_4 \text{PropIslam}_{at} \\ + D'_{dt}\beta + X'_i\gamma + A'_a\delta + \lambda_d + \sigma_t + \epsilon_{icdat} \quad (2)$$

where Y_{icdat} are our three outcomes of interest representing the proportion of (1) Christian, (2) Muslim or (3) secular students in student i 's advisor group a who take the same class c during the first two semesters at university.¹¹ Additionally, we define a class as all sections of a course taught by instructors of the same gender during a specific semester; for example all sections of Calculus III taught by female instructors in the Spring Term.¹² α_3 and α_4 are our main parameters of interest representing the effects of a change in the proportion of Christian and Muslim students

¹¹For example, if 3 Islamic peers from a students' advisor group take a class with that student and that class contains 100 students, then this proportion is defined as 0.03 for the student.

¹²We do so because the only identifying information we have on course sections is instructor gender. We view this definition of classrooms as largely innocuous since most students who wish to take classes with their friends are not always able to enroll in the exact same section due to course timing conflicts as well as capacity constraints.

in peer group a in year t relative to secular peers respectively. Additionally, to ensure that the effects we find are not driven by the mechanical correlation of having more students from a certain background in your department in a given year, we include D'_{dt} , a vector representing the leave-one out proportion of Islamic and Christian students within a department-year. We include department fixed effects λ_d throughout since randomization occurs at the departmental level and an academic year fixed effect σ_t to control for unobserved changes across years. Standard errors are clustered at the peer group-year level throughout to account for correlations among students exposed to the same advisor and peer group in the same year.

Results from this exercise are summarized in Table 4. Estimates from column (1) indicate that going from all secular peers to all Islamic peers increases the likelihood of taking a class with Islamic students from that same peer group by 7.8 percentage points, regardless of students' school background type. Importantly, we find no statistical link between having more Christian peers in an advisor group and the likelihood of taking classes with Islamic peers from that same advisor group. Results reported in column (2) further indicate student sorting based on peer school background. Students exposed to only Christian school peers, as opposed to secular school peers, are 8.8 percentage points more likely to take classes with Christian school peers from that advisor group. However, we find no statistically significant effect on the likelihood of taking courses with Christian peers when students are exposed to a higher proportion of Islamic relative to secular advisor group peers. Finally, in column (3), we show that the proportion of Islamic and Christian peers—relative to secular peers—in a student's advisor group are negatively related to the probability of having an increased proportion of secular students from the same advisor group in class. Put together, findings from this exercise confirm that students within the same advisor group are more likely to sort into the same classes based on school background type.¹³

One concern with the above analysis may be that we are miss-attributing advisor group peers to the same classroom as a result of not observing full information on class sections. For example, if there are three sections for a specific class and all are taught by only female or male instructors, then students in all three sections would be considered classroom peers using our definition. In such cases, our above analysis may wrongly attribute this to evidence of classroom peer sorting,

¹³Additionally, we show that these findings do not differ by student school type. Appendix Table A1 reports heterogeneous results by student school background and findings are similar.

when in reality these peers may not have ever been in the same classroom.¹⁴ To alleviate concerns over whether the course sorting behavior we document is driven by this miss-allocation issue, we conduct two robustness checks.

First, in the top panel of Appendix Table A2, we rerun our analysis after dropping all cases where we cannot identify at least two sections for a given course. Second, in the bottom panel, we look at upper-year courses (as opposed to only first-year courses) since they generally have a maximum of one or two sections—rendering this issue less severe.¹⁵ We find that our estimates on classroom peer interactions are robust to restricting the data to courses where we can identify more than one section, and to using data from only upper-year courses.

5.3 First-Year GPA

We begin by presenting findings on how university students’ first-year GPA is differentially affected by exposure to similar versus dissimilar proportions of religious school background peers. Column 1 of Table 5 shows estimates from our most basic specification that only includes the main parameters of interest, department fixed effects, year or cohort fixed effects and department specific linear time trends from equation (1). We summarize these results separately for our three groups of students. In particular, rows 1 and 2 of Table 5 present effects for students from secular high schools who match with similar peers relative to Christian and Islamic school peers respectively. Rows 3 and 4 capture effects for students from Christian high schools who match with similar peers relative to secular and Islamic school peers respectively. Finally, the last 2 rows present effects for students from Islamic high schools when matched with similar Islamic students relative to secular and Christian school peers respectively. Recall, all proportion measures are standardized throughout and as such, treatment should be interpreted as a one standard deviation increase in exposure to one set of peers relative to a one standard deviation increase in another set of peers.

Results from the first two rows of column 1 indicate that for students coming from secular high schools, being matched to a one standard deviation higher proportion of secular versus Islamic peers

¹⁴We must note that this miss-allocation issue is different than the mechanical association of having only one section for a class and many students in the same advisor group all pushed into that same class. Specifically, the latter scenario would still be a viable channel for interaction and evidence of a first stage.

¹⁵Students in their junior and senior years have more flexibility in terms of choosing their courses than sophomores—who typically have to take a specific number of required courses. As a result, there are fewer sections per course during the junior and senior years.

improves first year university performance by 3.6 percent of a standard deviation. However, we find no evidence of GPA effects when the counterfactual peers are from Christian high schools. The GPA increase we document for secular student matching is roughly comparable to estimates found in gender peer effects studies. For instance, Lavy and Schlosser (2011) find that a one standard deviation increase in the proportion of 5th grade elementary female students increases average test scores of girls and boys by 2.7 and 2.4 percent of a standard deviation respectively.

For students who attended Christian high schools, we document that being matched to a higher proportion of Christian peers at university, relative to secular peers, has a small (-0.005) and statistically insignificant effect on performance. Similarly, we find no statistically significant effect on performance when these students are exposed to more Christian versus Islamic university peers, though this estimate is not economically small (0.026).

Finally, for students coming from Islamic schools—all of whom are Muslim students—being matched to a one standard deviation higher proportion of Islamic as opposed to Christian peers negatively affects grade performance by 9.5 percent of a standard deviation. This estimate is close to the 6.6 percent of a SD reduction in test scores found in Carrell & Hoekstra (2010) when boys are exposed to a one standard deviation increase in disruptive male peers. We also find negative, but statistically insignificant, effects for Islamic students exposed to more Islamic versus secular peers at university, indicating that Muslim students realize academic gains when paired with peers from drastically different school environments.

We test the robustness of our findings to the inclusion of various student and advisor level controls. These results are presented in column 2 of Table 5, where controls include student gender, SAT scores, legacy status as well as advisor gender and academic rank. Our results are robust to the inclusion of these controls, in line with the random assignment of students to peer groups. Indeed, all significant coefficients reported in column 1 remain so. Additionally, the negative but marginally insignificant coefficient we found on Islamic versus secular peers for students from Islamic high schools is now statistically significant at the 10 percent level. Finally, column 3 of Table 5 presents coefficients from a specification that includes department-year fixed effects and results remain largely similar. Put together, our findings indicate that university students from secular high schools benefit from matching with similar peers, whereas those who attended Islamic high schools do not benefit from matching with similar peers; rather they gain from mixing with

dissimilar or diverse peers, particularly those who attended Christian high schools—which tend to be more conservative than Secular high schools.

5.4 Longer-Run Academic Effects: Attrition, Graduation and Final GPA

Next, we examine whether religious school peer match affects students in ways that extend beyond first-year grade improvements. Specifically, we look at how first-year attrition, four and six-year graduation rates as well as GPA at graduation are impacted. These results are summarized in Table 6 where we include department and year fixed effects, department specific linear time trends as well as student and advisor controls in all regressions. We begin by looking at whether peer match affects first-year dropout rates differentially. Estimates reported in column 1 of Table 6 indicate that being matched to a similar or dissimilar group of peers has no significant impact on the likelihood of first-year college dropout, except for secular background students matched to a higher proportion of secular versus Christian school background peers. Importantly, most of the insignificant estimates are reasonably precise.

In column 2 of Table 6, we present estimates on the likelihood of on-time graduation (4-year graduation). We find that for students coming from secular high schools, being matched to a higher proportion of peers coming from secular versus Islamic schools increases their likelihood of 4-year graduation by 2.6 percentage points, significant at the 10 percent level. Interestingly, these are the same group of students who witnessed positive grade improvements in first year GPA. We find no evidence of peer effects for students coming from Christian high schools. However, we do find suggestive evidence of a negative impact on 4-year graduation rates for Islamic students when matched to a similar as opposed to diverse peer group—though these estimates are not statistically significant at conventional levels. Overall, precision is reduced when looking at 4-year graduation rates, most likely due to reduced sample size, but the direction of coefficients are in line with those found on first year GPA.¹⁶

We next investigate whether overall graduation rates are affected by looking at 6-year graduation likelihood as an outcome of interest. These results, presented in column 3 of Table 6, indicate no statistically significant impact from peer match on overall graduation rates for all students.

¹⁶Recall, for graduation outcomes, we look at the sample of students entering AUB for the years 2001-2002 to 2012-2013 as to be able to accurately assign 4 and 6-year graduation rates.

However, the degree of imprecision, most likely due to reduced sample size, prevents us from making any definitive conclusions on overall graduation. Finally, we look at graduating or total GPA as a potential outcome of interest to further understand if the documented effects on first year GPA extend to longer term grade improvements.¹⁷ Strikingly, we find that grade improvements persist in the long run as we document comparable increases in graduation GPA which mirror those found on first-year GPA. Indeed, estimates from column 4 indicate that students from secular high schools have a higher graduating GPA when matched with peers from similar backgrounds, whereas those from Islamic high schools only benefit from matching with dissimilar or diverse peers, particularly students who attended Christian high schools (0.097). Overall, results from this section indicate that the impacts of religious school peer match are reflected primarily in terms of short and long term grade improvements and partially in terms of on-time graduation, though the latter effects are imprecisely estimated.

5.5 Instructor Religion

Having analyzed academic effects, we now turn to behavioral outcomes. In particular, we check whether religious school peer match impacts students' likelihood of taking classes with Muslim or Christian instructors. To do so, we first construct a database of teachers' religion based on their full names. We acquired instructor names through the registrar's office based on publicly available information on all final exams given at AUB for the academic years 2011-2012 to 2018-2019.¹⁸ Importantly, the final exam schedules contain information on instructors' full names as well as course names and semester-year. We identify instructor religion based on a two step process. As a first step, we cross-reference all names in our data with a database of pre-existing common names in Lebanon linked to their exact religion. This enables us to match around 40 percent of instructors to a particular religion, i.e. around 600 of the initial 1500 names found in our data. For the remaining names, we made use of four independent individuals from different sects and areas of Lebanon. In particular, we read out all remaining instructor names and had them respond with three choices: (a) Muslim, (b) Christian or (c) ambiguous. We matched instructor religion to one

¹⁷One caveat with interpreting these regressions is that they are conditional on graduating from university, i.e. a potential outcome variable. However, given that we find no statistically significant impact on overall graduation, then this is most likely an innocuous restriction.

¹⁸No documented records exist for the pre-2011 period. Additionally, records were lost for the 2013-2014 fall semester and the 2014-2015 fall semester.

of these three choices when there was consensus among all four individuals surveyed. For cases where no consensus was reached, we list instructor religion as ambiguous. Using this technique, we identify approximately 40 percent of instructors as Christian, 36 percent as Muslim and 24 percent as ambiguous or hard to tell.

We then match the newly constructed instructor religion identifier to our original data using course name, instructor gender and semester-year. For our analysis, we further restrict the data to faculty teaching second and third year courses.¹⁹ This leaves us with a final sample of 45,435 identified course level observations for 7,202 students spanning the academic years 2011-2012 to 2017-2018.²⁰

Table 7 summarizes findings from this exercise using two different specifications. Specifically, columns 1 through 3 of Table 7 show estimates on the likelihood of taking a course with a Muslim, Christian or religiously ambiguous teacher that includes the main parameters of interest, department fixed effects, year or cohort fixed effects, student and advisor controls and department specific linear time trends. We find that peer match has no effect on instructor religion for secular students, regardless of the counterfactual peer composition. Additionally, we find no strong evidence that religious high school peer composition affects students from Christian high schools. Strikingly, though, we find that peer match has an affect on Islamic students' instructor choice. Particularly, in row 6 of Table 7, we show that being matched to a one standard deviation higher proportion of Islamic as opposed to Christian peers reduces the likelihood that Islamic students take classes with Muslim teachers by 1.9 percentage points. This reduction does not lead to a statistically significant increase in the likelihood of taking courses with a Christian (0.005) or religiously ambiguous teacher (0.014). This result indicates that Islamic students matched to peers from Christian high schools, as opposed to Islamic peers, are more likely to choose a Muslim teacher in their second and third years in college. Estimates presented in columns 4 through 6 show that these results are robust to the inclusion of department-by-year fixed effects. Indeed, all statistically insignificant effects

¹⁹We exclude first year coursework since the first semester registration occurs before students meet with their peers. We also exclude second semester courses, since the registration period for that semester occurs only a month after the beginning of the academic year, precluding students from having enough time to interact properly with their peers before making registration decisions. Finally, we exclude courses taken in the 4th year and beyond since most majors require three years to completion.

²⁰Some courses remain unmatched due to missing information on instructor name or missing instructor data for two academic terms (Fall 2013-2014 and Fall 2014-2015). We check whether the likelihood of having a missing instructor religion identifier is correlated with treatment and we find no evidence of this.

remain so except for the estimate on Islamic students being matched to Islamic versus Christian peers (coefficient of -0.009) in row 5 of column 4, which is now significant at the 10 percent level.

As a robustness check, we show that these effects do not exist in settings where we would expect them not to. In particular, we find that first-year course instructor religion is unaffected by peer group composition. Indeed, first semester course registration occurs before students interact with their peers and second semester registration occurs one month into the start of the new academic year; before students have any prolonged and meaningful contact with students. Appendix Table A3 presents findings from this exercise. We find no statistically significant peer match effects on first year teacher religion for any student group. If anything, the coefficient for Islamic student peer match relative to Christian school peers is the opposite sign of what we document for the second and third year.

6 Discussion

6.1 Possible Mechanisms

So far, our results indicate that secular students' academic performance deteriorates when they are matched to Islamic rather than secular peers, and no significant effects are detected on their instructor choice. We also find that Islamic students' performance improves when they are matched to Christian rather than Islamic peers, but they are also more likely to take courses with Muslim instructors when they are exposed to dissimilar peers. These contrasting results are in line with previous studies showing that the impact of diversity on learning outcomes often runs in the opposite direction to its effect on behavioral outcomes. For example, Rao (2019) finds that in India, exposure to poor students causes rich students to be more prosocial and less likely to discriminate, but harms their performance on English language tests. Similarly, Corno, La Ferrara and Burns (2019) document that inter-racial contact increases white students' friendships with black peers but lowers their GPA.

A natural question that arises is whether we can attribute these peer effects to cultural and religious aspects. Recall that our definition of a peer is based on the type of high school that he/she attended—i.e., Islamic, Christian or secular school. It is thus possible that high school characteristics other than their religious focus or diversity are driving our effects.

We start by checking whether peer quality is driving the documented findings on first-year GPA and instructor religion. Indeed, university students who attended Christian high schools have higher mathematics SAT scores than secular or Islamic high school students, as documented in Table 1. Accordingly, we check whether the average quality of peers in an advisor group is correlated with treatment and outcome and thus driving our main findings. We do so by controlling for average peer group SAT math scores, separately for each type of student.²¹ Results presented in column (1) of Table 8 indicate that the inclusion of peer quality in regression equation (1) does not change estimates on first-year GPA in a meaningful way. Importantly, our previously documented effects on first-year GPA remain statistically significant and similar in magnitude. Specifically, we find that secular students experience a 3.7 percent of a standard deviation improvement in GPA when matched with secular as opposed to Islamic school background peers. Additionally, Islamic students matched to a one standard deviation higher proportion of Islamic, relative to Christian, peers experience a 0.11 SD decrease in first year GPA. In columns (1) through (3) of Table 9, we show that the addition of this peer quality control has no meaningful impact on the documented finding that students from Islamic schools are less likely (-0.019) to take classes with Muslim teachers when matched with similar as opposed to Christian school peers.

Next, we examine whether peer gender composition is driving our findings. For example, perhaps an increase in Islamic peers is correlated with the likelihood of having more male peers which may be driving our effects on GPA and instructor choice. We test for this, in column 2 of Table 8 and columns (4) through (6) of Table 9, by adding separate controls for the proportion of female peers in students' advisor groups. Our findings on first year GPA and instructor religion are robust to the addition of these controls indicating that our effects are not driven by changes in peer gender composition.

To investigate further channels, we hand collected data on language of instruction and yearly tuition from each high school's website. In cases where this information was not publicly available, we contacted schools directly. We first explore whether difference in schools' language of instruction contribute to our results. Recall, schools in Lebanon teach in either Arabic and English or Arabic and French.²² As a result, if Christian or secular schools are more likely to teach in French, then

²¹Specifically, we do so by running regression equation (1) with the addition of the following terms: $\gamma_1 \text{peerQuality}_a + \gamma_2 \text{Islamschool}_i * \text{PeerQuality}_a + \gamma_3 \text{Christschool}_i * \text{PeerQuality}_a$

²²For schools teaching in Arabic and English, French is taught as a third language but at a lower level. Similarly,

perhaps our effects may be driven by language. To test for this, we first collect data on the main language of instruction for each school (other than Arabic). We then construct a dummy that is equal to 1 if a school teaches in French and 0 otherwise (English). Finally, we separately control for the proportion of peers who were taught in French within each advisor group and re-run equation (1). Results presented in Tables 8 and 9 indicate that accounting for peer language differences across advisor groups has no effect on our main findings.

Another important dimension that could be correlated with school type is socioeconomic status (SES). For example, if Christian schools contain a higher proportion of students from wealthier backgrounds, then this would mechanically mean that individuals exposed to a higher proportion of students from Christian schools would be exposed to wealthier peers.²³ We next look at whether the average tuition of peer groups affects findings.²⁴ Results presented in column (4) of Table 8 and columns (10) through (12) of Table 9 are in line with those found in previous columns and indicate that our main effects are not driven by peers' socioeconomic status, as proxied by school tuition.

Finally, an important advantage of our setting is that all high school students in Lebanon must follow a similar curriculum, for the most part. That is mainly because students must sit for the national Lebanese Baccalaureate exit exam at the end of high school. As a result, we can additionally rule out major curriculum differences across school types as a driving factor. Put together, findings from this section indicate that our documented findings on students' first year GPA and instructor choice are not driven by observable differences in peer ability, gender composition, language or socioeconomic status. This suggests that religious school background peer match is mainly capturing the effects of religious culture or attitudes.

for those teaching in Arabic and French, English is taught as a third language but at a lower level.

²³We must note though that AUB is an expensive private university that is comprised of students who are, for the most part, significantly wealthier than most of the Lebanese population.

²⁴For schools with no website, we emailed or contacted administrators to acquire information on their tuition. However, we were not able to get tuition for all schools. To account for missing tuition, we reran our specification using dummy variables as opposed to a continuous variable for tuition. Specifically, we created a dummy variable equal to one for schools with a tuition greater than 9,000,000 LL or \$6000 (median) and zero for those below. Additionally we created another dummy for missing tuition. We then control for the proportion of both dummy variables within the same advisor group, interacted with students' school background. The results remain the same suggesting that missing tuition is not creating any bias.

6.2 Heterogeneous Effects Based on Diversity of High School’s Location

To further corroborate that our findings are driven by the religious or cultural aspect of the peer interaction, we present heterogeneous effects based on the level of diversity in students’ high school locations. To measure diversity, we follow Bazzi et al. (2019) and use a combination of two indices which reflect the degrees of fractionalization and polarization in different districts. Specifically, we first measure the level of fractionalization in high schools’ locations using the Herfindahl index—i.e., the probability that two residents are from different religions. The fractionalization index F is defined as follows:

$$F = 1 - \sum_k S_k^2 \quad (3)$$

where S represents the share of the religious group k residing in a specific area.

We also define a polarization index P as follows:

$$P = 4 \sum_k S_k^2 (1 - S_k) \quad (4)$$

P increases as the shares of different religious groups in an area become more equal in size (or get closer to a symmetric bimodal distribution). Data on residents’ religion by location are not available.²⁵ Instead, we collect data on the religious composition of registered voters by electoral district, which was released by the Ministry of Interior and Municipalities following the 2011 parliamentary elections.²⁶ Therefore, S in our setting is the share of registered voters in an electoral district that belong to religious group k .²⁷ Figure A1 plots the fractionalization index F as a function of the polarization index P for all electoral districts. The depicted relationship between F and P is similar to the one reported in Montalvo and Reynal-Querol (2005).

We report heterogeneous effects based on two different combinations of F and P . We first look at districts with levels of P and F that are below the median of these indices’ distributions—i.e., religiously homogeneous districts. An example of such districts is Nabatieh where 95.37% of registered voters are Shi’a Muslims resulting in F and P that are in the bottom 25th percentile of each

²⁵Due to sensitivities between different religions, the last official Lebanese census was conducted in 1932.

²⁶Lebanon is divided into 8 governorates (or *muhafazah*) and 24 districts (or *Kadaa*). In 2011, there were 26 electoral districts that roughly correspond to the *Kadaa*.

²⁷When constructing F and P , we consider each sect to be a separate religious group k . The Christian sects are Maronites, Greek Orthodox, Greek Catholics, Armenian Orthodox, Armenian Catholics, Evangelicals and other christian minorities. Muslims comprise the Sunni, Shi’a, Alawite and Druze sects.

of these indices' distributions. We rerun our main analysis using the sample of students whose high schools are located in homogenous districts. Column (1) of Table 10 reveals that when we restrict our sample to high schools that are located in districts with F and P that are below their respective median, the only significant effects are for Islamic students. Specifically, Islamic students whose high schools are in low F and P districts, experience a 17.3 percent of a standard deviation drop in the first-year GPA when exposed to a one standard deviation higher proportion of Islamic versus Christian peers.

We then look at first-year GPA effects for students whose high schools are located in diverse districts—i.e., with F and P above the median. Column (2) of Table 10 shows that the improvement in secular students' performance from interacting with similar versus Islamic peers is concentrated in these districts (4.8 percent of a standard deviation increase). We find that Christian students from diverse districts also increase their academic performance by 11.3 percent of a standard deviation when matched to Christian rather than Islamic peers. It is unsurprising that the results for Christian students are in line with those for secular students, as some Christian schools located in diverse areas enroll both Christian and Muslim students and the culture at these schools is close to that in Secular schools.

We also examine how instructor choice effects vary with the religious diversity of high schools' districts in Table 11. Columns (1) to (3) show that Islamic students whose high schools are in homogeneous districts are driving the overall impacts on Islamic students' instructor choice. Specifically, Islamic students in homogeneous districts are 4.8 and 4.7 percentage points more likely to take courses with Muslim teachers due to being matched to more secular and Christian peers (relative to Islamic peers), respectively. When looking at high schools located in diverse districts in columns (4) to (6), we find no significant effects on instructor choice for students from all different high school types.

In summary, results from our heterogeneity analysis indicate that effects on Islamic students' academic performance and instructor choice are driven by those whose high schools are located in homogeneous districts. In contrast, overall impacts on secular students' GPA are concentrated among those whose high schools are located in diverse districts. These findings are consistent with the idea that the religious diversity of one's peers is driving our effects on both academic performance and behavior.

7 Conclusion

In this paper, we examine how peers from different religious school backgrounds impact students' behavior and learning outcomes. We exploit the random assignment of students to academic advisors at the American University of Beirut, a secular 4-year college in Lebanon. We define a peer group as students who are assigned to the same advisor. Students with the same advisor enroll in similar classes which facilitates their interactions. We find that students coming from secular high schools have a higher first-year and graduating GPA when they are matched to similar rather than Islamic peers, but exhibit no changes in their social behavior. Students from Islamic schools benefit academically from interacting with Christian peers. However, exposure to dissimilar peers makes them more likely to enroll in classes with Muslim teachers.

Our results indicate that inter-religious contact strengthens within-group solidarity of the minority group—that is, Islamic students. One thing to bear in mind is that we are likely documenting the impact of Islamic students' *first* contact with individuals from other religious backgrounds. Indeed, in addition to Islamic schools being religiously homogeneous, Lebanon is residentially segregated along religious lines. As a result, AUB provides for an environment in which a significant portion of students are exposed to individuals from different religious backgrounds for the first time in their lives. It is possible that repeated inter-religious contact may dampen the initial negative effects on Islamic students' behavior.

Our findings nonetheless highlight that the degree of diversity in individuals' environments is important for predicting the impacts of intergroup contact. Indeed, in our setting, students from secular and Christian high schools are likely exposed to individuals from other religions prior to the peer interaction, which we show has no significant impact on their instructor choice. In contrast, Islamic students—the only group for which we document effects on instructor religion—come from religiously homogeneous environments.

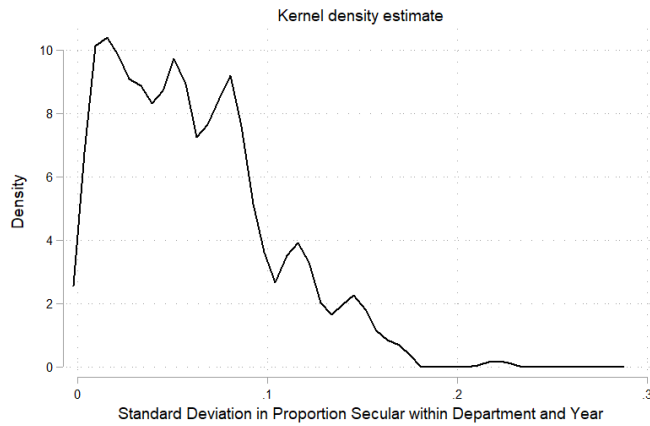
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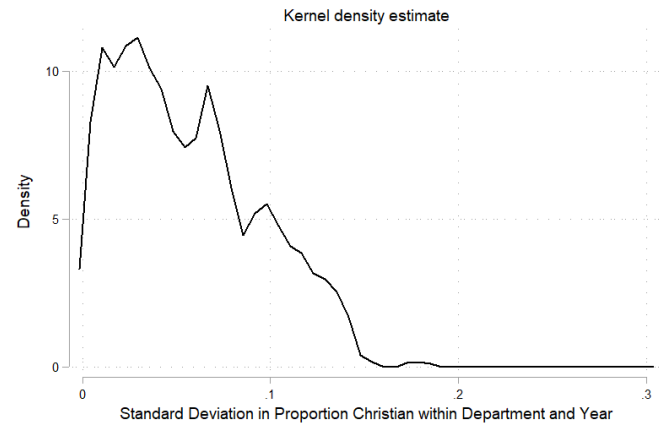
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A Figures

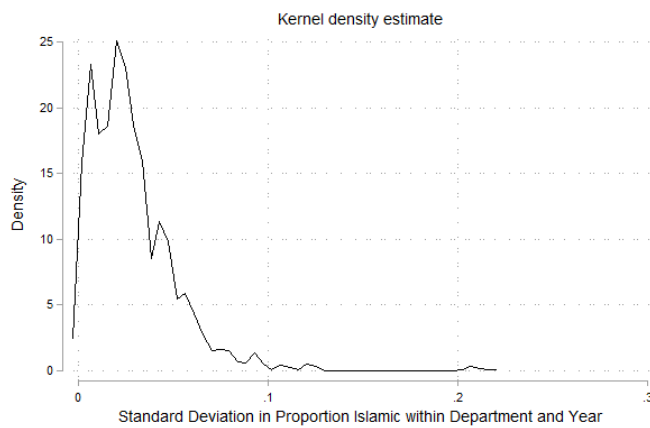
Figure 1: Standard Deviation in Proportion of Religious School Peers within University Department and Year



(a) Standard Deviation in Proportion of Secular Peers within Department and Year



(b) Standard Deviation in Proportion of Secular Peers within Department and Year



(c) Standard Deviation in Proportion of Islamic Peers within Department and Year

Notes: Each figure plots the distribution of the within department and year standard deviation in the proportion of advisor group peers from a given religious school background.

B Tables

Table 1: Summary Statistics

	(1) All Schools	(2) Secular School	(3) Christian School	(4) Islamic School
A. Student Level Covariates				
Female	0.442 (0.497)	0.452 (0.498)	0.429 (0.495)	0.433 (0.496)
Math SAT	649.707 (72.524)	646.133 (71.742)	657.546 (73.076)	640.281 (72.558)
Verbal SAT	536.404 (112.554)	540.615 (109.335)	538.669 (113.369)	496.050 (123.249)
Legacy Status	0.244 (0.429)	0.273 (0.445)	0.206 (0.405)	0.196 (0.397)
B. Student Level Outcomes				
First-Year GPA	77.722 (7.994)	77.452 (8.051)	78.200 (7.770)	77.516 (8.468)
Dropout	0.163 (0.370)	0.171 (0.376)	0.152 (0.359)	0.166 (0.372)
Graduate in 4 years	0.539 (0.499)	0.535 (0.499)	0.571 (0.495)	0.409 (0.492)
Graduate in 6 Years	0.777 (0.416)	0.775 (0.417)	0.787 (0.409)	0.738 (0.440)
Graduation GPA	79.732 (5.922)	79.556 (5.969)	80.063 (5.858)	79.372 (5.831)
C. Peer Group Level Characteristics				
Female Advisor	0.300 (0.458)	0.311 (0.463)	0.288 (0.453)	0.285 (0.452)
Tenured Advisor	0.335 (0.472)	0.336 (0.472)	0.324 (0.468)	0.372 (0.484)
Peer Group Size	63.299 (56.865)	62.904 (54.658)	65.771 (62.441)	55.062 (43.966)
Proportion Secular School Peers	0.593 (0.095)	0.599 (0.095)	0.587 (0.093)	0.588 (0.105)
Proportion Christian School Peers	0.334 (0.088)	0.330 (0.087)	0.341 (0.087)	0.334 (0.096)
Proportion Islamic School Peers	0.072 (0.046)	0.071 (0.045)	0.073 (0.046)	0.077 (0.056)
<i>N</i>	12,590	7,143	4,452	995

Notes: Table contains the means of listed variables with the standard deviation in parentheses. The number of observations for graduation outcomes is slightly lower as we have to restrict our sample to students who first enrolled in AUB prior to the academic year 2013-14. The proportion of peers from a specific religious background is calculated for each student by using a leave-one out method.

Table 2: Random Assignment Check

	(1) Christian School	(2) Muslim School	(3) Secular School	(4) Math SAT	(5) Verbal SAT
Dependent Variable					
Proportion Christian	-0.00112 (0.00130)	0.00405 (0.00232)	-0.00016 (0.00127)	0.00002 (0.00002)	0.000003 (0.00002)
Proportion Islamic	0.00154** (0.00063)	-0.00240 (0.00165)	-0.00072 (0.00064)	-0.000006 (0.000007)	-0.000004 (0.000007)
Proportion Secular	-0.00043 (0.00142)	-0.00157 (0.00241)	0.00087 (0.00150)	-0.00002 (0.00002)	0.000008 (0.00002)
<i>N</i>	12,590	12,590	12,590	12,590	12,590

Notes: Each estimate represents the results of a separate regression. Standard errors in parentheses are clustered at the peer-group level. All regression include department and year fixed effects. Following the Guryan, Kroft, and Notowidigdo (2009) correction, we control for the leave-out mean of the proportion of peers across cohorts within the department and year columns 1-3. *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$.

Table 3: Random Assignment Test

	(1) Math SAT Empirical P-Value	(2) Verbal SAT Empirical P-Value	(3) Secular School Empirical P-Value	(4) Christian School Empirical P-Value	(5) Islam School Empirical P-Value
A. Test for Student Characteristics					
χ^2 goodness of fit test (no. failed/total tests)	1/178	1/178	0/180	1/180	0/155
B. Test for Advisor Characteristics					
Female Advisor	-0.003 (0.034)	0.002 (0.033)	-0.035 (0.029)	0.001 (0.027)	0.029 (0.030)
Associate/Full Professor	-0.007 (0.030)	0.024 (0.030)	0.011 (0.026)	-0.017 (0.027)	-0.028 (0.028)
<i>N</i>	804	804	804	804	804

Notes: Standard errors in parentheses are clustered at the advisor level. All regressions include year and department fixed effects. The empirical p-value of each advisor represents the proportion of the 10,000 simulated groups of students with a summed value less than that of the observed group. Sample includes students from academic years 2002-2003 till 2016-2017. The χ^2 goodness of fit test results indicate the number of tests of the uniformity of the distribution of p-values that failed at the 5% level. The reduced number of test for Islam School is due to the fact some departments do not have any students from islamic schools in certain years.*** p < 0.01 ** p < 0.05 * p < 0.1.

Table 4: First Year Course-Taking Behavior

	(1) <i>Prop. Muslims from Advisor Peer Group in Class</i>	(2) <i>Prop. Christians from Advisor Peer Group in Class</i>	(3) <i>Prop. Secular from Advisor Peer Group in Class</i>
Proportion Islamic school peers	0.078*** (0.009)	-0.035 (0.029)	-0.122*** (0.036)
Proportion Christian school peers	0.003 (0.0025)	0.088*** (0.015)	-0.056*** (0.020)
Year Fixed Effects	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes
Student Controls	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes
Department Level Peer Proportion	Yes	Yes	Yes
<i>N</i>	120,790	120,790	120,790

Notes: Each column represents a different course-level regression. Sample includes all first time entering students from the academic years 2002 to 2017. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Standard errors are clustered by advisor-year (peer group) and reported in parentheses.

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

Table 5: Effect of Peer Match on First Year GPA

	(1) <i>First Year GPA</i>	(2) <i>First Year GPA</i>	(3) <i>First Year GPA</i>
Peer match for students from Secular schools			
Secular relative to Christian school peers	-0.015 (0.015)	0.004 (0.015)	-0.015 (0.016)
Secular relative to Islamic school peers	0.036*** (0.013)	0.037*** (0.013)	0.030** (0.014)
Peer match for students from Christian schools			
Christian relative to Secular school peers	-0.005 (0.019)	-0.018 (0.017)	0.001 (0.018)
Christian relative to Islamic school peers	0.026 (0.022)	0.016 (0.020)	0.032 (0.022)
Peer match for students from Islamic schools			
Islamic relative to Secular school peers	-0.033 (0.027)	-0.047* (0.028)	-0.041 (0.027)
Islamic relative to Christian school peers	-0.095** (0.039)	-0.100*** (0.038)	-0.099*** (0.036)
Department Fixed Effects	Yes	Yes	No
Year Fixed Effects	Yes	Yes	No
Department Linear Trend	Yes	Yes	No
Department-Year Fixed Effects	No	No	Yes
Student Controls	No	Yes	Yes
Advisor Controls	No	Yes	Yes
<i>N</i>	12,590	12,590	12,590

Notes: Sample includes all first time entering students from the academic years 2002 to 2017. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Both treatment and outcome are standardized. Standard errors are clustered by advisor-year (peer group) and reported in parentheses.

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

Table 6: Longer Term Academic Outcomes

	(1) <i>Dropout</i>	(2) <i>4 Year Graduation</i>	(3) <i>6 Year Graduation</i>	(4) <i>Graduation GPA</i>
Peer match for students from Secular schools				
Secular relative to Christian school peers	0.014* (0.008)	-0.024 (0.017)	-0.021 (0.016)	0.033* (0.017)
Secular relative to Islamic school peers	0.0002 (0.006)	0.026* (0.016)	0.017 (0.015)	0.045*** (0.014)
Peer match for students from Christian schools				
Christian relative to Secular school peers	-0.005 (0.008)	-0.008 (0.020)	-0.010 (0.017)	-0.023 (0.019)
Christian relative to Islamic school peers	-0.007 (0.010)	0.004 (0.023)	0.007 (0.020)	0.007 (0.024)
Peer match for students from Islamic schools				
Islamic relative to Secular school peers	-0.014 (0.010)	-0.026 (0.025)	-0.006 (0.022)	-0.053* (0.029)
Islamic relative to Christian school peers	-0.003 (0.012)	-0.042 (0.037)	0.006 (0.031)	-0.097** (0.043)
Year Fixed Effects	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes
Department Linear Trend	Yes	Yes	Yes	Yes
Student Controls	Yes	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes	Yes
<i>N</i>	12,590	7,613	7,613	6,110

Notes: Sample includes all first time entering students from the academic years 2002 to 2017 for dropout and 2002 to 2012 for graduation outcomes. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Both treatment and outcome are standardized. Standard errors are clustered by advisor-year (peer group) and reported in parentheses.

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

Table 7: Effect of Peer Match on Teacher Religion

	Muslim Teacher (1)	Christian Teacher (2)	Ambiguous (3)	Muslim Teacher (4)	Christian Teacher (5)	Ambiguous (6)
Peer match for students from Secular schools						
Secular relative to Christian school peers	0.002 (0.004)	-0.006 (0.004)	0.004 (0.003)	0.003 (0.004)	-0.004 (0.004)	0.001 (0.003)
Secular relative to Islamic school peers	0.001 (0.003)	0.002 (0.003)	-0.004 (0.003)	0.000 (0.003)	-0.001 (0.003)	0.001 (0.003)
Peer match for students from Christian schools						
Christian relative to Secular school peers	0.001 (0.004)	0.001 (0.005)	-0.002 (0.004)	0.001 (0.005)	-0.004 (0.005)	0.003 (0.004)
Christian relative to Islamic school peers	0.007 (0.005)	-0.001 (0.006)	-0.006 (0.005)	0.007 (0.005)	-0.009 (0.006)	0.001 (0.005)
Peer match for students from Islamic schools						
Islamic relative to Secular school peers	-0.008 (0.005)	0.003 (0.005)	0.005 (0.006)	-0.009* (0.005)	0.001 (0.005)	0.008 (0.006)
Islamic relative to Christian school peer	-0.019** (0.009)	0.005 (0.010)	0.014 (0.009)	-0.019** (0.009)	0.007 (0.010)	0.011 (0.009)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Department Linear Trend	Yes	Yes	Yes	No	No	No
Student Controls	Yes	Yes	Yes	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes	Yes	Yes	Yes
Department-by-Year Fixed Effects	No	No	No	Yes	Yes	Yes
<i>N</i>	45,435	45,435	45,435	45,435	45,435	45,435

Notes: Sample includes course level data on students in their second and third year during the academic years 2011 to 2017. The outcome of interest is class instructor religion. Standard errors are clustered by individual (due to repeated observations) and reported in parentheses.

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

Table 8: Mechanisms for First-year GPA

	(1) <i>First Year GPA</i>	(2) <i>First Year GPA</i>	(3) <i>First Year GPA</i>	(4) <i>First Year GPA</i>
Peer match for students from Secular schools				
Secular relative to Christian school peers	0.009 (0.016)	0.008 (0.016)	-0.002 (0.018)	0.001 (0.018)
Secular relative to Islamic school peers	0.037*** (0.013)	0.034*** (0.013)	0.045*** (0.014)	0.049*** (0.014)
Peer match for students from Christian schools				
Christian relative to Secular school peers	-0.018 (0.017)	-0.023 (0.017)	-0.018 (0.019)	-0.013 (0.020)
Christian relative to Islamic school peers	0.015 (0.021)	0.010 (0.021)	0.013 (0.024)	0.015 (0.024)
Peer match for students from Islamic schools				
Islamic relative to Secular school peers	-0.042 (0.027)	-0.041 (0.027)	-0.011 (0.029)	-0.002 (0.030)
Islamic relative to Christian school peers	-0.110*** (0.038)	-0.108** (0.038)	-0.103** (0.050)	-0.110** (0.050)
Department and Year Fixed Effects	Yes	Yes	Yes	Yes
Student and Advisor Controls	Yes	Yes	Yes	Yes
Department Linear Trend	Yes	Yes	Yes	Yes
Peer Quality	Yes	Yes	Yes	Yes
Peer Gender	No	Yes	Yes	Yes
Peer Language	No	No	Yes	Yes
Peer Socioeconomic Status	No	No	No	Yes
<i>N</i>	12,590	12,590	11,558	11,537

Notes: Sample includes all first time entering students from the academic years 2002 to 2017. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Both treatment and outcome are standardized. Standard errors are clustered by advisor-year (peer group) and reported in parentheses.

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

Table 9: Mechanisms for Teacher Religion

	Add Peer Quality			Add Peer Gender			Add Peer Language			Add Peer SES		
	Muslim Teacher (1)	Christian Teacher (2)	Ambiguous (3)	Muslim Teacher (4)	Christian Teacher (5)	Ambiguous (6)	Muslim Teacher (7)	Christian Teacher (8)	Ambiguous (9)	Muslim Teacher (10)	Christian Teacher (11)	Ambiguous (12)
Peer match for students from Secular schools												
Secular relative to Christian school peers	0.004 (0.004)	-0.006 (0.004)	0.002 (0.004)	0.004 (0.004)	-0.006 (0.004)	0.003 (0.004)	0.005 (0.004)	-0.008* (0.005)	0.004 (0.004)	0.005 (0.005)	-0.008* (0.005)	0.003 (0.004)
Secular relative to Islamic school peers	0.002 (0.003)	0.002 (0.003)	-0.004 (0.003)	0.002 (0.003)	0.002 (0.003)	-0.004 (0.003)	0.002 (0.003)	0.002 (0.004)	-0.004 (0.003)	0.002 (0.003)	0.002 (0.004)	-0.004 (0.003)
Peer match for students from Christian schools												
Christian relative to Secular school peers	0.002 (0.005)	0.002 (0.005)	-0.004 (0.004)	0.002 (0.005)	0.002 (0.005)	-0.004 (0.004)	0.001 (0.005)	0.002 (0.005)	-0.003 (0.004)	0.001 (0.005)	0.001 (0.005)	-0.003 (0.004)
Christian relative to Islamic school peers	0.007 (0.005)	-0.001 (0.006)	-0.006 (0.005)	0.008 (0.006)	-0.001 (0.006)	-0.006 (0.005)	0.005 (0.006)	0.000 (0.006)	-0.005 (0.005)	0.005 (0.006)	-0.001 (0.006)	-0.004 (0.005)
Peer match for students from Islamic schools												
Islamic relative to Secular school peers	-0.008 (0.005)	0.003 (0.005)	0.005 (0.006)	-0.007 (0.005)	0.003 (0.005)	0.004 (0.006)	-0.002 (0.006)	-0.001 (0.006)	0.002 (0.007)	-0.002 (0.006)	-0.002 (0.006)	0.004 (0.007)
Islamic relative to Christian school peers	-0.019** (0.009)	0.003 (0.011)	0.016 (0.010)	-0.017* (0.010)	0.003 (0.011)	0.014 (0.010)	-0.023** (0.011)	0.007 (0.014)	0.017 (0.011)	-0.023** (0.011)	0.007 (0.014)	0.017 (0.012)
Department and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Student and Advisor Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department Linear Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peer Quality	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peer Gender	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peer Language	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Peer Socioeconomic Status	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
<i>N</i>	44,325	44,325	44,325	44,325	44,325	44,325	40,274	40,274	40,274	40,274	40,274	40,274

Notes: Sample includes course level data on students in their second and third year during the academic years 2011 to 2017. The outcome of interest is class instructor religion. Standard errors are clustered by individual (due to repeated observations) and reported in parentheses. *** p < 0.01 ** p < 0.05 * p < 0.1.

Table 10: Effects on First-year GPA: Heterogeneity based on religious diversity of high school's location

	Homogeneous Areas, <i>First-year GPA</i> (1)	Diverse Areas, <i>First-year GPA</i> (2)
Peer match for students from Secular schools		
Secular relative to Christian school peers	0.078 (0.050)	-0.008 (0.019)
Secular relative to Islamic school peers	0.051 (0.040)	0.048*** (0.016)
Peer match for students from Christian schools		
Christian relative to Secular school peers	-0.006 (0.042)	0.049 (0.037)
Christian relative to Islamic school peers	0.039 (0.054)	0.115*** (0.043)
Peer match for students from Islamic schools		
Islamic relative to Secular school peers	-0.066 (0.064)	0.002 (0.038)
Islamic relative to Christian school peers	-0.173** (0.084)	-0.011 (0.059)
Year Fixed Effects	Yes	Yes
Department Fixed Effects	Yes	Yes
Department Linear Trend	Yes	Yes
Student Controls	Yes	Yes
Advisor Controls	Yes	Yes
<i>N</i>	1,518	5,409

Notes: Sample includes all first time entering students from the academic years 2002 to 2017. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Both treatment and outcome are standardized. Standard errors are clustered by advisor-year (peer group) and reported in parentheses.

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

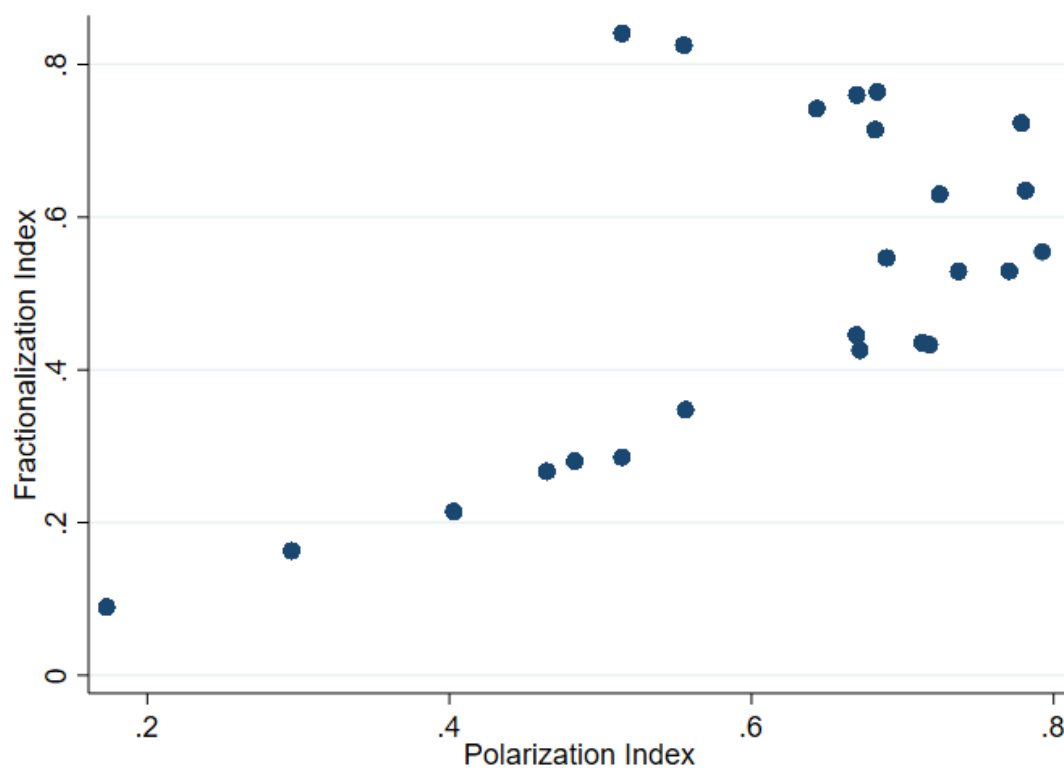
Table 11: Effects on teacher religion: Heterogeneity based on religious diversity of high school's location

	Homogeneous Areas			Diverse Areas		
	Muslim Teacher (1)	Christian Teacher (2)	Ambiguous (3)	Muslim Teacher (4)	Christian Teacher (5)	Ambiguous (6)
Peer match for students from Secular schools						
Secular relative to Christian school peers	-0.006 (0.014)	-0.002 (0.014)	0.008 (0.014)	-0.002 (0.005)	-0.004 (0.005)	0.006 (0.004)
Secular relative to Islamic school peers	0.013 (0.011)	0.006 (0.012)	-0.019 (0.011)	0.003 (0.004)	0.0008 (0.004)	-0.004 (0.004)
Peer match for students from Christian schools						
Christian relative to Secular school peers	-0.021 (0.015)	0.009 (0.017)	0.012 (0.014)	0.006 (0.008)	-0.001 (0.008)	-0.004 (0.008)
Christian relative to Islamic school peers	0.005 (0.016)	-0.011 (0.018)	0.006 (0.016)	0.013 (0.010)	-0.005 (0.010)	-0.008 (0.009)
Peer match for students from Islamic schools						
Islamic relative to Secular school peers	-0.048** (0.019)	0.014 (0.019)	0.034** (0.016)	0.002 (0.007)	-0.0008 (0.006)	-0.001 (0.008)
Islamic relative to Christian school peers	-0.047* (0.026)	0.020 (0.026)	0.027 (0.023)	-0.012 (0.013)	-0.003 (0.015)	0.015 (0.012)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Department Linear Trend	Yes	Yes	Yes	Yes	Yes	Yes
Student Controls	Yes	Yes	Yes	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	4,495	4,495	4,495	23,747	23,747	23,747

Notes: Sample includes course level data on students in their second and third year during the academic years 2011 to 2017. The outcome of interest is class instructor religion. Standard errors are clustered by individual (due to repeated observations) and reported in parentheses. *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$.

C Appendix Figures and Tables

Figure A1: Relationship between F and P



Notes: This figure plots the relationship between electoral districts' fractionalization (F) and polarization (P) indices.

Table A1: First Year Course-Taking Behavior by Student School Background

	(1) <i>Prop. Muslims from Advisor Peer Group in Class</i>	(2) <i>Prop. Christians from Advisor Peer Group in Class</i>	(3) <i>Prop. Secular from Advisor Peer Group in Class</i>
Students from Islamic Schools			
Proportion Islamic school peers	0.051*** (0.012)	-0.033* (0.018)	-0.108*** (0.029)
Proportion Christian school peers	0.005 (0.005)	0.071*** (0.014)	-0.013 (0.020)
Students from Christian schools			
Proportion Islamic school peers	0.082*** (0.009)	-0.054 (0.040)	-0.116** (0.048)
Proportion Christian school peers	0.000 (0.002)	0.078*** (0.019)	-0.076*** (0.022)
Students from Secular schools			
Proportion Islamic school peers	0.084*** (0.010)	-0.029 (0.029)	-0.133*** (0.039)
Proportion Christian school peers	0.005* (0.003)	0.098*** (0.014)	-0.050** (0.021)
Year Fixed Effects	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes
Student Controls	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes
Department Level Peer Proportion	Yes	Yes	Yes

Notes: Each column represents a different course-level regression. Sample includes all first time entering students from the academic years 2002 to 2017. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Standard errors are clustered by advisor-year (peer group) and reported in parentheses. *** p < 0.01 ** p < 0.05 * p < 0.1.

Table A2: Course-Taking Behavior—Robustness Checks

	(1) <i>Prop. Muslims from Advisor Peer Group in Class</i>	(2) <i>Prop. Christians from Advisor Peer Group in Class</i>	(3) <i>Prop. Secular from Advisor Peer Group in Class</i>
1st-year courses with more than one section identified			
Proportion Islamic school peers	0.049*** (0.005)	-0.017 (0.017)	-0.089*** (0.027)
Proportion Christian school peers	0.000 (0.001)	0.057*** (0.012)	-0.036** (0.018)
<i>N</i>	67,762	67,762	67,762
All courses taken in all years			
Proportion Islamic school peers	0.059*** (0.006)	-0.016 (0.019)	-0.055*** (0.0227)
Proportion Christian school peers	0.000 (0.002)	0.066*** (0.011)	-0.037*** (0.014)
<i>N</i>	413,004	413,004	413,004
Year Fixed Effects	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes
Student Controls	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes

Notes: Each column represents a different course-level regression. Sample includes all first time entering students from the academic years 2002 to 2017. Student controls include gender, Math and Verbal SAT scores. Advisor controls include gender and academic rank. Standard errors are clustered by advisor-year (peer group) and reported in parentheses.

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

Table A3: Effect of Peer Match on Teacher Religion during First Year (Robustness Check)

	(1) <i>Muslim Teacher</i>	(2) <i>Christian Teacher</i>	(3) <i>Ambiguous Teacher</i>
Peer match for students from Secular schools			
Secular relative to Christian school peers	-0.011 (0.007)	0.007 (0.007)	0.004 (0.007)
Secular relative to Islamic school peers	-0.005 (0.006)	0.000 (0.006)	0.005 (0.005)
Peer match for students from Christian schools			
Christian relative to Secular school peers	0.004 (0.009)	-0.002 (0.009)	-0.002 (0.008)
Christian relative to Islamic school peers	-0.007 (0.010)	-0.005 (0.012)	0.012 (0.010)
Peer match for students from Islamic schools			
Islamic relative to Secular school peers	-0.006 (0.010)	0.007 (0.010)	-0.002 (0.008)
Islamic relative to Christian school peers	0.004 (0.017)	0.019 (0.017)	-0.023 (0.014)
Department Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Department Linear Trend	Yes	Yes	Yes
Student Controls	Yes	Yes	Yes
Advisor Controls	Yes	Yes	Yes
<i>N</i>	16,074	16,074	16,074

Notes: Sample includes course level data on students in their first year during the academic years 2011 to 2017. The outcome of interest is class instructor religion. Standard errors are clustered by individual (due to repeated observations) and reported in parentheses. *** p < 0.01 ** p < 0.05 * p < 0.1.