Should I stay or should I go? The effect of London's terrorist attack on the educational choices of Muslims

Diego Astorga-Rojas[*†]

August 23, 2022

Abstract

This paper evaluates how the July 2005 London terrorist attacks affected Muslim teenagers' education plans and decisions. The attacks triggered a violent backslash against the Muslim community, which could have affected their incentives to continue in full-time education. I examine panel data on educational attitudes from the 'Next Steps' Survey in England and use the month the survey was administered to divide individuals into treatment and control groups. I find that the attacks negatively affected the education plans of Muslims, but not those of any other major religious group. The probability of planning to continue in full-time education decreased by around 4.4 percentage points for Muslims after the attacks. This corresponds to a 69% increase in individuals who were not sure whether to continue or drop out of full-time education after the compulsory years. However, this change in plans appears to be a temporary reaction, since it did not affect students' actual decisions 2 years later.

Keywords: education, terrorism

JEL codes: I20,I29,J15

[*]Pontificia Universidad Javeriana, Cra. 7 No. 40 - 62, Bogotá, Colombia, d.astorga@cemfi.edu.es

[†]This paper previously circulated under the title of "Affected by Beliefs? The Effect of London's Terrorist Attack on the Educational Choices of Muslims". I am greatly indebted to Diego Puga and Monica Martinez-Bravo for their detailed and valuable feedback and support. I would also like to thank Manuel Arellano, Nezih Guner, Miguel Almunia and all the participants at CEMFI, the Simposio de la Asociación Española de Economía SAEe, the XII ASCER Conference, ICESI, Universidad del Externado, and Universidad de la República de Uruguay for their suggestions. Funding from the Private Enterprise Development in Low-Income Countries Project by the CEPR and the European Research Council (ERC) under the European Union's Seventh Research Framework Programme (ERC Advanced Grant agreement 269868 – SPYKES) and Horizon 2020 Programme (ERC Starting Grant agreement 716318 – EDST) is gratefully acknowledged. All remaining errors are my sole responsibility.

Introduction

Identity – a person's sense of self – is a key factor in individuals' economic decisions. Identifying with a group can change the individual payoffs of a person's actions as well as those of others. Akerlof and Kranton (2000) incorporate this reasoning into a simple economic model and arrive at different conclusions from the standard case. When studying poverty, they find that social exclusion can cause agents to avoid remunerative activities under a model in which identity plays a role.

This paper investigates the interaction between identity and education. It studies how individuals' education plans are influenced by a change in the environment faced by the community or group with which they are associated, using the case of Muslim teenagers in England before and after the London terrorist attacks of July 7, 2005.

The London bombings (called 7/7) were the country's first ever suicide attack. Four British Islamist men detonated four bombs in the center of London, killing 52 civilians and injuring over 700 more. The media reported a violent backslash against the Muslim community[1] across the UK in response to these attacks. Kielinger and Paterson (2013) and Hanes and Machin (2014) found significant increases in hate crimes against Asians and Arabs in the UK almost immediately after the terror attacks of 9/11 and 7/7. These crimes subsequently decayed, but remained at higher than pre-attack levels for months afterwards.

I use data from the 'Next Steps' survey on English teenagers' educational attitudes to understand whether (and how) the tense environment generated by the attacks changed Muslim teenagers' education plans and decisions. My analysis proceeds in three steps.

First, I document whether the respondents who identified themselves as Muslims reported that they planned to continue in full-time education after the age of 16. I rely on the exogenous timing of the attack to divide respondents between the treatment group (those interviewed in 2005 after the bombings) and control group (those interviewed in 2005 before the attack). As the groups differ in some important characteristics such as family composition and work status of the main parent, I exploit the panel dimension of the data to study individual-level changes in education plans between 2004 (when the first wave of the survey was administered) using a fixed effects approach. I also use a differences-in-differences approach as an alternative methodology.

[1] See, for example, BBC News, "Hate crimes soar after bombings," August 4, 2005. http://news.bbc.co.uk/2/hi/uk_news/england/london/4740015.stm; BBC News, "Race body reports rise in abuse," July 22, 2005. http://news.bbc.co.uk/2/hi/uk_news/wales/south_east/4704593.stm.

I find that the terrorist attack had a robust negative effect on Muslim students' education plans. The average marginal effects suggest that the probability of planning to continue in full-time education decreased by around 4.4 percentage points for these respondents. This corresponds to a 69% increase in individuals who were not sure whether to continue or drop out of full-time education.

In a second step, I repeat the same analysis for different religions as a placebo test and find that the terrorist attack had no effect on the education plans of individuals who identified themselves as Christians, Hindus or atheist. There was, however, a negative effect for Sikhs. This community was also negatively affected as reported in the news, mainly because of ignorance of the perpetrators and the attention drawn by the turbans they wear.[2] In a second placebo test, I assume the attack was a month earlier and find no effect on Muslim teens' education plans.

Moreover, I find that the effects are similar in magnitude for males and females, although only the latter is statistically significant. I also find a significant effect for both Muslims who were born in the UK and those who were not, yet the effects are larger for the latter.

Third, I follow the respondents over time to determine what their main activity is at age 17 (after education is no longer compulsory). I find that the answers regarding education plans from 2004 and 2005 do *not* help predict whether education or apprenticeship is the respondent's main activity in the Muslim sample, but they do so for the rest of the respondents. Furthermore, using information from the 2001 and 2011 censuses supplied by the Office of National Statistics, I analyze the change in educational attainment by religion for cohorts that were close to age 16 (when English students decide whether to remain in formal education) in 2005. The percentage of Muslims aged 19–21 with high qualifications (level 4 or more) increased from 2001 to 2011. This increase was greater than for many other religions, which suggests the initial negative reaction towards continuing in full-time education cooled down and faded as people had more time to think about their choices. This pattern is also consistent with Zorlu and Frijters (2019), who find that the happiness of Muslim migrants in Europe initially fell after the 9/11 attacks but caught up in subsequent years.

[2] See, for example, BBC News, "Sikh meet police after the attacks," July 12, 2005. http://news.bbc.co.uk/2/hi/uk_news/4674883.stm

Related Literature

Terrorism can significantly affect aggregate economic outcomes such as GDP (Abadie and Gardeazabal (2003)), investment (Eckstein and Tsiddon (2004), Abadie and Gardeazabal (2008)), stock prices (Berrebi and Klor (2010), Straetmans et al. (2008)), and tourism (Sandler et al. (1992)). Recent studies have focused on how it can influence individual outcomes such as happiness and well being. For example, Metcalfe et al. (2011) finds that self-reported well-being decreased in the UK after the attacks of September 11, 2001. Likewise, Ahern (2018) provides evidence that terrorism has a detrimental effect on individual psychological traits: it decreases trust and subjective well-being, as well as respondents' opinions of the importance of creativity and freedom. Similarly, Coupe (2017) document a decrease in optimism in France caused by the attacks in November 2015 in Paris. Clark et al. (2020) add to this line of research by studying *experienced* (rather than *subjective*) well-being. They document a decrease in happiness and an increase in negative emotions that lasted for at least one week in the US after the Boston marathon bombing of 2013.

More closely related to the current study, the differential effects of terrorism on minorities have also been studied for outcomes beyond education. Kaestner et al. (2007) find that the September 11th attacks did not affect the employment or working hours of Arab or Muslim men in the US, although they were associated with a 14–16% decline in their real weekly earnings; Cornelissen and Jirjahn (2012) reports a negative effect in earnings for Arabs in Germany after the September 11th attacks. Regarding the London's attcks, Braakmann (2007) finds no impact on the number of hours worked, real wages or employment probabilities in London for Arab or Muslim men. However, Rabby and Rodgers III (2010) reports that London's metro attacks on 7/7 negatively affected the labor outcomes of Muslims aged 16–25.

Prior research has also assessed how Islamist terrorist attacks influence the social environment towards Muslims – and how the Muslim community's attitudes and actions respond to such changes. Hanes and Machin (2014) verifies that there was a significant increase in hate crimes against Asians and Arabs in the UK almost immediately after the terror attacks of 9/11 and 7/7. These crimes subsequently decayed, but remained at higher than pre-attack levels a year later. Elsayed and de Grip (2018) shows that Dutch survey respondents' perceptions of immigrants' integration decreased after the terrorist attacks in London for Muslim (but not non-Muslim) immigrants. Both papers provide support for the idea that the attacks increased the perceived level of discrimination or segregation against the Muslim community.

Lauderdale (2006) finds that 6 months after 9/11, Arabic-named women in California experienced a moderate increased in the risk of low birth weight compared to similar women who gave birth the year before. Hole and Ratcliffe (2020), focusing on subjective well-being, demonstrate a decrease in self-reported happiness for Muslim teenagers in the UK after the London bombings, especially among girls. Zorlu and Frijters (2019) find a decline, and then a subsequent return to average happiness, among the general Muslim migrant population relative to others after 9/11. They also document a persistent decline in happiness for Muslim migrants from the Middle East, which highlights the potential influence of this type of attack on migrants' integration into their host society. Romanov et al. studies the same question but in the Israel–Palestine context. They find that Palestinian terrorism has no effect on the happiness of Jewish Israelis and a negative, but not persistent, effect for more than one day on Arab citizens. They attribute Arabs' initial negative reaction to increasing concerns that they will be discriminated against.

This paper advances this line of research by focusing on the plans and decisions of Muslim teenagers related to acquiring human capital in reaction to the environment provoked by terrorist attacks. Much of the literature that analyzes how terrorism affects well-being suggests that depressed adolescents might decide to study less, as one of the main arguments of why should we care (see, for example, Hole and Ratcliffe (2020)). However, this channel has not been directly studied.

Most previous research that has explored the differential effect of terrorism on the outcomes of the minority identified with the perpetrators vs. the rest of the population has used different races or religions as a control group in a difference-in-differences setting. The results of these papers rely on the parallel-trends assumption for both groups in the absence of a treatment. Although I use a similar difference-in-differences approach for the first set of outcomes, the timing of the interviews allows me to establish a control group *within* the same religion and to use other religions as placebos, making the parallel assumption less of a concern. The panel structure of the data also lets me use a fixed effects approach, which is often difficult to do in these kinds of studies, which further alleviates concerns about parallel trends.

More related to education outcomes and violence, Brück et al. (2019) study the effect of the Israeli–Palestinian conflict on various education outcomes for Palestinian high school students in the West Bank during the Second Intifada. They find that the conflict negatively affected their grades and made them less likely to attend university in the future. The authors identified two possible main channels for this result: (1) the conflict-induced deterioration of school

infrastructures and (2) the worsening of the students' psychological well-being due to direct exposure to violent events. However, this type of violence could have very different consequences from those caused by terrorist attacks. The attacks during the Intifada were more regular and affected the supply of education via infrastructure, whereas terrorist attacks are infrequent and did not affect the school's infrastructure.[3]

Finally, Bennett et al. (2015) explain the educational gap between migrants and natives by proposing a Becker-style taste discrimination model within a search and wage bargaining setting in which agents have an educational choice. In their model, if negative attitudes towards high- and low-productive immigrants increase, immigrants' skill level will decrease because of the worst labor outcome perspectives. When only low-productivity workers face negative attitudes, however, immigrants' education level can increase. They find that in regions in Denmark that have more negative attitudes towards immigrants, immigrants are more likely to stay in high school. Although their results are contrary to the suggested results of the current article, this could be explained by the nature of a shock such as a terrorist attack. If an attack initially affects attitudes towards both high- and low-productivity Muslims, then the results could be aligned with Bennett et al. (2015)'s model.

The rest of the chapter is structured as follows. The next section explains the 'Next Steps' survey in more detail. Section 2 describes the empirical strategy and main specifications. Section 3 presents the results for the education plans and the heterogeneity across sub–populations. Section 4 analyzes the students' education decisions, and Section 5 concludes.

1 Data

The data on young Muslims is taken from The Longitudinal Study of Young People in England (LSYPE), also known as Next Steps.[4] It is a major panel study of young people containing information on the teenagers and their parents about educational attitudes and family backgrounds.

The study began in 2004, when most of the sample were aged 13–14. The study oversampled deprived schools and minority ethnic groups. According to the 2011 Census, 46% of Muslims lived in the 10% most deprived local authority districts in England (Ali (2015)), so the panel's construction helps generate a more representative sample of the country's Muslim

[3] For a general review of the effect of violence on different outcomes, see Verwimp et al. (2019).
[4] See: https://nextstepsstudy.org.uk/

community.

I focus on respondents who defined themselves as Muslims. I define education plans as a dummy indicating whether the teenager plans to stay in full-time education based on their answer to the following question in the 2004 and 2005 waves of the survey:

> When you are 16 and have finished Year 11 at school what do you want to do next...
>
> - ...stay on in full time education, either at the school you are at now or somewhere else
> - ...or leave full time education
> - ...leave ft education but return later (e.g. Gap Year) SPONTANEOUS ONLY
> - Don't know

Year 11 is the last year of compulsory education in England. I code the answers "don't know" and "leave full-time education" as 0 for the variable *Education Plans*. I assign a value of 1 if the respondent said she was returning to full-time education or planning to take a gap year before returning to full-time education.

This variable indicates the individual's certainty about his intention to continue in full-time education after finishing the compulsory years. The results are somewhat stronger if the gap year is counted as 0, but the interpretation is less clear.

In addition to their education plans (whether they plan to continue in full-time education after the age of 16), I observed whether they were born in the UK, the education of the main parent and working status.[5] I also focus on household type (whether the teenager lives in a married/cohabiting household or with a single parent).

Table 1 reports the mean of the variables at baseline for the main sample used in the paper. It is divided between those interviewed after the terrorist attack (treatment group) and those interviewed before (control group).

[5]The results do not change if instead of main parent I use information only about the mother (there is missing information about the father in nearly a quarter of the sample).

TABLE 1

DESCRIPTIVE STATISTICS IN 2004: MAIN SAMPLE OF MUSLIMS

	Treatment Group	Control Group	Difference
A. General Information			
Education Plans	0.956	0.931	0.025
Born in the UK	0.832	0.759	0.073**
B. Working Status-Main Parent			
Working Full Time	0.259	0.204	0.055**
Working Part Time	0.097	0.090	0.007
Not Working	0.644	0.706	-0.062**
C. Education Level-Main Parent			
No Qualifications	0.632	0.650	-0.018
Basic	0.050	0.058	-0.008
Intermediate	0.215	0.177	0.038
Advance	0.103	0.115	-0.012
D. Household Type			
Single Parent	0.168	0.225	-0.057**
Married or Cohabiting	0.832	0.775	0.057**
Observations	340	844	

Notes: The treatment group comprises Muslim respondents interviewed after the terrorist attack (August–September 2005), and the control group contains Muslims interviewed before the attack (April–June 2005). *Education Plans* is a dummy indicating whether the teenager plans to stay in full-time education (either continuously or after a gap year).

*** p<0.01, ** p<0.05, * p<0.1

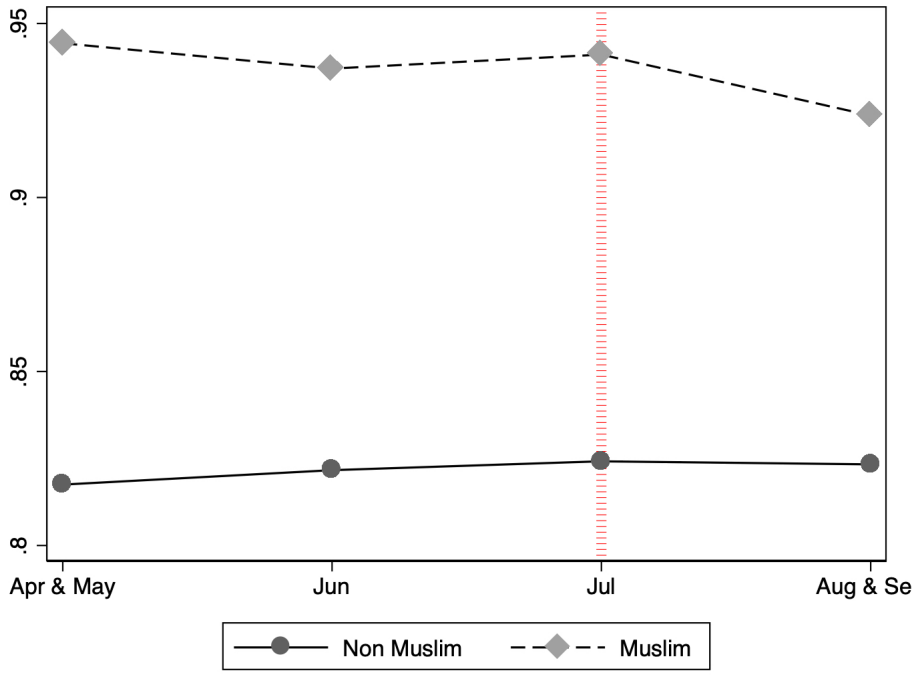
The treatment group has a lower proportion of individuals who were not born in the UK. It also has a larger share of teenagers with a parent working full time and who live in a married or cohabiting household.

Appendix Table 6.1.1 reports the same variables for Muslim vs. non-Muslim respondents. On average, the former teenagers are more certain about their plans to continue in full-time education than the latter.They differ in all other characteristics from the rest of the population. Fewer Muslims were born in the UK than their non-Muslim counterparts, the education of the main parent is lower for the Muslim respondents, and more of them are unemployed. These differences demonstrate that using the entire population as a control group for the Muslim community is a hard assumption to make. Although this problem could be addressed by using a

more similar sub-population, the fact that the analysis involves individuals of the same religion represents an improvement upon similar prior studies.

Figure 1 displays the proportion of teenagers each month in 2005 who reported that they planned to continue in full-time education. After the attack (denoted by the red vertical line), fewer Muslim respondents reported planning to continue in full-time education; there was no change for non-Muslim respondents. Appendix Figures 6.1.1 and 6.1.2 present the distribution of interviewees according to their education plans in 2004 and 2005 by month of interview in 2005; they tell a similar story as Figure 1.

FIGURE 1
PROPORTION OF PEOPLE WITH EDUCATION PLANS =1 BY RELIGION AND MONTH OF INTERVIEW IN 2005

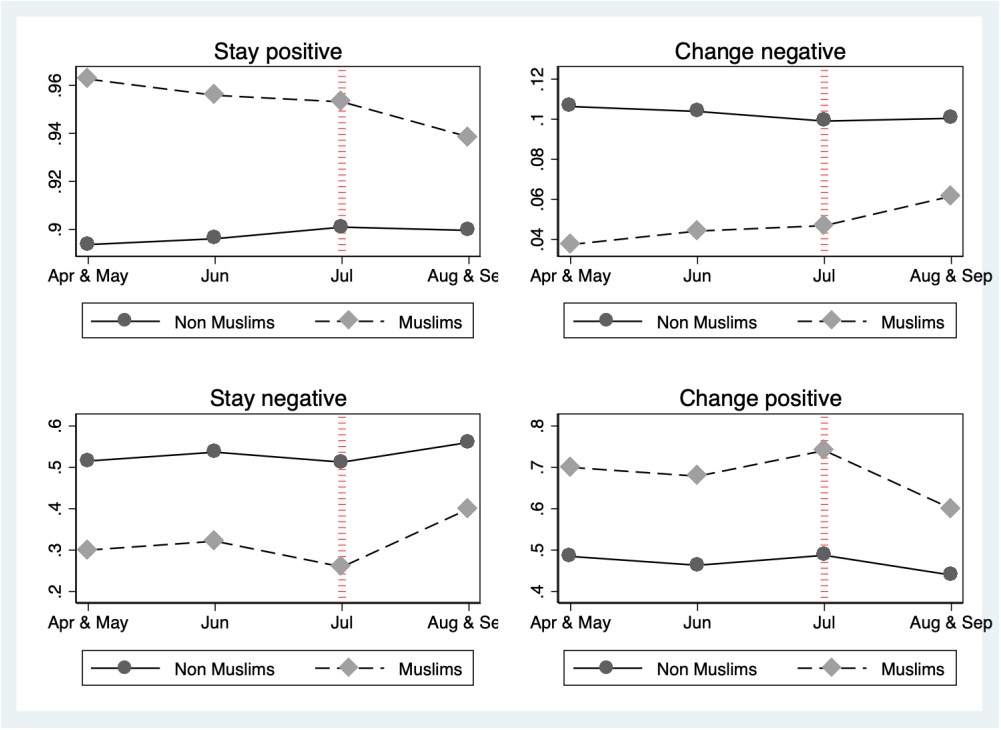


Notes: Education Plans equals 1 if the student expressed the intention to continue in full-time education at the age of 16, and 0 otherwise. The solid (dashed) line indicates the proportion of non-Muslims (non-Muslims) in each month with education plans equal to 1. The red line denotes the date of the terrorist attack. The months of April and September are stacked with May and August, respectively, because few Muslims were interviewed in April ($n = 26$) and September ($n = 65$).

Figure 1 demonstrates that after the attack, more Muslims expressed that they were unsure about continuing in full-time education. Figure 2 conditions on their education plans as indicated in the 2004 survey to study whether this increase in uncertainty comes from (1) people

who had planned in 2004 to continue studying but changed their intention after the attack (Change negative) or (2) an increase in the number of people who expressed in both years that they were unsure about whether they would continue to study (Stay negative).

FIGURE 2
DISTRIBUTION OF CHANGE IN EDUCATION PLANS BY MONTH OF INTERVIEW IN 2005- CONDITIONAL ON THE EDUCATION PLANS IN 2004



Notes: The upper panel displays the distribution of the education plans of Muslims (dashed line) and non-Muslims (solid line) in 2005 by month, among those who expressed their intention the previous year to remain in full-time education at the age of 16. The upper-left graph shows the proportion of people that maintained the same idea in 2005 (Stay positive) and the upper-right figure displays the proportion of people who in 2005 were unsure about continuing in full-time education (Change negative). The bottom panel performs the same analysis on those who expressed in 2004 that they were unsure about remaining in full-time education at the age of 16. Change negative =1 if they remained unsure in 2005 and Change positive =1 if in 2005 they expressed an intention to continue in full-time education. The red line in July denotes the date of the terrorist attack. The months of April and September are stacked with May and August, respectively, because few Muslims were interviewed in April ($n = 26$) and September ($n = 65$).

Conditional on their answers in 2004, more Muslim students negatively changed their education plans (in 2004 they planned to continue in full-time education but in 2005 were no longer sure); more Muslim students also expressed being unsure of their education plans in both 2004

and 2005. The analysis yields no clear trend for non-Muslim students after the attack. While these graphs present suggestive evidence that the London bombings in July 2005 might have negatively influenced Muslim respondents' education plans, I turn to the regression analysis to quantitatively estimate this effect.

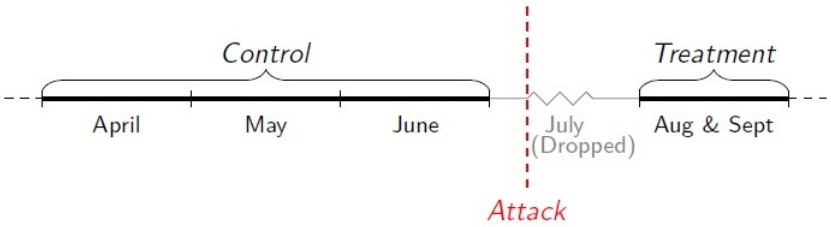
2 Empirical Strategy

2.1 Changes in Education Plans

To determine whether the attack caused Muslim students to change their education plans, I divided the Muslim respondents into treatment and control groups based on the date of their interview in 2005 (those interviewed in August 2005 or later were placed in the treatment group). The terrorist attack is assumed to be unexpected to avoid endogeneity concerns.

The interview date determines the individual's exposure to the shock introduced by the treatment (bombings). An individual interviewed after the attacks has more information to internalize (such as the new environment towards his community) when completing the survey and discussing his future education plans (Figure 3).

FIGURE 3
TREATMENT AND CONTROL GROUPS BY MONTH OF INTERVIEW IN 2005



Individuals in the treatment group would be treated only in 2005; 2004 serves as the baseline survey. I drop individuals surveyed in July 2005 from the analysis because the data only contains the month of the interview; therefore I do not know if they were surveyed before or after the attack. The results are robust to including this month in the treatment group.

Since the control and treatment groups differ in certain baseline characteristics, I use a panel fixed effect approach to identify the effect of the terrorist attack on Muslim respondents' education plans.

$$Y_{it} = \beta_1 Year_{2005} + \beta_2 Treated_i * Year_{2005} + X'_{i,2004} * t * \gamma + \lambda_i + \nu_{it} \quad (1)$$

Equation 1 is the main specification for the change in education plans. Y_{it} is a binary indicator that takes a value of 1 if individual *i* in year *t* plans to continue in full-time education after age 16. *Treated* is a dummy indicating assignment to the treatment group, $Year_{2005}$ is a dummy coded 1 if the individual was interviewed in 2005, and $X_{i,2004}$ is a vector of individual characteristics at baseline that could affect their plans to keep studying. The controls used are the same as those presented in the descriptive statistics in Table 1. The person fixed effect (λ_i) captures all time-invariant unobservables. The baseline characteristics $X_{i,2004}$ are interacted with a time trend.

The coefficient of interest is the interaction coefficient β_2, which captures the effect of answering after the attack. I cluster the standard errors at the school level (the primary sample unit), but this makes little difference. I also use a difference-in-differences methodology in both a linear probability model and a probit model as alternative estimations.

$$Y_{it} = \alpha_0 + \alpha_1 Year_{2005} + \alpha_2 Treated_i + \alpha_3 Treated_i * Year_{2005} + X'_{i,2004} * \gamma + u_{it} \quad (2)$$

In Equation 2, the effect of the terrorist attack on education plans would be identified by α_3, either in the case of the probit model or the linear probability model.

A potential concern is that the news that London would host the 2012 Olympics (this was announced one day before the attacks) could translate into better expectations in terms of labor opportunities in different sectors. This would increase the outside option of continuing in full-time education, making teenagers more likely to change their education plans and drop out of full-time education. Another concern is that an unobserved fixed characteristic that is correlated with both education plans and the treatment status (month of interview in 2005) could be driving the results. To address these concerns, I propose two placebos.

Effect on other religions: The argument is that after the terrorist attack, the level of violence targeted at the Muslim community increased, so the most affected students were those who identified themselves as Muslims. I therefore estimate Equation 1 separately for Hindus, Christians, Sikhs and atheists. The effect of the attack should be economically lower and sta-

tistically insignificant if the paper's argument is true. And if the Olympics affected teenagers' education plans, Muslims were unlikely to be affected differently than other religions.

False treatment – acting like the attack was in June 2005: I also conduct a second placebo test within the Muslim population. From the control group, I create a false treatment group (those who were interviewed in June 2005) and rerun the analysis in Equation 1. Intuitively, if the effect is driven by the actions after 7/7, there should be no differential effect in this regression between those interviewed in June vs. those interviewed in April and May, as both groups are reporting their education plans in a similar environment.

2.2 Educational Decisions

I start by creating a dummy that takes a value of 1 if the individual is in full-time education at age 17. To construct this variable, I used individuals' responses about their main activity (education, employment, apprenticeship or inactive). To avoid seasonality, the survey specifies that even if the individual is working in the summer, he should respond "education" if that is his main activity in the rest of the year.

The difference-in-differences strategy used to determine change in education plans cannot be used to assess whether Muslim teenagers followed these plans for two reasons. First, the information about the main economic activity is cross-sectional, so the time dimension of the panel is lost. Second, even though the treatment and control groups were defined based on the timing of their interview in relation to the terrorist attack, the control group could still have been affected *after* the attack. In other words, the Muslims interviewed before the attack were also exposed to the backlash against their community because of the attacks, so they are no longer a good control group.

To analyze whether the intention to stay in full-time education mattered, I estimate a probit based on the change in plans between 2004 and 2005:

$$\begin{aligned} Edu_i = \quad & 1(\alpha_1 + \alpha_2 Change\ negative_i + \alpha_3 Change\ positive_i \\ & + \alpha_4 Stay\ positive_i + X_i'\gamma_2 + \epsilon_i \geq 0) \end{aligned} \tag{3}$$

In Equation 3, the dependent variable Edu_i is a dummy indicating whether the respondent's main activity at age 17 is education. $Change\ negative$ takes a value of 1 if initially (in 2004) the person was planning to stay in full-time education but changed her mind in 2005. Similarly, $Stay\ positive$ and $Change\ positive$ take a value of 1 if she always planned to stay in full-time education or if she was unsure of staying in full-time education and the next year

she changed her mind, respectively. $Stay\ negative$ takes a value of 1 if the education plans in both years were unsure of staying in full-time education; these respondents were left out as the referenced group in Equation 3.

This analysis compares whether the responses related to education plans have the power to predict the individual's actual decisions, for both Muslims and non-Muslims. Although this analysis cannot claim causality, it suggests the persistence of individual responses in their evenutal decisions.

3 Results

3.1 Changes in Education Plans

Columns 1–3 of Table 2 report the estimates of Equation 1. Columns 4–7 present the results of Equation 2 in a linear probability model and also a probit. The results are significant and robust to the controls in each case. There are fewer observations in Columns 3, 5 and 7 because the sample for these is restricted to persons who did not move schools (hence we know for a fact they live in the same region). Since this variable of region is only available in 2005 and not in 2004, it is the only way of knowing the individuals have not moved to another region.

TABLE 2
EFFECTS OF THE TERRORIST ATTACK ON EDUCATION PLANS

	Dependent Variable: Education Plans						
	FE			LPM		Probit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated				0.026*	0.029**	0.229	0.260*
				(0.014)	(0.014)	(0.140)	(0.144)
$Year_{2005}$	0.009	0.047	0.037	0.009	0.011	0.080	0.092
	(0.010)	(0.031)	(0.029)	(0.010)	(0.011)	(0.085)	(0.087)
Treated*$Year_{2005}$	-0.042**	-0.044**	-0.049**	-0.042**	-0.047**	-0.359**	-0.404**
	(0.019)	(0.019)	(0.020)	(0.019)	(0.019)	(0.162)	(0.166)
Controls	N	N	N	Y	Y	Y	Y
Controls*time trend	N	Y	Y	N	N	N	N
	Average Marginal Effects						
						-0.039**	-0.045**
						(0.019)	(0.018)
Mean of dep. variable	0.937	0.937	0.937	0.937	0.937	0.937	0.937
Observations	2,368	2,368	2,316	2,368	2,316	2,368	2,316
R-squared	0.004	0.012	0.012	0.015	0.016	0.039	0.040
Clusters	302	302	296	302	296	302	296

Notes: *Education Plans* is a dummy coded 1 if the respondent planned to continue in full-time education by year 11, regardless of whether they intended to take a gap year. Columns 3. 5 and 7 restrict the sample to non-movers. Controls are baseline characteristics in 2004 presented in Table 1: dummies for working status and education level of the main parent, single or cohabiting household, gender and if the individual was born in the UK. Standard errors are clustered at the school level.

*** p<0.01, ** p<0.05, * p<0.1

Our preferred results (reported in Column 2) suggest that Muslim teenagers surveyed after the attack were 4.4 percentage points less likely than those surveyed before, on average, to report that they were planning to continue in full-time education. Since the unconditional mean of the education plans of Muslims in 2004 is 0.937 (only 6.3% of Muslims did not plan to continue studying in 2004), a 4.4-percentage-point decrease implies a large increase (69.8%) in the number of individuals who planned to drop out after age 16 or were not sure whether they would continue in full-time education. The results of the linear probability model and average marginal effects found in the probit specification are similar (3.9–4.7 percentage points).

3.2 Robustness Checks

The suggested explanation for the negative change in education plans for Muslims is that after the attacks, the Muslim community suffered a change in environment that no other group experienced. Thus, estimating Equation **??** for non-Muslim groups should indicate a zero effect of the terrorist attack. Nor should the timing of the interview have any effect aside from the events in July. Therefore, the change in plans for the Muslims interviewed in April and May vs. those interviewed in June should not differ significantly. Table 3 presents the evidence for the two placebos. The results are insignificant for both, which reassures us that the effect is mainly for Muslim teenagers who were interviewed after the terrorist attack.

TABLE 3
PLACEBO TEST

Dependent Variable: Education Plans				
	FE	LPM	Probit	
	(1)	(2)	(3)	Observations
No religion	-0.031	-0.032	-0.112	5844
	(0.021)	(0.021)	(0.072)	
Christian	0.004	0.005	0.025	8760
	(0.015)	(0.015)	(0.070)	
Hindu	0.004	-0.002	-0.484	574
	(0.030)	(0.030)	(0.515)	
Sikh	-0.068	-0.072	-0.525*	496
	(0.044)	(0.047)	(0.285)	
Other	0.115	0.127	0.594	210
	(0.120)	(0.123)	(0.627)	
False-Treatment	-0.010	-0.009	-0.072	1688
	(0.020)	(0.020)	(0.159)	
Controls	N	Y	Y	
Controls*time trend	Y	N	N	

Notes: The coefficients presented represent the interaction between treated and $Year_{2005}$. *Education Plans* is a dummy coded 1 if the respondent planned to continue in full-time education after year 11, regardless of whether they intended to take a gap year. Controls are the baseline characteristics in 2004 presented in Table 1: dummies for working status and education level of the main parent, single or cohabiting household, gender and if the individual was born in the UK. Standard errors are clustered at the school level.

*** p<0.01, ** p<0.05, * p<0.1

Not only are the results statistically insignificant for non-Muslim respondents; the effect is even of a different sign than the one calculated for the Muslim community. However, there seems to be a negative and slightly significant effect for Sikhs in the probit specification, which could be explained by religious ignorance on the part of local (non-Muslim) communities. Several reports of attacks on *gurdwaras* (Sikh temples) were reported after the 7/7 attack. As Sikh spokeswoman Mejindarpal Kaur explained in July 2005, "We are a community that gets

targeted because of the way we look and because our people wear turbans.[6]

If this sentiment was widespread among the Sikh respondents, it could explain why the effect is similar in magnitude and almost significant or significant at the 10% level. However, this evidence is suggestive as the results are not significant in either the fixed effect model or the linear probability model.

The false treatment shows that there is no statistical difference between Muslims interviewed in April and May vs. those interview on June. The coefficient in each specification is highly non-significant and the magnitude is on the order of four times lower than the main results.

3.3 Heterogeneity analysis

I explore whether the effects found in the main regression differ according to gender or being born in the UK vs. elsewhere. The first dimension is important: Hole and Ratcliffe (2020) provide evidence of a decrease in self-reported happiness for Muslim adolescents after 7/7 in the UK, which could be a mechanism to explain why their education plans changed negatively after the attack. Their results are driven by Muslim teenage girls, so the gender dimension might be important. Zorlu and Frijters (2019) also find a temporal decline in happiness in the US Muslim population after 9/11, yet this decline seems more persistent among Muslim migrants coming from the Middle East. Not being born in the UK and being Muslim might complicate this group's social integration, potentially making the effects of the terrorist attacks more salient.

[6]BBC News, "Sikh meet police after the attacks," July 12, 2005. http://news.bbc.co.uk/2/hi/uk_news/4674883.stm

TABLE 4
HETEROGENEITY OF THE EFFECTS - FIXED EFFECTS

	Dependent Variable: Education Plans				
	Baseline	Male	Female	Born UK	Not born UK
	(1)	(2)	(3)	(4)	(5)
$Year_{2005}$	0.047	-0.037	0.026	0.060	-0.004
	(0.031)	(0.035)	(0.046)	(0.039)	(0.045)
Treated*$Year_{2005}$	-0.044**	-0.047	-0.041*	-0.037*	-0.086**
	(0.019)	(0.029)	(0.024)	(0.022)	(0.043)
Controls*time trend	Y	Y	Y	Y	Y
Mean of dep. variable	0.937	0.931	0.943	0.933	0.950
Observations	2,368	1,156	1,212	1,848	520
R-squared	0.012	0.028	0.010	0.007	0.071
Clusters	302	209	210	260	145

Notes: *Education Plans* is a dummy coded 1 if the respondent planned to continue in full-time education after year 11, regardless of whether they intended to take a gap year. Controls are the baseline characteristics in 2004 presented in Table 1: dummies for working status and education level of the main parent, single or cohabiting household, gender and if the individual was born in the UK. Standard errors are clustered at the school level.
*** p<0.01, ** p<0.05, * p<0.1

Table 4 presents the estimates of Equation 1 for the baseline population and the different groups individually. The results are similar if a linear probability model or probit model is used. The findings are in line with those of Hole and Ratcliffe (2020) in the sense that female estimates were statistically significant (at the 10% level), but there was little difference in final education decisions between males and females. Estimates for both groups vary little in magnitude, and male estimates were very close to significance at the 10% level.

The estimates are also in line with the results reported in Zorlu and Frijters (2019). The attack's negative effect on education plans is larger for Muslims not born in the UK, as they report a more persistent decrease in happiness and might struggle more with the negative backlash towards their community.

Another potential channel for the change in education plans is the expectation of a more difficult job market in the future, as suggested by Bennett et al. (2015). Indeed, Hole and Rat-

cliffe (2020) found an increase in expectations of discrimination in the workplace after university for Muslims after the attack. This could explain the results, as more difficulty in getting a job after university would discourage individuals from continuing in full-time education.

4 Results on Education Decisions

Table 5 assesses whether respondents' answers in 2004 and 2005 affected their education decisions at age 17. For non-Muslim respondents, the order of magnitudes and signs make sense. The probability of being in education is lowest if in both 2004 and 2005 the individual stated that they were unsure or did not plan to continue full-time education. The probability starts to increase if at least in 2004 the plan was to continue in full-time education, it increases more if they had "positive" education plans in 2005, and is the highest if the education plans were positive in both years.

TABLE 5
PROBIT-EDUCATION DECISIONS

Dependent Variable: Education Decisions in 2007						
	Non-Muslims			Muslims		
	(1)	(2)	(3)	(4)	(5)	(6)
Change negative	0.253***	0.206**	0.203**	-0.162	-0.189	-0.145
	(0.083)	(0.084)	(0.087)	(0.381)	(0.386)	(0.388)
Change positive	0.483***	0.437***	0.427***	-0.000	-0.031	-0.060
	(0.083)	(0.083)	(0.084)	(0.364)	(0.372)	(0.370)
Stay positive	1.264***	1.136***	1.137***	0.642**	0.575*	0.593**
	(0.063)	(0.066)	(0.068)	(0.298)	(0.303)	(0.302)
Controls	N	Y	Y	N	Y	Y
Mean of dep. variable	0.676	0.676	0.681	0.837	0.837	0.841
Observations	6,371	6,371	6,193	898	898	883
R-squared	0.0957	0.120	0.117	0.0278	0.0571	0.0563
Clusters	640	640	631	275	275	270

Notes: *Education Decisions* is a dummy coded 1 if the respondent's main activity at age 17 is education. Controls are the baseline characteristics in 2004 presented in Table 1: dummies for working status and education level of the main parent, single or cohabiting household, gender and if the individual was born in the UK. Standard errors are clustered at the school level.

*** p<0.01, ** p<0.05, * p<0.1

The picture is less clear for the Muslim community. The only coefficient that is statistically different from 0 is $Stay\ positive$; however, the magnitude is half that of the non-Muslim community. The probability of being in education is statistically not different for those who answered $Change\ negative$, $Change\ positive$ or $Stay\ negative$. Therefore, it is very difficult to interpret the results aside from the fact that the answers from the education plans are less able to predict the actual plans for the Muslim community.

This could be interpreted as a positive sign that more than 1 year after the attacks, when the Muslim respondents had to choose whether to remain in full-time education, they readjusted their economic perspectives and put less weight on their past responses than their non-Muslim counterparts, as many of them were answering in the heat of the moment. This behavior would

be in line with the results of Zorlu and Frijters (2019) as the decrease in happiness they observed was only temporarily.

The responses of the UK police and government, which condemned any reprisal against the Muslim community (Winkler (2005)), might have also helped prevent the initial negative effect on education plans from translating into actual education decisions. The patterns of incidents reverted to previous levels in London 4 months after the attack (Kielinger and Paterson (2013); see Appendix Figures 6.2.1 and 6.2.2).

However for this claim to be possible, one dimension to take into account is the dropout rates. Around 20% of the non-Muslim teenagers are not present in the wave 4, when education decisions are being recorded.

TABLE 6
SURVEY ATTRITION BY 2007

Change in Education Plans	Muslim	Non-Muslim	Difference
Stay Negative	0.250	0.285	-0.035
Change Negative	0.365	0.272	0.094
Change Positive	0.265	0.253	0.013
Stay Positive	0.234	0.172	0.062***

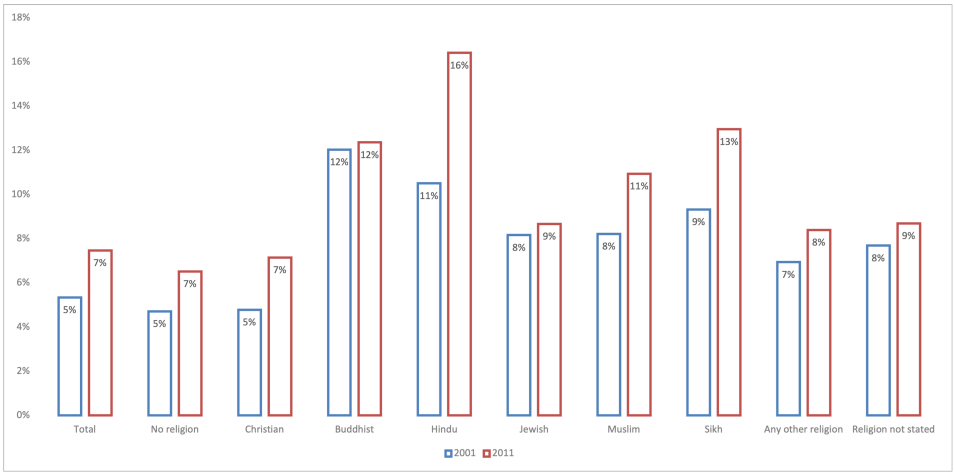
Notes: Mean of Muslim and Non-Muslim teenagers out of the survey by 2007. The last column is the difference between the mean of both groups.

*** p<0.01, ** p<0.05, * p<0.1

Table 6 presents the proportion of individual Muslim and non-Muslim respondents that left the survey according to their responses on education plans. It also shows the difference in means between both groups in each category. The attrition rate among Muslims is higher in the group that stayed positive in continuing full-time education in both years. A probit on the probability of being out of the survey on the characteristics reveals that respondents were less likely to drop out of the survey if they were born in the UK and if their parents were more educated and working part time or full time. Since these characteristics are associated with a higher probability of being in full-time education for Muslim teenagers (with the exception of being born in the UK), then the drop out rate is important. If those who are dropping out of the survey are the ones not staying in full-time education, then the coefficients for the Muslims in Table 5 can be biased downwards as the pool of stayers in the Muslim group is more selected than in the non-Muslim group.

To further analyze whether the terrorist attacks affected the Muslim respondents continuing in full-time education, Figure 4 presents the percentage of people aged 19–21 that obtained a level 4 or higher qualification according to the UK Official National Statistics by religion in 2000 and 2011 (i.e. those who were aged 13–15 in 2005). Level 4 or above qualifications are usually obtained by continuing in full-time education. If the negative effect on education plans translated into fewer Muslims continuing in full-time education by the age of 16, then the change in the proportion of people with these qualifications from 2000 to 2011 might be significantly lower for Muslims than for other religions. However, my results do not support this hypothesis, suggesting that the change in plans to stay in full-time education because of the terrorist attack might have been temporary.

FIGURE 4
PERCENTAGE OF PERSONS AGE 19 TO 21 WITH QUALIFICATION OF LEVEL 4 OR MORE IN THE UK



Note: The Office for National Statistics defines level 4 and above as: Degree (for example BA, BSc), Higher Degree (for example MA, PhD, PGCE), NVQ Level 4–5, HNC, HND, RSA Higher Diploma, BTEC Higher level, Foundation degree (NI), Professional qualifications (for example teaching, nursing, accountancy)

More research is needed in this area. Although it seems the terrorist attack did not affect whether the Muslim students surveyed remained in full-time education in the extensive margin, it might have influenced their education and career paths. Carlana et al. (2022), for example, find that on average, migrants in Italy are more likely to enroll in vocational high schools than natives of similar ability, who choose more technical or academic-oriented high schools. They find that tutoring and career counseling can increase the number of migrants enrolling in high-skills-track high schools. One potential avenue for further research would be to study the education choices of Muslim teenagers after the terrorist attack. The Next Steps

survey data can be merged with the National Pupil Database via request to the UK Department for Education to explore the respondents' grades and educational achievements as well as their subject choices and the type of education they pursued. These findings would deepen the analysis of whether the attack affected the *actual* educations of the Muslim students aside from their education plans.

5 Conclusions

This study's results found that the 7/7 attack in London negatively affected young Muslims' educational *plans*, but not those of respondents from other religious groups. The effect of changes in expectations does not appear to be driven by the announcement that the Olympic Games would be held in London in 2012, or by any other individual characteristic.

However, the evidence is inconclusive as to whether these plans affected the Muslim respondents' actual educational outcomes. A potential explanation is that in the heat of the moment, Muslim teenagers reacted more negatively towards education after the attack but later reconsidered. This could be due to the efforts of the UK police and government to prevent violence and prejudice towards Muslims because of the terror acts,[7] or because the economic pay-offs of studying more provided sufficient incentives to overcome the effect of the attack, as explained theoretically by Becker and Rubinstein (2011). The evidence suggests that this might indeed be the case, as responses about education plans have less power to predict actual education decisions for Muslims than for non-Muslims. Furthermore, official national statistics demonstrate that the percentage of Muslims aged 19–21 achieving level 4 or higher qualifications increased from 2001 to 2011 even more than other religions. However, Muslim respondents' higher attrition rate from the survey makes it difficult to arrive at a definitive conclusion.

Future research should examine whether the terrorist attack affected the intensive margin of education decisions, the course taken by the different groups, their grades or career paths. It is also important to understand what determines the persistence of education plans on education decisions, and whether the reaction by the police and government in penalizing violence against the Muslim community helped mitigate a potential negative effect in education outcomes.

[7] BBC News, "Police vows over revenge attacks," July 12, 2005. http://news.bbc.co.uk/2/hi/uk_news/4674079.stm

References

Abadie, A. & Gardeazabal, J. (2003). The Economic Costs of Conflict: A Case Study of the Basque Country. *American Economic Review*, *93*(1):113–132. https://doi.org/10.1257/000282803321455188.

Abadie, A. & Gardeazabal, J. (2008). Terrorism and the world economy. *European Economic Review*, *52*(1):1–27. https://doi.org/10.1016/j.euroecorev.2007.08.005.

Ahern, K. R. (2018). The importance of psychology in economic activity: Evidence from terrorist attacks. Working Paper 24331, National Bureau of Economic Research. https://dx.doi.org/10.3386/w24331.

Akerlof, G. A. & Kranton, R. E. (2000). Economics and Identity. *The Quarterly Journal of Economics*, *115*(3):715–753. https://dx.doi.org/10.1162/003355300554881.

Ali, S. (2015). British Muslims in Numbers: A demographic socioeconomic and health profile of Muslims in Britain drawing on the 2011 Census. Technical report, The Muslim Council of Britain (MCB). https://mcb.org.uk/report/british-muslims-in-numbers.

Becker, G. S. & Rubinstein, Y. (2011). Fear and the Response to Terrorism: An Economic Analysis. CEP Discussion Papers No 1079, Centre for Economic Performance, LSE. https://EconPapers.repec.org/RePEc:cep:cepdps:dp1079.

Bennett, P., La Cour, L., Larsen, B., & Waisman, G. (2015). Negative Attitudes, Network and Education. Working Papers 01-2015, Copenhagen Business School, Department of Economics. https://ideas.repec.org/p/hhs/cbsnow/2015_001.html.

Berrebi, C. & Klor, E. F. (2010). The Impact of Terrorism on the Defence Industry. *Economica*, *77*(307):518–543. https://doi.org/10.1111/j.1468-0335.2008.00766.x.

Braakmann, N. (2007). Islamistic Terror, the War on Iraq and the Job Prospects of Arab Men in Britain: Does a Country‘s Direct Involvement Matter? Working Paper Series in Economics 70, University of Lüneburg. https://EconPapers.repec.org/RePEc:lue:wpaper:70.

Brück, T., Di Maio, M., & Miaari, S. H. (2019). Learning The Hard Way: The Effect of Violent Conflict on Student Academic Achievement. *Journal of the European Economic Association*, *17*(5):1502–1537. https://doi.org/10.1093/jeea/jvy051.

Carlana, M., La Ferrara, E., & Pinotti, P. (2022). Goals and Gaps: Educational Careers of Immigrant Children. *Econometrica*, *90*(1):1–29. https://doi.org/10.3982/ECTA17458.

Clark, A. E., Doyle, O., & Stancanelli, E. (2020). The Impact of Terrorism on Individual Well-Being: Evidence from the Boston Marathon Bombing. *The Economic Journal*, *130*(631):2065–2104. https://doi.org/10.1093/ej/ueaa053.

Cornelissen, T. & Jirjahn, U. (2012). September 11th and the earnings of Muslims in Germany—The moderating role of education and firm size. *Journal of Economic Behavior & Organization*, *81*(2):490–504. https://doi.org/10.1016/j.jebo.2011.07.014.

Coupe, T. (2017). The impact of terrorism on expectations, trust and happiness–the case of the November 13 attacks in Paris, France. *Applied Economics Letters*, *24*(15):1084–1087. https://doi.org/10.1080/13504851.2016.1254335.

Eckstein, Z. & Tsiddon, D. (2004). Macroeconomic consequences of terror: theory and the case of Israel. *Journal of Monetary Economics*, *51*(5):971–1002. https://doi.org/10.1016/j.jmoneco.2004.05.001.

Elsayed, A. & de Grip, A. (2018). Terrorism and Integration of Muslim Immigrants. *Journal of Population Economics*, *31*(1):45–67. https://doi.org/10.1007/s00148-017-0646-z.

Hanes, E. & Machin, S. (2014). Hate Crime in the Wake of Terror Attacks: Evidence From 7/7 and 9/11. *Journal of Contemporary Criminal Justice*, *30*(3):247–267. https://doi.org/10.1177/1043986214536665.

Hole, A. R. & Ratcliffe, A. (2020). The Impact of the London Bombings on the Well-Being of Adolescent Muslims. *The Scandinavian Journal of Economics*, *122*(4):1606–1639. https://doi.org/10.1111/sjoe.12379.

Kaestner, R., Kaushal, N., & Reimers, C. (2007). Labor Market Effects of September 11th on Arab and Muslim Residents of the United States. *Journal of Human Resources*, *42*(2):275–308. https://doi.org/10.3368/jhr.XLII.2.275.

Kielinger, V. & Paterson, S. (2013). Hate crimes against london's muslim communities: An analysis of incidents recorded by the metropolitan police service 2005-2012. Technical report, The Mayor's Office for Policing And Crime (MOPAC). https://www.report-it.org.uk/files/hate_crime_against_london_highres_print_final.pdf.

Lauderdale, D. S. (2006). Birth Outcomes for Arabic-Named Women in California Before and After September 11. *Demography*, *43*:185–201. https://doi.org/10.1353/dem.2006.0008.

Metcalfe, R., Powdthavee, N., & Dolan, P. (2011). Destruction and Distress: Using a Quasi-Experiment to Show the Effects of the September 11 Attacks on Mental Well-Being in the United Kingdom*. *The Economic Journal*, *121*(550):F81–F103. https://doi.org/10.1111/j.1468-0297.2010.02416.x.

Rabby, F. & Rodgers III, W. M. (2010). The Impact of 9/11 and the London Bombings on the Employment and Earnings of U.K. Muslims. IZA Discussion Paper No 4763, IZA Institute of Labor Economics. https://docs.iza.org/dp4763.pdf.

Romanov, D., Zussman, N., & Zussman, A. Does Terrorism Demoralize? Evidence from Israel. *Economica*, *79*(313):183–198. https://doi.org/10.1111/j.1468-0335.2010.00868.x.

Sandler, T., Enders, W., & Parise F, G. (1992). An Econometric Analysis of the Impact of Terrorism on Tourism. *Kyklos*, *45*(4):531–554. https://doi.org/10.1111/j.1467-6435.1992.tb02758.x.

Straetmans, S. T., Verschoor, W. F., & Wolff, C. C. (2008). Extreme US stock market fluctuations in the wake of 9/11. *Journal of Applied Econometrics*, *23*(1):17–42. https://doi.org/10.1002/jae.973.

Verwimp, P., Justino, P., & Brück, T. (2019). The microeconomics of violent conflict. *Journal of Development Economics*, *141*:102297. https://doi.org/10.1016/j.jdeveco.2018.10.005.

Winkler, B. (2005). The impact of 7 July 2005 London bomb attacks on Muslim communities in the EU. Technical report, European Monitoring Centre on Racism and Xenophobia. https://fra.europa.eu/en/publication/2005/impact-7-july-2005-london-bomb-attacks-muslim-communities-eu.

Zorlu, A. & Frijters, P. (2019). The happiness of European Muslims post-9/11. *Ethnic and Racial Studies*, *42*(16):23–44. https://doi.org/10.1080/01419870.2018.1519587.

6 Appendix

6.1 Descriptive Statistics-Next Steps

Table 6.1.1
Descriptive Statistics-Main Sample

	Muslim	Non-Muslim	Difference
A. General Information			
Education Plans	0.938	0.824	0.114***
Born in the UK	0.781	0.951	-0.170***
B. Working Status-Main Parent			
Working Full Time	0.220	0.412	-0.192***
Working Part Time	0.092	0.342	-0.250***
C. Education Level-Main Parent			
No Qualifications	0.645	0.169	0.476***
Basic	0.056	0.115	-0.059***
Intermediate	0.188	0.450	-0.263***
Advance	0.112	0.266	-0.154***
D. Household Type			
Single Parent	0.208	0.253	-0.045***
Married or Cohabiting	0.792	0.747	0.045***
Observations	1,181	7,932	

textitNotes: *Education Plans* is a dummy indicating whether the teenager plans to stay in full-time education (either continously or after a gap year).

*** p<0.01, ** p<0.05, * p<0.1

FIGURE 6.1.1

DISTRIBUTION OF CHANGE IN EDUCATION PLANS BY MONTH OF INTERVIEW IN 2005-MUSLIMS

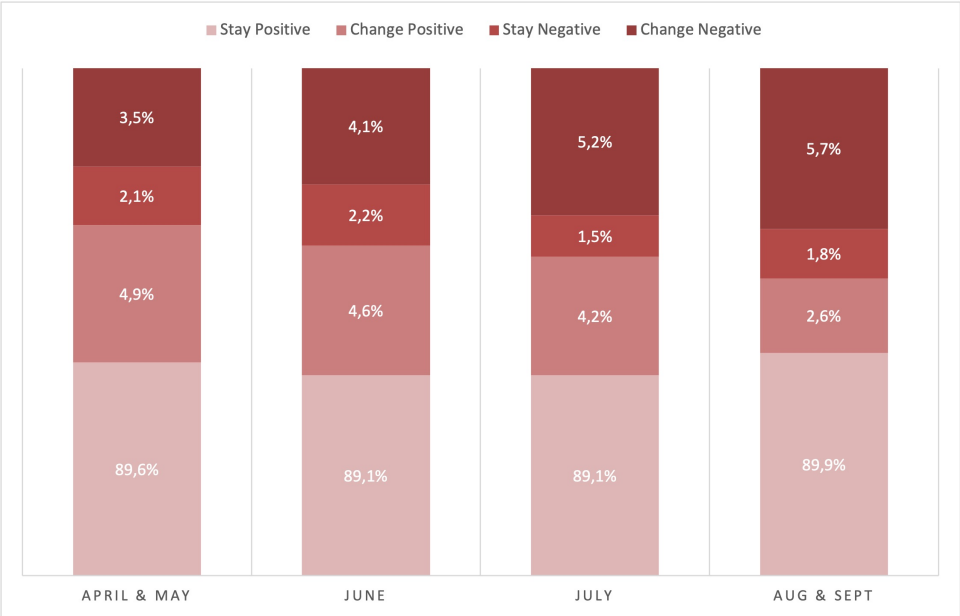
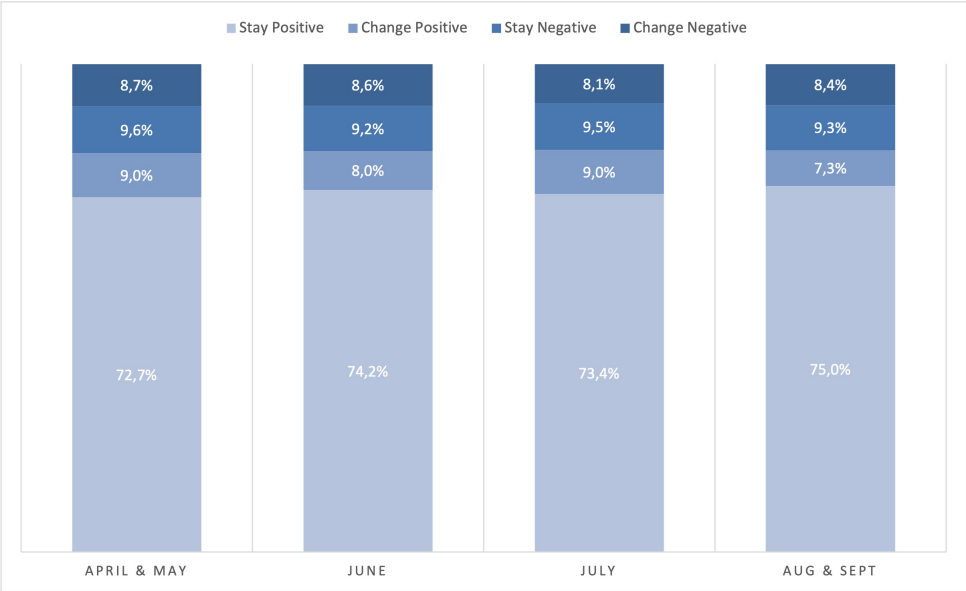


FIGURE 6.1.2

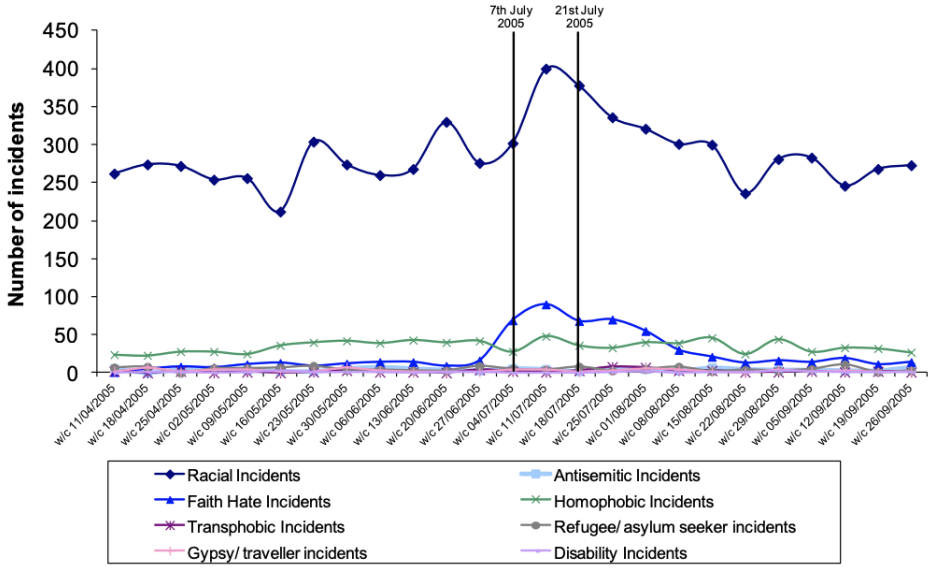
DISTRIBUTION OF CHANGE IN EDUCATION PLANS BY MONTH OF INTERVIEW 2005-NON MUSLIMS



6.2 Figures taken from Kielinger and Paterson (2013)

FIGURE 6.2.1

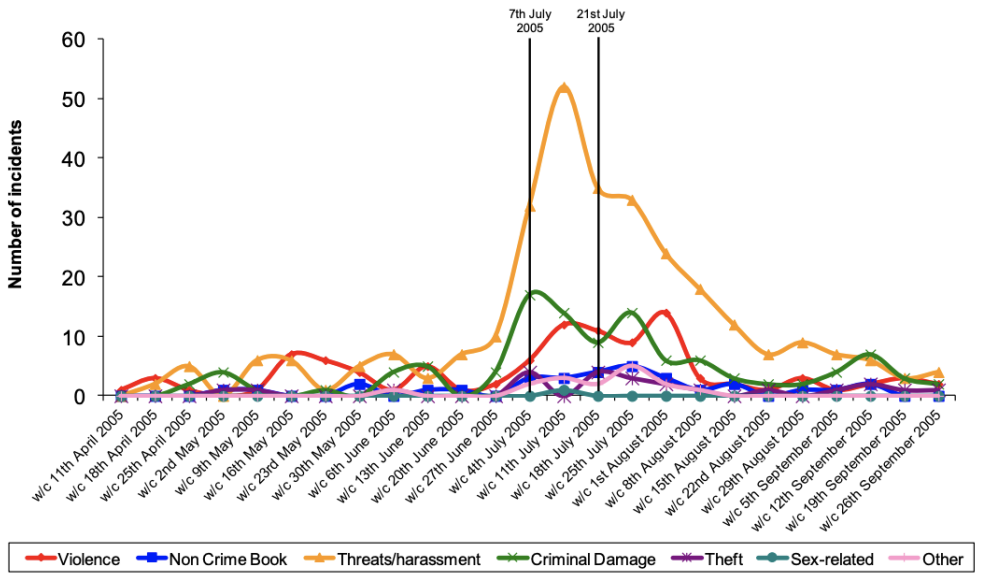
TYPES OF HATE CRIME INCIDENTS (APRIL 11–OCTOBER 2, 2005)



(Source: Data extracted from CRIS 27/10/2005)

FIGURE 6.2.2

FAITH INCIDENTS – ALLEGATION GROUPING (APRIL 11–OCTOBER 2, 2005)



(Source: Data extracted from CRIS 27/10/2005)