# Ethno-Religious Differences in Israeli Higher Education: Vertical and Horizontal Dimensions

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## Abstract

The worldwide expansion and diversification of higher education systems has sparked growing interest in the stratification of students according to higher education institution and field of study. This article focuses on Israel, where higher education has experienced significant expansion and diversification during the past two decades. Using generalized ordered logistic regression models, the study analyses vertical and horizontal ethno-religious inequality. The findings indicate that Ashkenazim, the privileged Jewish group, remain the most advantaged regarding enrollment in higher education, but their advantage over other veteran Jewish groups is mainly owing to areas of specialization in high school and achievement on the tests that serve as admission criteria to the higher education institutions. Among the enrollees, controlling for high school history reveals that the disadvantaged Jewish groups, *Mizrachim* and new immigrants, have higher odds than Ashkenazim of enrolling in lucrative programmes. Muslim, Druze, and Christian Arabs are disadvantaged regarding both the vertical (access) and horizontal (fields of study) dimensions, regardless of high school history and previous achievements.

## Introduction

There is growing interest among sociologists of education in the effects of the worldwide expansion and diversification of higher education systems on the enrollment of members of disadvantaged groups. This line of research has tended to focus on parental socio-economic status. Such research has indicated that the expansion of higher education systems has led to a rise in the enrollment rates of economically disadvantaged groups, thus reducing to some extent the vertical dimension of the enrollment gap (i.e., access to higher education). Yet the expansion has also produced stratification *within* higher education by granting prominence to the horizontal dimension of inequality: privileged social groups take advantage of the differentiation within higher education

to preserve their labour market advantages (e.g., Ambler and Neathery, 1999; Shavit, Arum and Gamoran, 2007; Gerber and Cheung, 2008; Boliver, 2011).

The literature on racial, ethnic, and religious inequality in higher education is more limited, especially regarding horizontal stratification. This study contributes to this literature in two main ways. First, we simultaneously examine the vertical and the horizontal dimensions of stratification from an ethno-religious perspective, and are thus able to detect and discuss differences and similarities in patterns of inequality in each of these dimensions. Second, we offer a solution to a common problem in the research on horizontal inequality in higher education, namely, the definition of the dependent variable. Differentiation in higher education has two

main sources: institutions and fields of study. Most studies on horizontal inequality focus on either one or the other. In an attempt to take into account both sources, Davies and Guppy (1997) combined data on income of graduates of different fields of study with data on institution selectivity. By focusing on labour market returns, we offer a more parsimonious solution. Using unique Israeli data on income of bachelor's degree recipients, we classified the different combinations of fields of study and higher education institutions into three categories of expected earnings: low, medium, and high. We thus provide a straightforward connection between stratification within higher education and stratification in the labour market.

Israeli society offers an ideal social context for research on the vertical and horizontal dimensions of ethnic stratification in higher education. First, during the past two decades, the higher education system in Israel has undergone a dramatic reform that significantly expanded and diversified the supply of academic opportunities (Ayalon and Yogev, 2005; Menahem, Tamir and Shavit, 2008). Second, Israeli society is characterized by wide economic and educational gaps between the Jewish majority and the Arab minority, and also among different subgroups within each of these groups.

## Theoretical Background and Previous Findings

The broad literature on educational inequality suggests several mechanisms that can help explain stratification in higher education. In this study we focus on three main theoretical explanations, which were developed in an attempt to explain class inequality but can also be applied to racial and ethnic disparities. The first is effectively maintained inequality (EMI). The EMI hypothesis posits that '[s]ocioeconomically advantaged actors secure for themselves and their children some degree of advantage wherever advantages are commonly possible' (Lucas, 2009: p. 484). Thus, when a quantitative (vertical) educational advantage declines, privileged social groups seek to exploit qualitative (horizontal) advantages at that level of education (Lucas, 2001). This argument seems especially relevant regarding processes of expansion and diversification in higher education systems. Triventi (2013) who analysed data from 11 European countries (using the REFLEX database) found that in all of them social background was related to both vertical and horizontal advantages. On the macro level he observes that, in line with the EMI argument, social background has stronger effect on enrollment in prestigious institutions and lucrative fields of study in countries with higher levels of

participation in tertiary education and stronger relationship between the type of diploma attained and labour market returns. Thus, processes of expansion and diversification tend to increase the competition within tertiary education, to which persons from more advantageous background are better prepared.

Although the EMI hypothesis was developed in order to explain class-based inequality, its logic can also be applied to other dimensions of inequality such as race and ethnicity. Posselt and her colleagues (2012) argue that access to higher education in the United States has expanded for all ethnic and racial groups in the past four decades. However, Asians and Whites still enjoy an advantage over Blacks and Latinos regarding their odds of enrollment in selective colleges (the horizontal dimension of inequality). In this case, educational inequality has been maintained through the rising academic standards for admission to the more prestigious institutions. The study suggests that Asian and White high school graduates are better equipped to deal with these admission criteria.

In addition to institutions, fields of study can also play an important role in maintaining qualitative (horizontal) advantages in higher education. Ayalon and Yogev (2005), who studied the Israeli higher education system, found that members of privileged social groups better exploited the expansion of the system when it comes to enrollment in socially and economically rewarding academic programmes. In contrast to Posselt and her colleagues (2012), Ayalon and Yogev attribute their finding to the ability of members of privileged groups to identify and exploit new opportunities in a changing institutional environment.

The second theoretical explanation is based on Boudon's (1974) distinction between primary and secondary effects in the process of educational attainment. Primary effects are those associated with parental attributes and resources and with students' demonstrated achievement. Secondary effects are manifested in the actual choices that young people and their families make in the educational process (Boudon, 1974). Research on primary and secondary effects has tended to focus on class-based inequality (e.g., Erikson *et al.*, 2005; Kloosterman *et al.*, 2009), but recent studies have also found this theoretical perspective helpful in explaining ethnic education inequality. Jackson (2012) examined ethnic inequality in England and Wales regarding transitions to A-level education and to a university degree. She found that both primary and secondary effects are important for the understanding of this inequality. Primary effects can account for the lower odds of some ethnic minorities, compared with whites, of making these transitions. Using counterfactual methodology, Jackson

suggests that if ethnic minority groups had the same achievement distribution as Whites, they would be advantaged, in most cases, relative to the White majority population regarding these transitions. In Jackson's study, then, primary and secondary effects work in opposite directions for some ethnic minorities: the disadvantaged socio-economic background suppresses achievement, but high aspirations encourage the choice of transitions to higher levels of education. Jackson, Jonsson and Rudolphi (2012) found similar patterns also in Sweden.

In line with these findings, a recent study from Germany reveals that despite their disadvantaged background, young adults of Turkish origin who have obtained the *Abitur* (matriculation diploma) have higher odds than comparable native Germans of enrolling in tertiary education. In addition, among those who continued to higher education, students of Turkish origin were more inclined to choose the more prestigious institutions in comparison with students from the majority (Kristen, Reimer and Kogan, 2008). These studies are consistent with American research that finds high optimism among members of certain ethnic groups regarding their ability to achieve upward mobility via the educational channel (e.g., Kao and Thompson, 2003). Thus, while ethnic minorities may suffer from certain socio-economic disadvantages, their actual choices regarding enrollment in higher education may differ from those of comparable persons who belong to the majority group.

The third theoretical mechanism is the role of high school learning opportunities in shaping educational achievement, which subsequently affects opportunities for enrollment in higher education in general, in selective institutions and fields of study in particular. One of the most important features of high schools is their differentiated curriculum. A large body of research suggests that curriculum differentiation plays an important role in creating and maintaining inequalities in learning opportunities. High school students of low socio-economic status and from some minority groups are disproportionably placed in lower-ranked classes; therefore, tracking mechanisms constrain their chances of proceeding to higher education (for a recent literature review, see Gamoran, 2010). Previous research on Israeli secondary education shows that it is extensively tracked and that ethnoreligious affiliation is linked to high school specialization (see below in the section on the Israeli context).

## The Israeli Education System

Israel is an ethnically heterogeneous society with a population of about 8,000,000 inhabitants. The Jewish majority (about 80% of the total population) consists of three main origin groups: Ashkenazim, who originated in Europe and America; Mizrachim, who originated in the Middle East and North Africa; and new immigrants from the former Soviet Union (FSU). Much smaller groups are new immigrants from Ethiopia, North and South America, and Europe (mainly France and the United Kingdom). Jews of mixed origin (Mizrachi-Ashkenazi) also form a substantial group. The Arab minority consists of a large Muslim majority (about 80%) and Christian and Druze minority groups, each comprising about 10% of the Arab population. Social research in Israel indicates that Ashkenazim are the most educationally and economically advantaged ethno-religious group, while the Muslims are the least advantaged (e.g., Ayalon and Shavit, 2004; Semyonov and Lewin-Epstein, 2004).

Education in Israel is compulsory and free from kindergarten to the end of secondary education (12th grade). The Jewish and Arab school sectors are almost completely separate. Most Arab students study in Arab state schools, where the language of instruction is Arabic and the staff is Arab. Although financed by the state, these schools suffer from long-standing discrimination in budget allocations and services (Al-Haj, 1995; Abu-Saad, 2004). The Christians benefit from a system of independent and selective schools, owned by Christian denominations, which are characterized by high educational standards (Al-Haj, 1995).

Israeli secondary education is extensively tracked. Students can study at an academic or vocational school or in different tracks within a comprehensive school. Although high school subjects are not formally stratified, there is an informal stratification between the sciences (physics, chemistry, biology, and computer science) on one hand and the humanities and social sciences on the other. The sciences are highly regarded by students, parents, and teachers, and students who take advanced sciences are considered the school elite. Schools tend to be involved in assigning students to advanced science classes. Schools control, to a lesser degree, the assignment of students to advanced humanities and social science classes, which are sometimes considered a default option for students unable to take advanced sciences. Consequently, students who take advanced courses in different fields of study differ in their educational and social profiles (Ayalon, 2006; Mizrachi, Goodman and Feniger, 2009).

## Israeli Higher Education

The Israeli higher education system has undergone significant expansion and diversification since the 1990s (Ayalon and Yogev, 2005; Menahem, Tamir and Shavit, 2008). The expansion of the system has been owing to

the establishment of new collegiate institutions, *michlalot*, offering undergraduate studies, and to the grant of academic accreditation to the undergraduate programmes of the older-established ones. Unlike the universities, which are all publicly supported, some of the colleges are privately owned. The Israeli Council for Higher Education, however, accredits the programmes of all higher education institutions, public and private, thereby exercising autonomous control over the major share of developments related to the expansion of higher education. The expansion has increased the number of degree-granting institutions from about 10 to >55. The number of undergraduates more than tripled: from about 55,000 in 1990 to 132,000 in 2000 and to about 190,000 in 2010 (Central Bureau of Statistics, 2012).

## Ethno-Religious Inequality in Israeli Higher Education

Most of the research on inequality in the Israeli higher education system refers to ethno-religious gaps that existed before the reform of the 1990s. Shavit (1990), who analysed data on Israeli men who were born in 1954 and interviewed during the 1980s, found that Ashkenazim had the highest chances of enrolling in higher education. Despite budgetary discrimination against Arab schools, both Christian and Muslim Arabs had higher rates of enrollment in higher education than Mizrachi Jews. Shavit explained this counterintuitive finding by the extremely high percentage of Mizrachim who were channeled to vocational tracks in high school. Using income surveys conducted by the Israeli Central Bureau of Statistics (CBS), Cohen and Haberfeld (1998) examined educational and economic gaps between second-generation Mizrachim and Ashkenazim in 1975, 1982, and 1992. They found that in both groups the percentages of those who obtained a B.A. increased, but the gap between the groups remained large. In 1992 (just before the beginning of the reform in higher education) about 41% of Askenazim had at least a B.A. diploma, while only 11% of Mizrachim had such academic qualification. Cohen, Haberfeld and Kristal (2007), who analysed data from the 1983 and 1995 population censuses, extended the comparison between Mizrachim and Ashkenazim to the third generation and added the group of mixed origin. They report that the gap between the two ethnic groups in enrollment in higher education is no smaller in the third generation than in the second generation. Persons of mixed origin are found midway between the two groups. It is important to note that this study also refers to the pre-reform period. To the best of our knowledge, differences in enrollment in higher education between new immigrants from the FSU and other ethno-religious groups have not yet been studied.

The Jewish-Arab gap in higher education has been studied less extensively than the Ashkenazi-Mizrachi gap. Al-Haj (2003) argues that educational disparities between Arabs and Jews begin in kindergarten and continue throughout elementary and secondary education. Thus, gaps at the end of secondary education, which influence the odds of entering higher education, can be traced back to earlier stages of education. Al-Haj also maintains that the psychometric test, an admission criterion for many tertiary institutions, increases inequality between Arabs and Jews owing to its cultural bias coupled with the fact that the test itself reflects earlier gaps between Jews and Arabs. The limited opportunities of Arab graduates to find suitable employment constitute another important explanation for the relatively low proportion of university graduates among the Arab population in Israel (Al-Haj, 1995, 2003; Mazawi, 1995).

Ayalon and Yogev (2005, 2006) provide new insights on inequality in the Israeli higher education system after the initiation of the reform. Based on a survey of students in universities and colleges that was conducted in 1999, they report that the reform in the higher education system reduced inequality in enrollment mainly in fields of study that afford limited returns in the labour market. When the academic programmes are comparable, the new academic colleges mainly help less-able candidates from privileged groups to obtain degrees in prestigious and selective fields. Yet, when colleges offer less academically oriented programmes, they do open the gates to students from underprivileged groups, who until the reform rarely studied in the universities. From an ethno-religious perspective, Ayalon and Yogev's findings suggest that Mizrachi and Arab young adults are more inclined to enroll in colleges than in universities. Furthermore, both these groups have higher chances than Ashkenazim of choosing teacher training colleges. Mizrachim were also overrepresented in private colleges that mainly offer law, business, and technology. In these institutions the academic requirements for admission are lower than in the universities, but tuition fees are much higher. The survey also revealed that Arabs and Mizrachim took into consideration the utility of their chosen field of study more than Ashkenazim.

## Research Questions and Hypotheses

*Question 1: Has horizontal inequality become the focus of ethno-religious stratification in Israeli higher education?*

The EMI argument predicts that when a quantitative (vertical) educational advantage declines, privileged social groups will seek to exploit qualitative (horizontal) advantages (Lucas, 2001). Based on this argument, it can be hypothesized that the rapid expansion of the Israeli higher education system and the growing numbers of high school graduates enrolling in tertiary education reduced or eliminated vertical inequality, encouraging privileged ethno-religious groups to exploit horizontal advantages.

*Hypothesis 1: Within the Jewish population, after control for socio-economic background, high school specialization and achievement, differences in access to higher education will be relatively small or nonexistent. The privileged group, Ashkenazim, will enjoy an advantage in enrolling in the most lucrative academic programmes. Due to very large historic gaps between Jews and Arabs, we do not hypothesize that vertical differences between the two groups have been eliminated as a result of the expansion of the higher education system.*

*Question 2: Can curriculum differentiation in secondary education help explain vertical and horizontal ethno-religious stratification in tertiary education?*

Previous research in Israel has demonstrated that high school tracking plays a crucial role in enabling or limiting access to higher education (e.g., Shavit, 1990; Feniger, 2013). Ayalon (2003), who studied gender inequality in Israeli higher education, also provides strong evidence for a link between specialization during high school and choice of fields of study in higher education. Within the Jewish majority, Ashkenazim have better chances than Mizrahim of specializing in scientific subjects. Mizrahim tend to specialize in the humanities/social sciences or vocational/technological subjects (e.g., Mizrachi, Goodman and Feniger, 2009). New immigrants from the FSU also have high rates of specializing in science during high school, partly because it is less dependent on mastery of the Hebrew language (Chachashvili-Bolotin, 2010). Science specialization is more prevalent in Arab than in Jewish schools, and vocational/technological subjects are less prevalent (Al-Haj, 1995; Ayalon, 2002).

*Hypothesis 2: Curriculum differentiation in high school will help explain vertical and horizontal inequality within the Jewish majority—mainly between Ashkenazim and Mizrahim—but not between Jews and Arabs.*

*Question 3: Do different ethno-religious groups make different choices regarding enrollment in higher education?*

Studies from the United States and the United Kingdom indicate that several immigrant groups have higher educational and occupational aspirations than members of the majority group, and that this can help explain their higher rates of enrollment in higher education in fields of study that enable economic mobility (e.g., Kao and Thompson, 2003; Connor *et al.*, 2004). New evidence on FSU immigrants in Israel suggests that they too are characterized by high educational and occupational aspirations (Feniger, 2012); they therefore may be expected to more vigorously exploit opportunities in higher education compared with other groups. On the other hand, Israeli scholars have suggested that Arabs are less motivated to enter higher education because of the difficulties they face in both higher education and the labour market (Al-Haj, 2003). Our reference group in the analysis is Ashkenazim; therefore, we formulated the following hypotheses:

*Hypothesis 3a: After socio-economic background, specialization during high school and previous achievement are taken into account, Arabs will have an enrollment disadvantage relative to Ashkenazi Jews on the vertical dimension of inequality.*

*Hypothesis 3b: Arabs' disadvantage relative to Ashkenazi Jews will be also present on the horizontal dimensions of inequality.*

*Hypothesis 3c: After socio-economic background, specialization during high school and previous achievement are taken into account, new immigrants from the FSU will have an enrollment advantage relative to Ashkenazi Jews on the vertical dimension of inequality.*

*Hypothesis 3d: FSU Immigrants' enrollment advantage will be also present on the horizontal dimensions of inequality.*

## Method

### Data

The data set used in this study was prepared by the Israeli CBS by combining data from the 1995 population census with newer data from the Ministry of Education, from the National Institute for Testing and Evaluation, and from tertiary education institutions. It includes information on a representative sample of 20% of all Israelis born between 1978 and 1982. Members of these cohorts were aged 13–17 years at the 1995 census, and most of them were sampled in their parents' households. By merging the file of the 1995 census with several additional files, we were able to follow these cohorts through high school into higher education.

The extended questionnaire of the 1995 census provides data on subjects' socio-demographic characteristics and socio-economic background.

This file was merged with the matriculation files of the Ministry of Education, which contain information on school subjects, the number of units of study of each subject, and the matriculation grade. Students' scores on the psychometric test were taken from the psychometric files provided to the CBS by the National Institute for Testing and Evaluation. Information on tertiary education was drawn from the application files for undergraduate studies at the universities, provided to the CBS by the six universities, and from undergraduate students' files in the academic colleges provided to the CBS by all academic colleges. The information on higher education includes higher education institution, field of study, and year of enrollment (the latest year of enrollment is 2007). The data set covers only those who enrolled in higher education institutions in Israel. Israelis who chose to study abroad were not included in this study due to data limitations. We excluded from the analysis individuals who attended independent ultra-Orthodox (*Haredi*) schools, as the vast majority of members of this community do not study the national curricula, nor do they continue to higher education because of religious considerations (see, e.g., Finkelman, 2011). In addition, we do not have information on high school subjects and achievement for most of this population.

In Israel, one must be eligible for the matriculation diploma to enroll in higher education. Hence, our analysis focuses on high school graduates eligible for this diploma (for a detailed discussion on ethno-religious gaps in matriculation eligibility, see Ayalon and Shavit, 2004). To control for a possible sample selection bias, we conducted a preliminary probit regression analysis for matriculation eligibility. We computed the Inverse Mills Ratio ($\lambda$) (Heckman, 1979) and added it to the multivariate analysis.[1]

## Variables

### Dependent variable

The dependent variable focuses on the value of higher education in the labour market. Using information on employment and earnings of bachelor's degree recipients in the early 2000s (Central Bureau of Statistics, 2009), we classified the different combinations of fields of study and higher education institutions (about 400 combinations) into three categories of expected earnings: low, medium, and high. This was done in two stages. First, we divided the individual-level range of income of

bachelor's degree recipients into three equal thirds. Second, we computed the average income for each combination of fields of study and institutions and assigned the specific combination to one of the three categories. Similarly to Shwed and Shavit's (2006) findings, our data showed that income depends mainly on field of study and less on type of institution. For example, in the most lucrative fields of study, such as computer sciences, the income discrepancies between university and college graduates were fairly minor; in some cases, graduates of prestigious colleges earned more than university graduates. On the other hand, in the social sciences and the humanities there were many cases in which graduates of universities earned more than graduates of colleges.

The dependent variable consists of four categories: (i) did not enroll in higher education; (ii) enrolled in academic programmes that lead to relatively low-paid occupations (e.g., teacher training colleges, social sciences in the less prestigious colleges, humanities in the universities); (iii) enrolled in academic programmes that lead to medium-paid occupations (e.g., social sciences in the universities and the more prestigious colleges); (iv) enrolled in lucrative academic programmes (e.g., engineering and business administration).

### Independent variables

Our focus in this article is on ethno-religious differences in enrollment in higher education. We constructed six dummy variables using information on both parents regarding religious affiliation and paternal grandfather's country of origin for children of Israeli-born parents: (i) *Mizrachim*—Jews of North African or Middle Eastern origin, (ii) *Ashkenazim*—Jews of European or American origin, (iii) mixed-origin families in which one of the parents is *Mizrachi* and the other *Ashkenazi*, (iv) Jews who immigrated to Israel from the FSU (i.e., new immigrants), (v) Christian Arabs, and (vi) Muslim and Druze Arabs. Recent Jewish immigrants to Israel from countries other than the FSU were excluded from the analysis owing to their relatively small numbers (<4% of the sample) and heterogeneity (e.g., immigrants from Ethiopia, France, and North and South America). Jews whose paternal grandfather was born in Palestine before 1948 (about 1.1% of the sample), for whom information on country of origin is not available, were coded as Ashkenazim because most of the Jewish population of pre-statehood Palestine was of European origin.

To control for socio-economic background, we used the following variables: number of siblings (calculated

according to the number of births of the subject's mother), standard of living (the number of electronic appliances present in the subject's home in 1995), and parental higher education (a dummy variable coded 1 if either parent completed academic education, otherwise 0).

Specialization during high school is represented by three dummy variables: (i) sciences, (ii) humanities and social sciences, and (iii) technological/vocational. These categories are based on the advanced courses taken in high school. Students who took advanced subjects from the sciences and subjects from either the humanities/social sciences or technological/vocational were assigned to the science category because this category is most selective. A combination of humanities/social sciences and technological/vocational subjects is rare. In such cases, students were assigned to the technological/vocational category.

As explained above, tertiary institutions in Israel use two main criteria for admission. The first is the average matriculation score. We therefore calculated the weighted average according to the formula used by most higher education institutions in Israel. The second is the score on a standardized psychometric test with a range of 200–800 and a mean of 500. We constructed four dummy variables which are based on the psychometric score: (i) did not take the test, (ii) low score (200–510, the lower third of scores in our data set), (iii) medium score (511–621, the medium third), and (iv) high score (621–800, the upper third). We preferred to use dummy variables instead of a continuous variable to include in the analysis those who decided not to take the psychometric test. Bivariate statistics for the relations between the dependent variable and the independent variable are presented in the online Appendix.

## Analytic Strategy

We begin with a descriptive analysis of the dependent variable according to ethno-religious groups and gender. This allows us to present actual ethno-religious stratification in the Israeli higher education system. The next stage of the analysis is based on generalized ordered logit models. In the first model, we control for socioeconomic background, and in the second model, we add controls for specialization during high school and achievement on the matriculation examinations and the psychometric test. The major advantage of the generalized ordered logistic regression model over ordered logistic regression is the relaxing of the parallel slopes/lines assumption by allowing the parameters to vary across the thresholds instead of estimating a common parameter across all thresholds (Williams, 2006). Using

predicted probabilities,[2] we compare the odds of enrolling in higher education and in the most lucrative academic programmes according to ethno-religious affiliation among men and among women. As can be seen in the Findings section, the pattern of ethno-religious stratification is generally similar across gender, although there are gender effects. In a separate paper we will discuss gender differences and the intersections of gender and ethno-religious affiliation that emerge from our data set.

## Findings

The findings from the descriptive analysis, which are presented in Figure 1, show actual ethno-religious differences in the Israeli higher education system. First, for both women and men, Jews enroll in higher education at much higher rates than Arabs, and the former also enjoy a substantial advantage regarding enrollment in the most lucrative programmes. The average enrollment rate among Jews who were eligible for the matriculation diploma is about 69%, among Arabs only about 51%. As might be expected, Christian Arabs have a somewhat higher representation than Muslims and Druze in higher education and in lucrative programmes, but they are disadvantaged in comparison with the Jewish groups.

Within the Jewish population, we find that Ashkenazim retain their advantage over all other groups in the vertical dimension. About 75% of them enrolled in higher education, compared with about 61% among Mizrachim and 65% among new immigrants from the FSU. In the horizontal dimension, new immigrants from the FSU have the highest representation in the most lucrative programmes, followed by Ashkenazim, persons of mixed origin, and Mizrachim. A gender perspective reveals the well-known pattern of female advantage in the vertical dimension and male advantage in the horizontal dimension. This pattern was found true for all ethno-religious groups.

The multivariate analysis can help explain the patterns of stratification found in the descriptive analysis. It also makes it possible to examine the three hypotheses regarding the mechanisms behind this inequality outlined above. Table 1 presents coefficients from generalized ordered logit models that encompass the entire sample, while Figures 2 and 3 present predicted probabilities, which were calculated for men and women separately. In Figure 2 we take into account socioeconomic background, and in Figure 3 we add controls for specialization during high school and achievement on the matriculation examinations and the psychometric
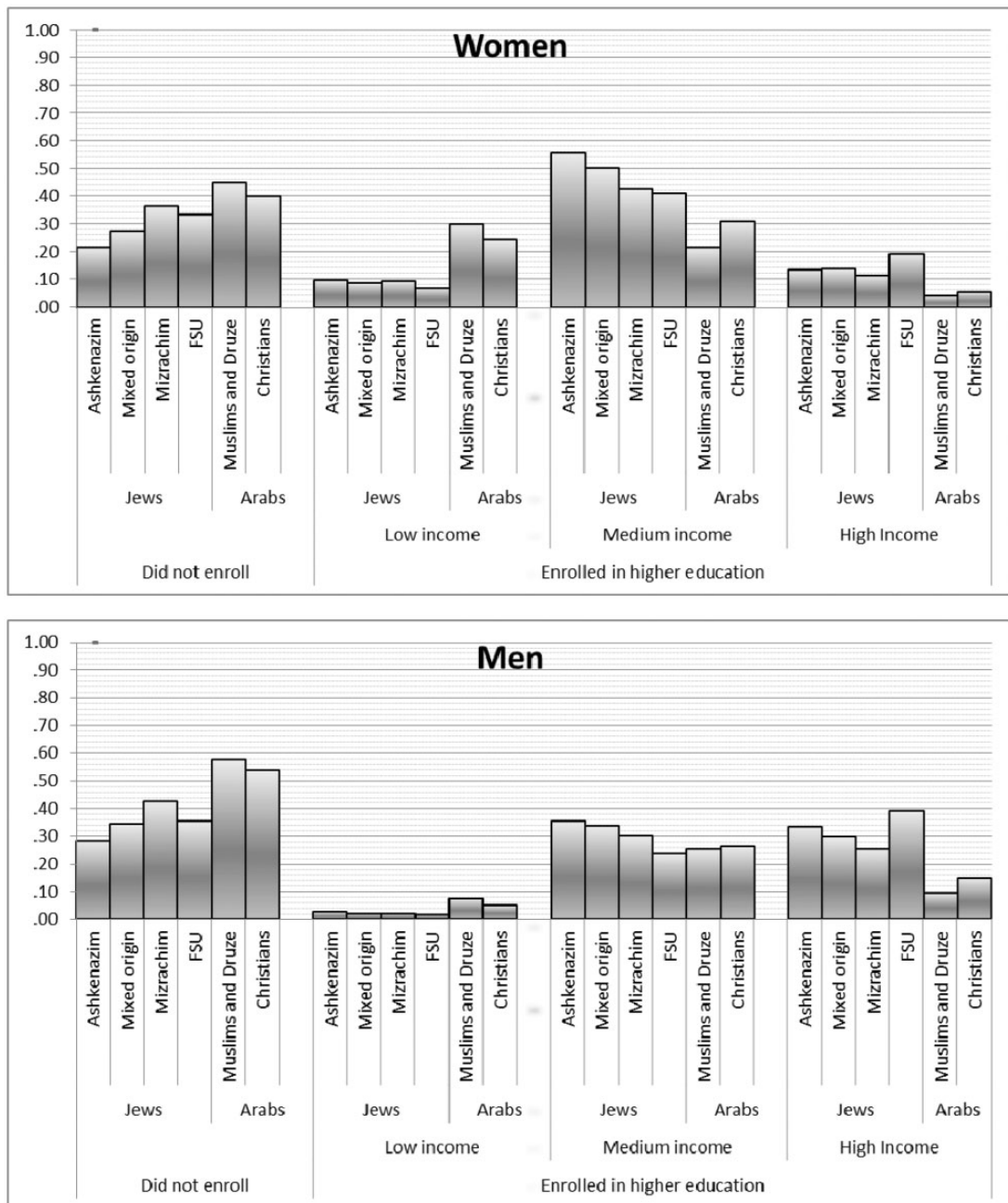
**Figure 1**. Enrollment in higher education by gender and ethno-religious group

test. In all models, Ashkenazim, the privileged ethno-religious group, is the reference category.

The full model (Figure 3, Model 2 in Table 1) suggests that the EMI hypothesis (*Hypothesis 1*) is only partially supported in regard to ethno-religious

stratification in the Israeli higher education system. From the perspective of the Arab/Jewish divide, our full model shows that Jewish men and women enjoy substantial advantages in both the vertical and horizontal dimensions. The small advantage of Christians over

**Table 1.** Coefficients from a generalized ordered logit regression analysis predicting enrollment in higher education

| Variables | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | y > 1 | y > 2 | y > 3 | y > 1 | y > 2 | y > 3 |
| Ethno-religious group (reference: Ashkenazim): | | | | | | |
|   Ethnically mixed | −0.094** | −0.050 | 0.044 | −0.032 | 0.019 | 0.113** |
|   Mizrachim | −0.212** | −0.169** | 0.047 | −0.028 | 0.009 | 0.227** |
|   FSU | −0.365** | −0.274** | 0.420** | −0.324** | −0.227** | 0.580** |
|   Muslims and Druze | −0.479** | −1.01** | −0.941** | −0.371** | −0.918** | −0.726** |
|   Christians | −0.671** | −0.959** | −0.821** | −0.673** | −0.940** | −0.702** |
| Gender: male | −0.301** | 0.062** | 1.087** | −0.420** | 0.013 | 0.980** |
| Number of siblings | −0.052** | −0.060** | −0.071** | −0.025** | −0.038** | −0.046** |
| Standard of living | 0.067** | 0.067** | 0.067** | 0.038** | 0.038** | 0.038** |
| Parental higher education | 0.260** | 0.197** | 0.038 | 0.083** | 0.017 | −0.158** |
| Specialization in high school (reference: humanities and social sciences): | | | | | | |
|   Sciences | | | | 0.092** | 0.119** | 0.793** |
|   Technology | | | | −0.136** | −0.089 | 0.811** |
| Average matriculation score | | | | 0.031** | 0.030** | 0.036** |
| Psychometric score (reference: low score): | | | | | | |
|   No score | | | | −1.309** | −1.241** | −0.775** |
|   Medium | | | | 0.752** | 0.823** | 0.915** |
|   High | | | | 0.980** | 0.980** | 1.221** |
| Intercept | 1.273** | 0.815** | 1.703** | −1.867** | −2.392** | −6.633* |
| N | | 37,060 | | | 37,060 | |
| Pseudo $R^2$ | | 0.085 | | | 0.185 | |

*\*\*P < 0.01; \*P < 0.05.*

*Note*: 1 = did not enroll, 2 = enrolled in programmes leading to low-paid occupations, 3 = enrolled in programmes leading to medium-paid occupations, 4 = enrolled in programmes leading to lucrative occupations. Control for selection bias in eligibility for the matriculation diploma (inverse Mills ratio) is included in the analysis, but not presented.

Muslims and Druze disappears after socio-economic background, specialization during high school and previous achievement are taken into account.

The Ashkenazim/Mizrachim divide tells a different story. In the vertical dimension, the Ashkenazi advantage disappears in the full model for both men and women. In the horizontal dimension, not only are Ashkenazi men not advantaged in enrollment in the most lucrative programmes (the difference is statistically insignificant), but Mizrachi women have, in fact, higher odds than Ashkenazi women of enrolling in these programmes. The full model also suggests that socio-economic background and previous achievement cannot account for the disadvantage of new immigrants from the FSU in the vertical dimension and their advantage in the horizontal dimension.

Our second hypothesis predicted that differences in learning opportunities and previous achievement will help explain inequality between Mizrachim and Ashkenazim. A comparison of the findings from the model that controls for socio-economic background (Figure 2) and those of the full model (Figure 3) lend

support to this hypothesis, but only regarding the vertical dimension. After socio-economic background is taken into account, Ashkenazim still have a small (but statistically significant) advantage in access to higher education compared with Mizrachim and the ethnically mixed individuals. When specialization during high school and academic achievement are taken into account, this advantage disappears. In the horizontal dimension, the small Ashkenazi advantage that was found in the descriptive analysis is eliminated once socio-economic background is controlled for.

Our findings support *Hypotheses 3a*, *3b*, and *3d*, but not *Hypothesis 3c*. New immigrants from the FSU are disadvantaged, rather than advantaged, in access to higher education. As hypothesized, Arabs, both Christians and Muslims and Druze, are disadvantaged compared with Jews in both the vertical and horizontal dimensions, even after socio-economic background, specialization in high school, and previous achievement are taken into account. Thus, secondary effects play an important role in the enrollment patterns of both new immigrants from the FSU and members of the Arab minority.
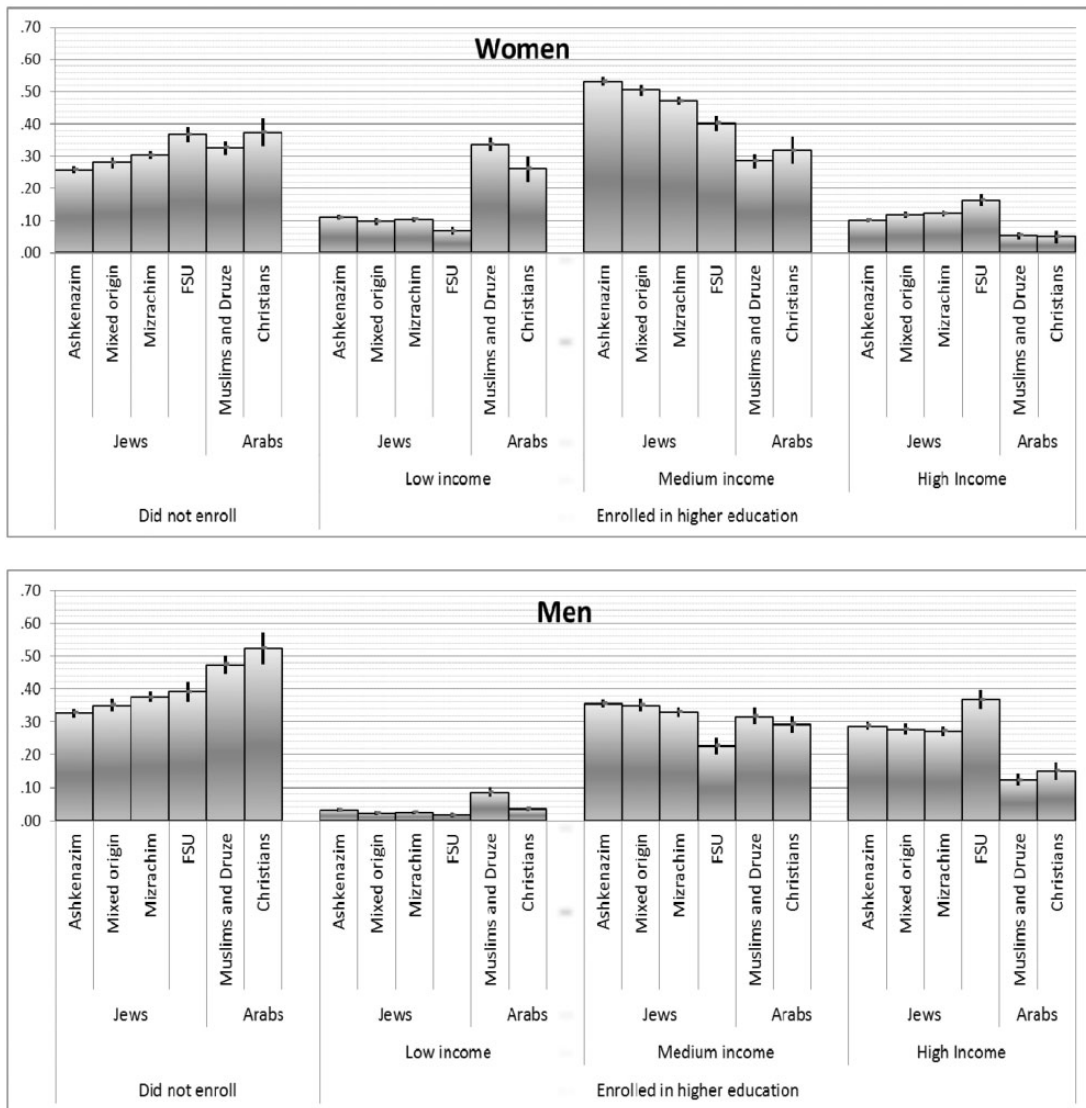
**Figure 2.** Predicted probabilities (with 95% confidence intervals) for enrollment in higher education after controlling for socio-economic background, by gender and ethno-religious group

## Discussion

Despite the expansion of the Israeli higher education system in the past two decades, ethno-religious gaps in access to academic degrees have not disappeared. The descriptive analysis indicated that gaps between Ashkenazim and Mizrachim in the vertical dimension still exist today, but these differences disappear when social background and high school experience and achievement are taken into account. We did not find that the horizontal dimension has become the main focus of inequality in Israeli higher education, as might

be expected from the theoretical perspective of the EMI. In fact, the historically privileged Ashkenazi group does not have an advantage over other Jewish groups regarding enrollment in the most lucrative academic programmes. This may call for a more nuanced analysis of educational expansion processes in which inequality can be maintained but can also be changed. Thus, for example, Ayalon and Yogev (2006) pointed out that Mizrachim individuals tend to attend private colleges, which in turn allows them easier access to more selective fields of study. The present study suggests that the
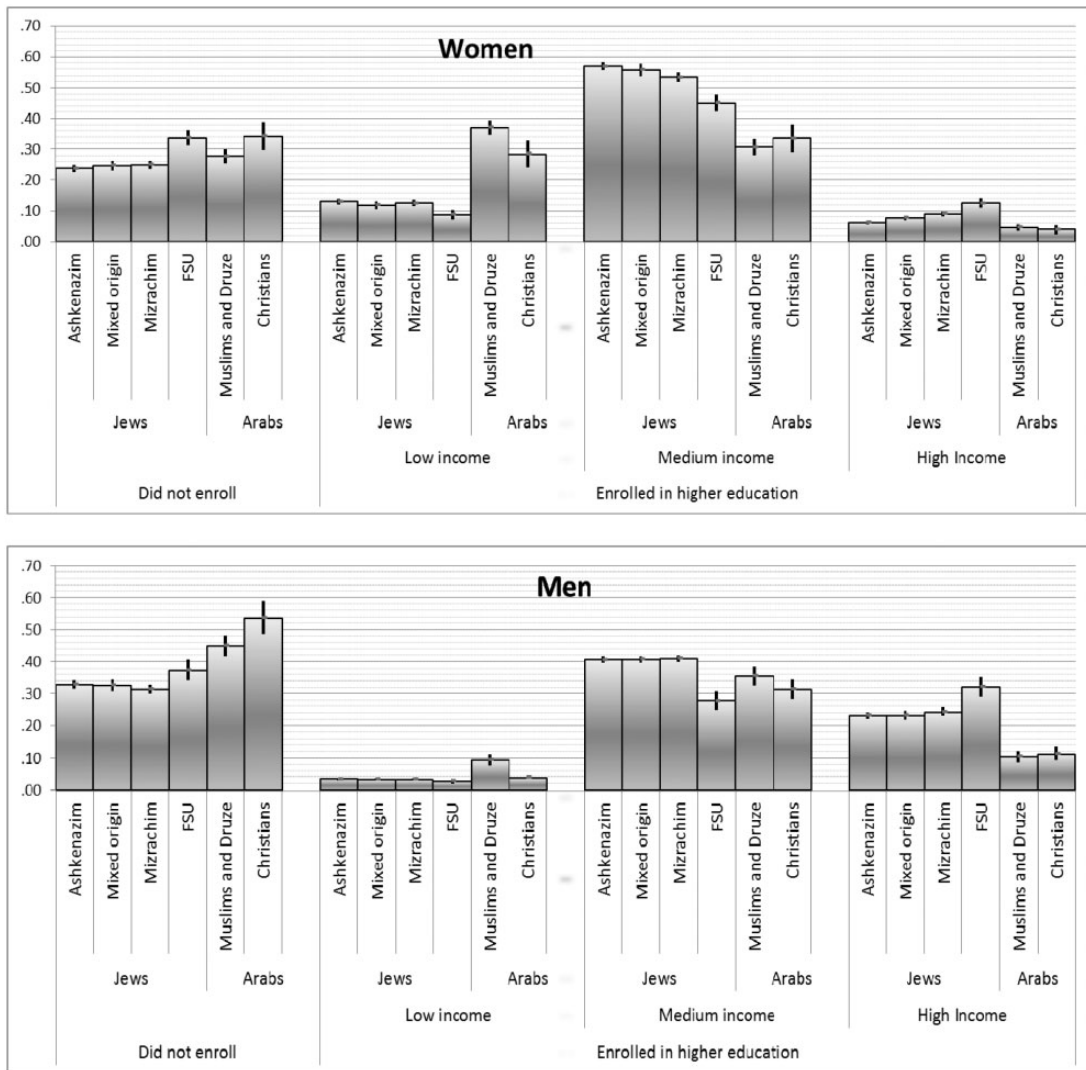
**Figure 3.** Predicted probabilities (with 95% confidence intervals) for enrollment in higher education after controlling for socio-economic background, specialization during high school, average matriculation score, and the Psychometric score, by gender and ethno-religious group

orientation of Mizrachim towards economic mobility in the labour market is stronger among women.

New immigrants from the FSU have the highest chances of entering lucrative academic programmes. This pattern is similar to the one found among Asian Americans in the United States. Xie and Goyette (2003), who observed this pattern on the basis of American data, argue that 'Asian Americans consciously choose certain high status occupations where they can avert disadvantages as newcomers and succeed with marketable credentials' (p. 490). This argument is possibly true for immigrants who arrived in Israel from the FSU. On the other hand,

new immigrants from the FSU enter higher education at lower rates than Ashkenazim, Mizrachim, and persons of mixed origin. This split pattern is intriguing in light of the relatively high educational performance of students from this ethnic group. Our data do not provide information that can help explain this finding. A possible explanation is a choice of nonacademic technological professions, such as technicians. Future research should further explore this explanation as well as other explanations.

The vertical disadvantage of members of the Arab minority can be attributed to two main factors. First,

language difficulties may play an important role. As noted above, the language of instruction in Arab schools is Arabic. However, most tertiary institutions in Israel, including all universities and most colleges (the exception is some teacher-training colleges), use Hebrew as their language of instruction. Arab high school graduates who do not feel proficient enough in Hebrew may therefore choose not to enroll in Israeli higher education institutions. A recent study on Arab students from Israel studying in Jordanian tertiary institutions showed that one of the reasons for their decision was the desire to study in Arabic (Arar and Haj Yehia, 2010).

Another important explanation for Arabs' lower odds of enrolling in higher education is discrimination in the labour market. The Israeli labour market is highly segregated, and Arabs are limited in their ability to find a job in Jewish-dominated firms (Lewin-Epstein and Semyonov, 1992). Many Arab youth may therefore choose not to invest in higher education. Our analysis did not confirm the argument that average achievement on the matriculation examinations and the psychometric test is an important barrier to the enrollment of Arabs in higher education (Al-Haj, 2003), although it may play a role in certain selective fields such as medicine.

Members of the Arab minority who chose to enroll in higher education tended to be concentrated in nonlucrative academic programmes, oriented towards the public sector. We believe that this pattern results mainly from the segregated nature of the Israeli labour market and is less a consequence of the education system itself. Arabs who acquire academic education probably prefer fields of study that allow access to less discriminatory professions. This explanation should be further explored in future research.

The findings regarding patterns of enrollment of new immigrants from the FSU and members of the Arab minority emphasize the importance of secondary effects to the understanding of ethnic and racial stratification in higher education. As previous studies have suggested, youngsters belonging to minority groups may have different considerations than members of the majority regarding entering higher education and choosing institutions and fields of study. One of the main limitations of the present study lies in its dependence on administrative data, which does not enable further exploration of these considerations. Future research, in Israel and elsewhere, should further explore these considerations to better understand why some minority groups are advantaged while others are disadvantaged in the main channel of mobility in developed countries.

## Notes

1 We estimated the multivariate models with and without the control for selection. The general pattern of the findings remained similar. Adding the selection variable to the models reduced the effect of socio-economic background on enrollment in higher education.

2 The SPOST package (Long and Freese, 2006) was used to calculate predicted probabilities and confidence intervals based on the results of the generalized ordered logit models.

## Supplementary Data

Supplementary data are available at *ESR* online.

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