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Aaron Institute for Economic Policy

In the name of Aaron Dovrat z"l

Paving the Way to Labor Market Success for Arab Higher Education Graduates

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Aaron Institute for Economic Policy

Dedicated to the memory of Aaron Dovrat

The vision of the Aaron Institute for Economic Policy in the Tiomkin School of Economics is to support sustainable economic growth and social resilience, along with poverty reduction. To achieve these goals, the institution strives to design a strategy based on measurable goals, which can be subjected to international comparison, and propose detailed plans for economic policies based on the most updated international knowledge. We focus primarily on reforms towards economic growth stemming from increasing employment and raising the GDP per hour worked (labor productivity) in Israel.

The key measure of sustainable economic growth – GDP per capita – is still low in Israel compared to leading developed countries, and so is labor productivity. Through its economic studies, the Aaron Institute presents goals, innovative policy tools, and reforms to promote growth, high-quality employment, and labor productivity.

The Institute's mission is to help shaping the socioeconomic policy in Israel through the development of long-term plans that address the full range of economic and social issues facing the Israeli economy. Our main focus is families with less than median income, who comprise significant parts of the Arab and Haredi (ultra-Orthodox) populations. In these groups specifically, increasing employment and productivity would greatly contribute to achieving the goals of growth, social resilience, and poverty reduction. In addition, our studies aim to influence the professional discourse, and to stimulate discussion based on reliable information and socioeconomic research that offers practical tools to achieve these goals.

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The Center for Economic Policy of the Israeli Arab Population

The Aaron Institute has established the Center for Economic Policy of the Israeli Arab Population with a vision of advancing the manufacturing and business economy in Israeli-Arab population, enhancing its integration in the Israeli economy. The Center's advisory committee is headed by former Supreme Court Justice Salim Joubran, and includes several key figures from various fields in the Arab population. The advisory committee is assembled every year to decide on the Center's research plan based on outcomes and accumulated knowledge.

The activity of this center is part of the Aaron Institute's comprehensive economic strategy for the Israeli economy, which aims to achieve sustained growth in GDP and labor productivity while reducing poverty and inequality. The Center's activity focuses on presenting government decision-makers with recommendations for implementation of long-term economic policies concerning Israel's Arab population and promoting their realization. In accordance with the Center's vision, activity revolves around designing strategies and devising policies in the fields of education, employment, and infrastructure, through collaboration with various government agencies, and particularly the Ministry of Finance and the Economic Development Authority of the Minority Sector. Policy recommendations include proposals for detailed programs, which are based on up-to-date data regarding the Arab population in Israel as well as economic knowledge acquired nationally and internationally, while also considering existing customs and cultural norms in Israel, including political limitations. Research findings and recommendations are presented at public roundtable discussions held in Arab localities, with participants including Arab and Jewish professionals such as researchers, decision-makers, and leading figures from the business and public sectors.

Our collaboration with government offices, especially the Ministry of Finance, enables us to enhance the Center's impact and to translate its proposals into government decisions with allocated funds, which engender the implementation of long-term policies in various fields.

Paving the way to Labor Market Success for Arab Higher Education Graduates

This study examines the quality of labor market integration among Arab bachelor's degree holders who have obtained their degrees in Israeli academic institutions. The study utilizes rich administrative data compiled by the Central Bureau of Statistics of Israel. The findings indicate that Arab BA degree holders, both men and women, exhibit high employment rates and are able to secure employment immediately after graduation. The wage premiums on education for Arab graduates are comparable to those of Jewish graduates, albeit with significant variation observed across different fields of study. Furthermore, the study reveals that after accounting for demographic differences, there are no wage disparities between Arab and Jewish men. Yet, for women, even after controlling for observable characteristics, Arab women still earn 10% less than Jewish women in the public sector and 22% less in the private sector. Factors such as work hours and occupational choices explain at least some of this disparity for Arab women. Overall, the findings suggest that Arab graduates can successfully compete in the job market and benefit from their education. This study provides valuable insights into public policy and highlights the importance of promoting access to higher education for the Arab population in Israel.

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Executive Summary

Identifying the factors that impact economic progress is vital for improving the standard of living in Arab society and fostering GDP growth and productivity. A 2019 study by the Aaron Institute for Economic Policy revealed that around two-thirds of the income gap between Arab and Jewish households can be attributed to differences in human capital, such as education and skills (Tehawkho, 2019). The current study focuses on evaluating the quality of labor market integration for Arab bachelor's degree holders who have completed their education in Israeli institutes. To conduct this analysis, we utilize recent comprehensive administrative data obtained from the Central Bureau of Statistics of Israel. Our study aims to answer three key questions: (a) *Does pursuing an academic degree in Israel pay off for Arab degree holders?* (b) *Have recent years seen shifts in labor market outcomes for Arab degree holders compared to a decade ago?* And (c) *Where do Arab recent graduates stand in comparison to Jewish graduates in terms of employment and wages?*

To address the first question, we conduct a thorough analysis that examines the relationship between obtaining a bachelor's degree (BA) and the employment status and wages of individuals aged 29-31 in 2019. Specifically, we draw comparisons between the employment status and earnings of Arab degree holders and those Arabs who do not hold a full matriculation (*Bagrut*) but share similar demographic attributes including age, place of residence, and socio-economic status.[1] By comparing individuals with similar characteristics, the study aims to isolate the effect of education on employment and wages, which we refer to as the returns to education and employment associated with pursuing this degree.[2]

[1] We choose this comparison group due to difficulties in accurately identifying the educational qualifications of Arab individuals who study abroad, potentially resulting in lower wage premiums compared to high-school graduates.

[2] To accurately measure the effect of education, we must consider the fact that not every high school graduate chooses to pursue it. Since higher education students are assumed to have higher abilities in average compared to the general population, the effect of education may be biased, suggesting a higher effect of education on employment and income. The measure we use to account for abilities, "*Bagrut* high tech", does not fully capture all aspects of a person's abilities. Therefore, we expect the influence of education to be upward biased in this paper.

In later stages, our study assesses labor market outcomes for both Arab and Jewish BA graduates in their first-year post-graduation. We compare two cohorts of graduates from 2004-2008 and 2014-2018, examining trends over time and exploring the factors leading to wage disparities between Arab and Jewish graduates. A significant focal point of this study is understanding whether wage disparities persist even after accounting for observable differences between the groups.[3]

Our main findings are segmented into three key questions:

Does pursuing an academic degree in Israel pay off for Arab degree holders aged 29-31 in 2019?

- ***Employment:*** Education is positevely and significantly associated with employment, particularly for Arab women. Arab BA graduates, both men and women, exhibit high employment rates across all fields of study, typically exceeding 90%, in line with their Jewish counterparts.
- ***Wages:*** Arab men and women with bachelor's degrees earn an average of 41% and 53% more, respectively, compared to their Arab peers with similar demographics and lower education level (less than full matriculation (*Bagrut*)). These results differ by field of study and align with those observed among Jewish counterparts.

Have recent years seen shifts in labor market outcomes for Arab degree holders (2014-2018 cohort) compared to a decade ago (2004-2008 cohort)?

- ***Employment:*** Over 90% of Arab graduates secure employment immediately after graduation, regardless of their field of study. Employment rates have remained stable over time with a slight increase noted among Arab males.
- ***Wages:*** Arab graduates experienced substantial wage growth: 36% and 40% increase among men and women, respectively, in the first year after graduation. These increases were significantly higher than those observed among Jewish men (10%) and women (16%). Demographic changes and fields of study explain about half of this growth.

[3] This comparison overlooks potential differences in unobservable traits between Arab and Jewish individuals with bachelor's degrees. The lower enrollment and graduation rates in higher education among Arabs, and particularly Arab men, suggest that Arab men graduating with a BA degree may have higher abilities in average compared to their Jewish peers, resulting in smaller gaps in employment and wages.

Where do Arab graduates stand in comparison to Jewish graduates?

- ***Employment:*** Arab men display slightly higher employment rates than Jewish men, while Arab women's employment rates align with Jewish women's.
- ***Wages:*** Arab graduates enter the job market with lower average salaries compared to Jewish graduates. However, the wage gap was significantly reduced over the past decade due to faster wage growth among Arabs. Arab men from the 2014-2018 cohort outearn Jewish men in the public sector, while Arab women earn less than Jewish women.
- ***What explains the disparities in wages?*** After accounting for demographic differences, there are no wage disparities between Arab and Jewish men. However, Arab women from the 2014-2018 cohort earn 22% less in the private sector and 10% less in the public sector compared to Jewish women, even after controlling for demographics, fields of study, institution types, and economic sectors. Factors such as work hours and occupations, which are not available in the administrative data, contribute to these differences.
- ***Wage disparities ten years after graduation:*** Real wage gaps remain stable for men in the first ten years after graduation, while among women they even decrease.

Our findings suggest that pursuing an academic degree is highly beneficial for Arab young adults, leading to improved employment prospects and higher wages. Yet, it is concerning that the percentage of Arab students pursuing higher education is significantly lower compared to their Jewish peers (Tehawkho, Larom and Jabali-Serhan, 2023). Furthermore, the same study highlights a significant disparity between enrolment rates and completion rates, suggesting a higher dropout rate among Arabs.

Previous studies conducted by the Aaron Institute found that accessing higher education can be challenging for Arab youth due to various barriers such as low matriculation rates, low levels of cognitive and noncognitive skills, insufficient digital literacy, low Hebrew proficiency, and lack of information and guidance (Tehawkho, Larom and Jabali-Serhan, 2023). Furthermore, Arab society in Israel was found to have low educational mobility – i.e., there is a low rate of first-generation students, and most higher education students come from educated families.

To improve labor market outcomes and economic progress within Arab society, we recommend the following:

Promoting Access to Higher Education: We advocate for strategies that reduce barriers to higher education for Arab youth. Collaborative efforts involving educational institutions, government agencies, non-profits, and stakeholders are essential in order to enhance skills, improve language proficiency, promote digital literacy, provide information and guidance, and encourage educational mobility.

Supporting Degree Completion: To ensure equal opportunities for success in higher education, it is vital to support students who face challenges during their studies. Strategies may include tracking students' progress to identify areas in need of support, offering academic support services such as tutoring and counselling, providing financial assistance to alleviate financial burdens, and promoting mentorship and peer support programs.

It is important to note that the effectiveness of these strategies warrants further research, which is beyond the scope of the current paper. Our primary aim is to shed light on the significant benefits that Arab degree holders can obtain from higher education and to stress the need for strategic efforts to encourage more Arab youth to pursue and complete their academic degrees. By addressing the identified barriers, we can ensure equal opportunities for success in higher education, leading to improved labor market outcomes in Arab society.

This study also highlights notable wage disparities between Arab and Jewish women in Israel, even after accounting for comparable observable characteristics. Such disparities potentially arise from differences in hours worked and occupational choices and may indicate a need for targeted interventions.

To enhance the quality of labor market integration for Arab women, we recommend addressing the factors that contribute to these wage disparities:

Addressing Wage Disparities: It is essential to delve deeper into the reasons for Arab women's fewer work hours and fewer leadership positions. While cultural factors may influence these outcomes, further research is required to fully comprehend the underlying factors. This understanding may assist in designing measures to foster an inclusive work environment, enabling Arab women to thrive and reach their full potential in their chosen careers. By addressing wage disparities, we can ensure equitable labor market outcomes and foster economic growth and progress in Arab society.

1. Introduction

A study conducted by the Aaron Institute for Economic Policy in 2019 revealed that Arab households in Israel had significantly lower income compared to Jewish nonorthodox households, with an income disparity of roughly 50% (Tehawkho, 2019). The study identified two major types of barriers contributing to this income gap: impediments to acquiring human capital, such as education and skills, which accounted for about two-thirds of the gap, and barriers to entering the labor market, which accounted for the remaining one-third.

The current study examines the quality of labor market integration among Arab degree holders who have obtained their degrees in Israeli academic institutions. It aims to address three key questions: (a) Does pursuing an academic degree in Israel pay off for Arab degree holders? (b) Have recent years seen shifts in labor market outcomes for Arab degree holders compared to a decade ago? And (c) Where do Arab recent graduates stand in comparison to Jewish graduates in terms of employment and wages? By examining these questions, the study aims to provide insights into the quality of labor market integration among Arab degree holders in Israel and shed light on the factors related to their employment prospects and wage levels.

Our investigation utilizes rich administrative data from the Central Bureau of Statistics of Israel. The study focuses specifically on individuals who obtained their academic certification within the Israeli educational system after studying in Israeli high schools. It is important to note that the study's findings may not be generalizable to Arab degree holders who have pursued their education elsewhere (outside the Israeli system).

This study is crucial for developing effective strategies to ensure the quality integration of Arab graduates into the labor market in Israel. By identifying the barriers hindering equitable employment outcomes and wage levels, this research aims to inform policies, enhancing labor market integration for Arab degree holders. Such improvements could foster higher motivation among Arab youth to pursue higher education degrees in Israel, leading to a more diverse and skilled workforce that could catalyze economic growth and development.

The study is presented as follows: Chapter 2 investigates the association between obtaining a bachelor's degree and employment as well as wages for individuals aged 29-31 in 2019. Specifically, we compare the employment and wages of Arab individuals with a BA degree to Arabs whose highest level of education is less than full matriculation (*Bagrut*) with the same background characteristics such as age, area of residence, and socio-economic status. By comparing individuals with similar characteristics, our aim is to isolate the effect of obtaining a BA degree from other factors – an effect termed as the returns to education and employment associated with pursuing this degree. The main limitation of this approach is that certain characteristics of individuals are not accessible or observable, making it challenging to control for them in the analysis. For instance, if individuals with higher abilities are more likely to obtain a bachelor's degree, it will make education seem more influential than it truly is.

Chapters 3 and 4 explore the employment and wages of Arab and Jewish BA graduates during their first year after graduation. The analysis compares the outcomes of graduates who completed their studies between 2004-2008 and those who graduated between 2014-2018. We start by examining changes over time in the employment rates and wages, and proceed by investigating the factors that contribute to the disparities in labor market outcomes between Arab and Jewish graduates. This comparison also fails to account for potential variations in the unobservable traits of Arab and Jewish individuals who hold a bachelor's degree. Considering the significantly lower enrollment and graduation rates of Arab individuals, and particularly Arab men, in higher education, it is possible that the Arab BA graduates are more capable on average than their Jewish counterparts. As a result, the observed differences in outcomes between Arab and Jewish degree holders might appear smaller than they would when comparing individuals with similar abilities.

Chapter 5 summarizes our findings, offering recommendations based on the insights obtained from the analysis. The chapter also highlights the barriers to quality labor market integration for Arab youths in Israel. This information can be instrumental in informing policies and interventions aimed at promoting greater equality in the labor market.

2. Does it pay off to have an academic degree in Israel?

This chapter explores the impact of education over employment and wages for Arab men and women aged 29-31 in 2019.[4] We compare the employment and wages of BA graduates to those whose highest education level is less than full matriculation (*Bagrut*) while controlling for various background characteristics.[5] By doing so, we aim to isolate the effect of education on employment and wages, which we refer to as the *returns on education and employment* associated with pursuing this degree. This approach has a significant limitation: it does not account for unobserved characteristics of individuals that influence employment, wages, and the decision to pursue higher education. For instance, if individuals with higher abilities are more likely to obtain a bachelor's degree, it introduces an upward bias when attributing wage premiums solely to education. This bias could be more pronounced for Arab men and women due to their lower enrollment and graduation rates compared to their Jewish counterparts, indicating a more selectively skilled group.[6]

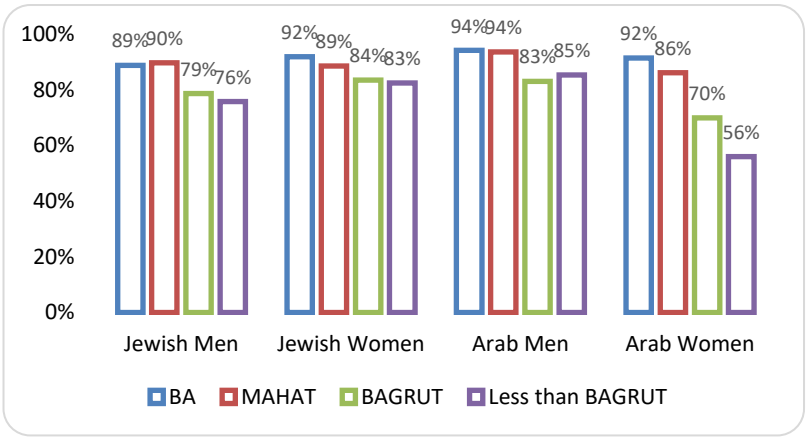
2.1 Education and employment

Our data demonstrates a substantial positive association of education and employment, especially for Arab women. Around 91% of Arab women holding a bachelor's degree are employed, similarly to Jewish women with the same level of education (see Figure 1). However, among Arab women who did not achieve full matriculation, employment rates drop significantly to 56%, considerably lower than the 83% rate for Jewish women at the same educational level.[7] When comparing Arab women with similar backgrounds we can see that obtaining a bachelor's degree is associated with 31 percentage point increase in employment (see Figure 2).[8] Despite the varying abilities, motivations, and opportunities that distinguish Arab women who choose to pursue higher education from those who do

[4] Please refer to the data description provided in the Appendix.
[5] We chose to compare BA graduates with individuals who have no matriculation (*Bagrut*) rather than those with full matriculation, because many individuals from the Arab society pursue higher education abroad. In our sample, those who pursue education abroad are classified as high school graduates, which could potentially underestimate the true effect of obtaining a BA degree.
[6] See Table 3 and Figure 13 in the Appendix.
[7] Employment rates for Arab women without full matriculation appear high due to our sample's focus on individuals who studied in high school in Israel, excluding Arabs of Eastern Jerusalem for the most part, and because administrative data typically show slightly higher employment rates than labor force surveys.
[8] Please refer to the model description provided in the Appendix.

not, we firmly believe that higher education plays an important role in enhancing employment opportunities for Arab women.

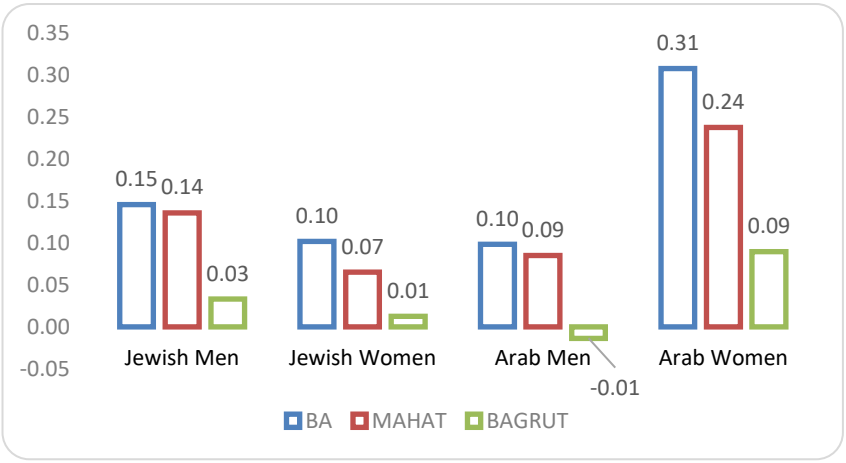
Figure 1: Employment rates by gender and ethnicity, ages 29-31 in 2019



Note: *Bagrut* is an Israeli matriculation certificate, awarded to high school students in Israel upon successful completion of their secondary education. MAHAT refers to a diploma from the National Institute for Training in Technology and Science colleges for technicians/practical engineers.

Source: Administrative Data CBS.

Figure 2: Effect of education on employment, by gender and ethnicity ages 29-31 in 2019



Note: We run a linear regression of probability to be employed on the highest degree completed and other control variables such as age, area, parent's education, parental income, religion, and *Bagrut* high tech. "*Bagrut* high tech" is defined as achieving a five-unit level in matriculation exams in Math, English, and either Physics or Computer Science. We compared these results to the employment rate of those with less than full matriculation.

Source: Administrative Data CBS.

Education is also associated with an increase in employment among Arab men, albeit somewhat less markedly than for Arab women and Jewish men. Obtaining a bachelor's degree is linked to a ten-percentage point increase in the employment rate for Arab men, in contrast to those who did not complete their matriculation (see Figure 2). Notably, Arab men with less than *Bagrut* exhibit higher employment rates compared to Jewish men (Figure 1). However, it is important to note that our sample does not identify Jews serving in the army, thus appearing as unemployed, leading to an underestimation of Jewish men's actual employment rate.

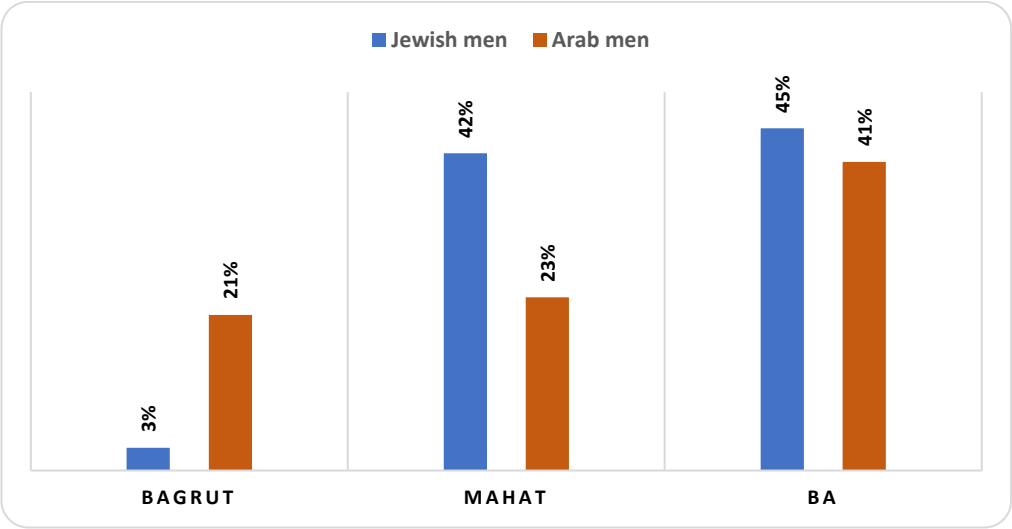
The analysis is further broken down by subject of study, which can provide valuable insights into the employment prospects of different fields. Employment rates vary across different fields of study, with nursing having the highest rates of employment among them (Table 1 in the Appendix). Overall, these findings suggest that Arab BA graduates exhibit high employment rates regardless of field of study, typically exceeding 90%.

2.2 Education and wages

For Arab individuals aged 29-31, earning a bachelor's degree is associated with a significant wage premium in 2019, similar to those observed among Jews.[9] Arab men and women with bachelor's degrees earn wages that are, on average, 41% and 53% higher, respectively, compared to their counterparts with similar demographics and whose highest completed degree is lower than full matriculation (*Bagrut)* (see Figures 3 and 4). It is noteworthy to mention that a higher wage premium for women compared to men has been observed internationally and could be attributed to a variety of factors, including differences in chosen study fields, career progression, or societal influences (Dougherty, 2003).

[9] Please refer to the model description provided in the Appendix.

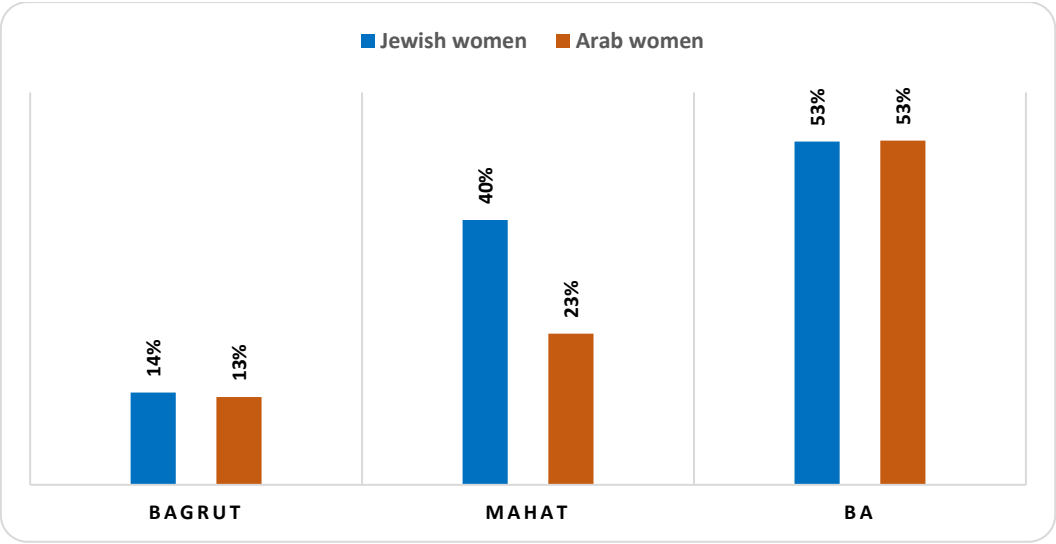
Figure 3: Education premiums by ethnicity, men 29-31 in 2019



Note: *Bagrut* refers to full matriculation. We ran a linear regression of log monthly income in relation to the highest degree obtained, considering other factors like age, experience, location, parents' education, income, religion, and *Bagrut* high tech. Our base category is those with less than full matriculation.

Source: Administrative Data CBS.

Figure 4: Education premiums by ethnicity, women 29-31 in 2019



Note: *Bagrut* refers to full matriculation. We ran a linear regression of log monthly income in relation to the highest degree obtained, considering other factors like age, experience, location, parents' education, income, religion, and *Bagrut* high tech. Our base category is those with less than full matriculation.

Source: Administrative Data CBS.

Wage premiums to a bachelor's degree can vary, depending on the chosen field of study. Fields that are in high demand and offer high-paying job opportunities typically provide greater returns. High-tech, pharmacy, and nursing fields offer the highest returns for both Arab men and women, while humanities and education offer the lowest returns (see Figures 11 and 12 in the Appendix). Furthermore, it is important to note that Arab men have lower wage premiums compared to Jewish men in fields such as mathematics, statistics, management, and accounting (see Figure 11). Therefore, it is important to consider the field of study when assessing the economic benefits of bachelor's degree.

Finally, our study suggests that technological education, referred to as MAHAT, could be a worthwhile consideration for both Arab men and women due to its attractive wage premiums (see Figures 3 and 4).[10] MAHAT programs typically require less time and have lower entry requirements compared to bachelor's degree programs, making them appealing for those keen on entering the workforce sooner. Furthermore, it is worth noting that the wage premiums on completing full matriculation (*Bagrut*) are high for Arab men compared to Jewish men. It is crucial to acknowledge, however, a potential upward bias in this coefficient, since many Arab graduates pursue higher education abroad and most appear as high school graduates in our sample. Ultimately, personal interests, goals, and market demands should be considered when choosing the most appropriate educational path.

[10] Students pursuing MAHAT certification earn 30% more than those whose highest degree was less than full matriculation.

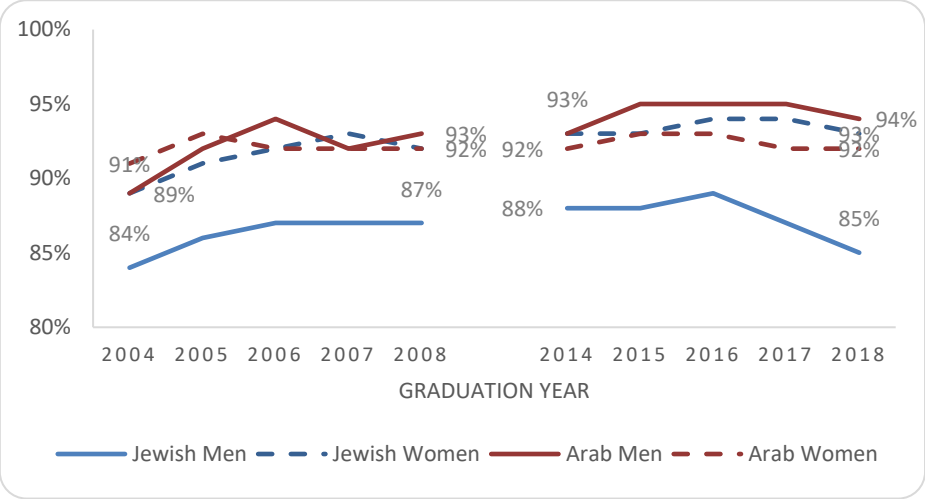
3. Have recent years seen shifts in labor market outcomes for Arab degree holders compared to a decade ago?

In the previous chapter, we examined how a bachelor's degree impacts employment and wages. This chapter seeks to identify whether there have been shifts in labor market outcomes for Arab degree holders in recent years compared to a decade ago. We compare two groups of graduates: Those who graduated between 2004-2008 and those who did so between 2014-2018[11]. Our objective is to identify factors that can explain changes in employment and wages for Arab graduates during this period.

3.1 Trends in employment

In terms of employment, Arab graduates in Israel, both men and women, exhibit encouraging prospects, with over 90% finding employment promptly after completing their bachelor's degree (see Figure 5). These rates have remained steady, with a minor upward trend among Arab men. Furthermore, Arab graduates consistently display high employment rates across all study fields (see Tables 12 and 13 in the Appendix). Disciplines like nursing demonstrate almost 100% employment rates, while fields like humanities, law, and high-tech have shown an increase in employment rates over time for both male and female graduates. This indicates a positive trend and a strong demand for Arab graduates in various sectors of the labor market.

Figure 5: Employment rates in the first year after graduation, by population group



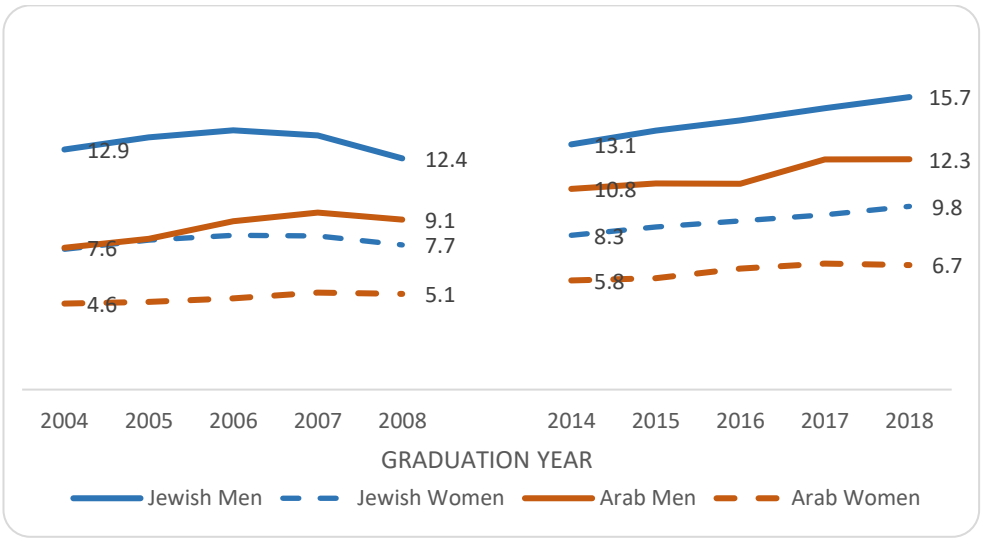
Source: Administrative Data CBS.

[11] Please refer to the data description provided in the Appendix.

3.2 Trends in real wages

Over the last decade, Arab graduates have seen a substantial rise in real wages (see Figure 6). When comparing between the 2004-2008 and 2014-2018 cohorts, we can see an upswing of 36% in real monthly earnings in the first-year post-graduation among Arab men. Similarly, Arab women recorded an even more pronounced wage growth, with a 40% increase in real wages over the same period. This growth indicates a substantial improvement in earning potential for Arab graduates, both male and female, over the past decade. The increase in real wages among Arab graduates has been consistently observed across all fields of study (see Tables 4 and 5 in the Appendix), economic branches (Tables 6 and 7), and institution types (see Figures 14, 15 and 16). Fields such as high-tech, engineering, and nursing saw the most accelerated wage growth for both genders. On the other hand, accounting and management, law (for women), and education (for men) demonstrated a slower wage growth. When comparing sectors, public administration showed the most rapid wage growth for both genders. In addition, education and human health emerged as fast-growing sectors for women, while the industry and high-tech sectors showed notable wage growth for men. These findings highlight the variation in wage growth across different areas of study and sectors, indicating the importance of considering specific fields and sectors when analyzing wage trends among Arab graduates.

Figure 6: Real wages (monthly thousands NIS) in the first year after graduation



Source: Administrative Data CBS.

3.3 Factors contributing to the increase in real wages over time for Arab graduates

Next, we aim to determine what has led to an increase in the wages of Arab BA degree holders in the first year following their graduation between the cohorts of 2004-2008 and 2014-2018. To answer this question, we compare wages across these two periods while accounting for changes in observable characteristics that occurred during this time, trying to identify the factors that partially explain the increase in wages of Arab BA degree holders.[12]

Arab men and women have shown considerable advancement over time, increasingly selecting fields of study, types of institutions, and economic sectors that offer higher salaries. This can be seen in the growing trend of graduates from academic colleges and the declining trend of graduates from education colleges (see Table 11 in the Appendix). There has also been an increase in the number of graduates in the fields of nursing, management and accounting for both genders, and in the field of high tech for men (see Table 9 in the Appendix). In terms of sectors, there has been a shift towards more graduates entering high tech and human health sectors, while there has been a decrease in graduates entering public administration (Table 10 in the Appendix). It is noteworthy that the 2014-2018 cohort is older and more experienced compared to previous cohorts, suggesting they might bring more potential work experience into the labor market post-graduation (see Table 8 in the Appendix).

Our analysis reveals that demographic changes (primarily age) between the 2004-2008 and 2014-2018 cohorts explain a third of the wage increase in the first year after graduation for both Arab men and women (see Figure 17 in the Appendix). When we account for other changes in the fields of study, type of institution and economic branches in addition to demographics, we can explain almost half of the increase in the real wages. However, it is important to acknowledge that other factors could explain the remaining wage increase among Arab men and women. These could include initiatives focusing on promoting diversity and inclusion in recent years, shifts in labor market demand for specific academic qualifications, and other pertinent factors.

[12] Please refer to the model description provided in the Appendix.

4. Where do Arab recent graduates stand in comparison to Jewish graduates in terms of employment and wages?

In the previous chapter, we analyzed the changes in employment and wages among Arab graduates over the past decade and explored the factors contributing to the increase in their real wages. Now, we shift our focus to a comparison between Arab graduates and their Jewish peers in the first-year post-graduation, examining disparities in employment and wages and identifying the factors driving these differences. This comparison overlooks potential differences in unobservable traits between Arab and Jewish individuals with bachelor's degrees. Due to the lower rates of higher education enrollment and graduation among Arab individuals, and particularly Arab men, it is possible that the average abilities of Arab men graduating with a BA degree are higher than those of their Jewish counterparts (see Figure 13 in the Appendix). As a result, the gaps in employment and wages could appear smaller than would be expected otherwise.

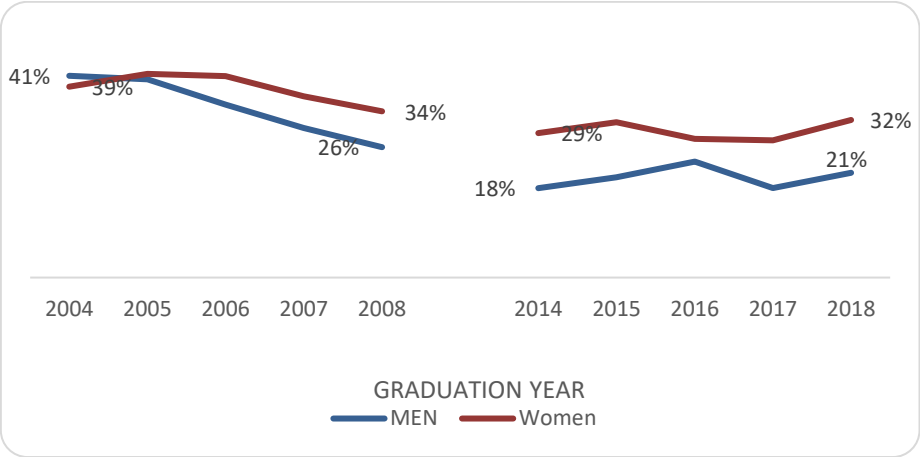
4.1 Employment

Once they graduate with a bachelor's degree, Arab women have similar employment rates to Jewish women, while Arab men have even higher employment rates compared to Jewish men (Figure 5). However, it is important to note that our sample does not recognize Jews employed in the army, which may lead to an underestimation of the true employment rate for Jewish men. Overall, the employment rates of Arab graduates across various fields of study are generally high and compare favorably to their Jewish peers (Tables 12 and 13). This finding highlights the positive employment prospects for Arab graduates.

4.2 Wages

In their first-year post-graduation, Arab graduates earn less than Jewish graduates (see Figure 6). Nonetheless, there has been a significant growth in the real wages of Arab graduates over time, which has substantially reduced the wage gap between Arabs and Jews. The real monthly wages for Arab graduates has increased considerably, as shown in Figure 7, resulting in a decrease in the wage gaps from 41% in 2004 to 21% in 2018 for men and from 39% to 32% for women. While there is progress yet to be made, these trends indicate a positive movement towards equal wages across different groups in the post-graduation labor market.

Figure 7: Arab/Jewish real wage gaps in the first year after graduation, by gender



Source: Administrative Data CBS.

4.2.1 Fields of study

Looking at the trends in various fields of study, we see a positive pattern of narrowing wage gaps between Arab and Jewish graduates in recent years (see Tables 4 and 5 in the Appendix). The observed trend is more pronounced within certain disciplines, including high-tech, engineering, nursing, and humanities. The narrowing wage differences are a good sign, especially considering the growing interest of Arab individuals in some of these fields (see Table 9 in the Appendix). However, it is important to note that substantial wage gaps persist in most fields, especially for women.

4.2.2 Types of institution

There is a narrowing of wage gaps between Jews and Arabs graduating from universities and colleges (see Figures 14, 15 and 16 in the Appendix). In addition, there has been a noticeable shift in the choice of educational institutions between these groups. A growing trend of graduates from academic colleges and a declining trend of graduates from education colleges has been detected over time (see Table 11 in the Appendix).

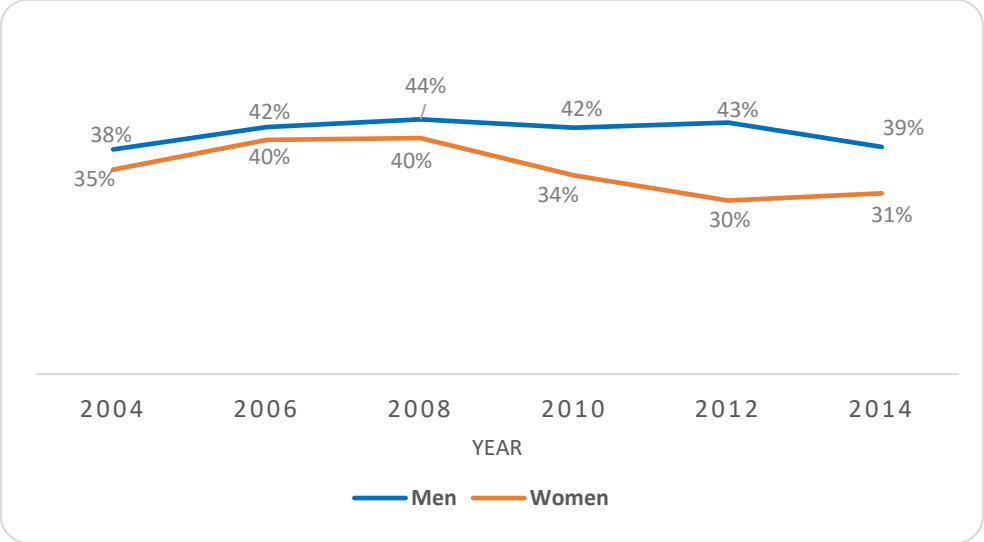
4.2.3 Economic branches

The wage disparities between Arab and Jewish graduates are notably smaller in the public sector compared to the private sector (see Tables 6 and 7 in the Appendix). In fact, Arab men, on average, earn higher salaries in the public sector in their first-year post-graduation compared to Jewish men, while Arab women still earn less than Jewish women in the same sector. As a result, the public sector has emerged as an attractive employment option for Arab graduates. Over 40% of Arab male graduates and 65% of female graduates secure employment in the public sector in their first-year post-graduation, indicating an overrepresentation of the Arab population in this sector, as shown in Table 10 in the Appendix.

4.2.4 Years since graduation

Finally, we have examined the wage gaps in the long run, up to 10 years post-graduation, as we were concerned that these gaps might be widening due to potentially slower career advancement among Arab graduates. The results show that among men, the wage gap remains static on average at around 40%, while among women, it narrows from 40% to 31% over the years (see Figure 8). This finding demonstrates progress in closing the wage disparities over time and suggests that career advancement opportunities for Arab women may be improving as well.

Figure 8: Arab/Jewish real wage gaps over 10 years, by gender, 2004 graduates



Source: Administrative Data CBS.

4.3 What factors explain the wage gaps between Arab and Jewish graduates?

In this part we aim to examine the factors influencing wage disparities between Arabs and Jews, focusing on their observable characteristics, such as age and socio-economic status. By comparing these characteristics between the two groups and assessing how wage gaps change when considering individuals with similar attributes, we aim to identify the specific factors contributing to these disparities. By addressing the underlying causes, we can strive for greater economic well-being among the Arab population and work towards reducing inequality in Israel.[13]

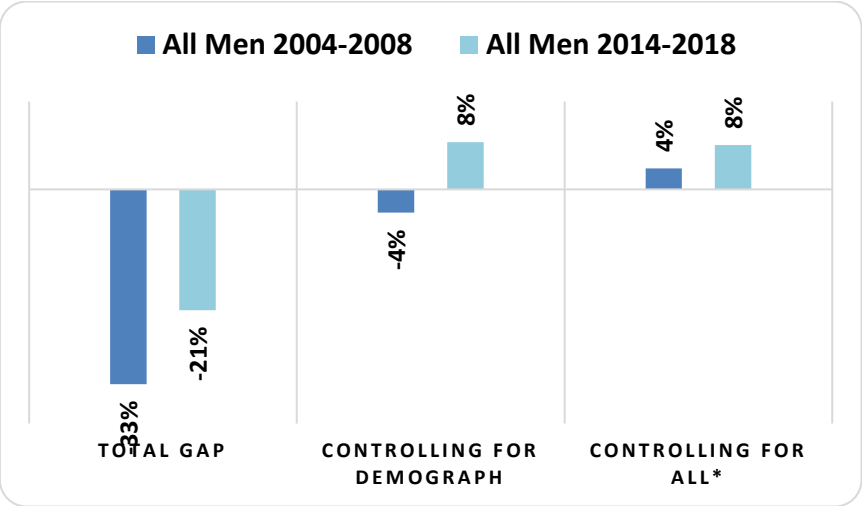
Based on the data presented in Table 8 in the Appendix, it can be observed that Arab graduates tend to exhibit certain background characteristics that may contribute to wage disparities compared to Jews. On average, Arabs are younger, less experienced, have obtained high school diplomas of lower quality, come from less prosperous yet more educated families, and reside mostly in the northern part of Israel. Additionally, a larger proportion of Arab graduates pursue studies in education colleges, a field with lower wages, while fewer chose high-paying fields of study, like high-tech and engineering. One exception is nursing – a popular field among Arabs that pays well (see Tables 9, 10 and 11 in the Appendix). Furthermore, a greater number of Arab graduates are employed in the public sector, where salaries are lower but more evenly distributed (Table 10 in the Appendix).

Based on the information presented in Figure 9, it appears that the wage gaps in the first year after graduation between Arab and Jewish men can be fully explained by background characteristics such as age, region of residence, and socio-economic status. When considering additional variables, such as the type of college, field of study, and economic branches, in conjunction with the background characteristics, it appears that Arab men earn slightly more than Jewish men in the first year after graduation. This finding suggests that the differences in earnings between Arab and Jewish men are primarily influenced by disparities in background characteristics, rather than discrimination.[14]

[13] Please refer to the model description provided in the Appendix.

[14] One potential issue is the lack of control for unobservable factors, which means we cannot fully account for the selection process. It is possible that Arab men, being a more selected group, may have higher abilities, which can influence the results.

Figure 9: Arab/Jewish men real wage gaps in the first year after graduation, when controlling for different factors



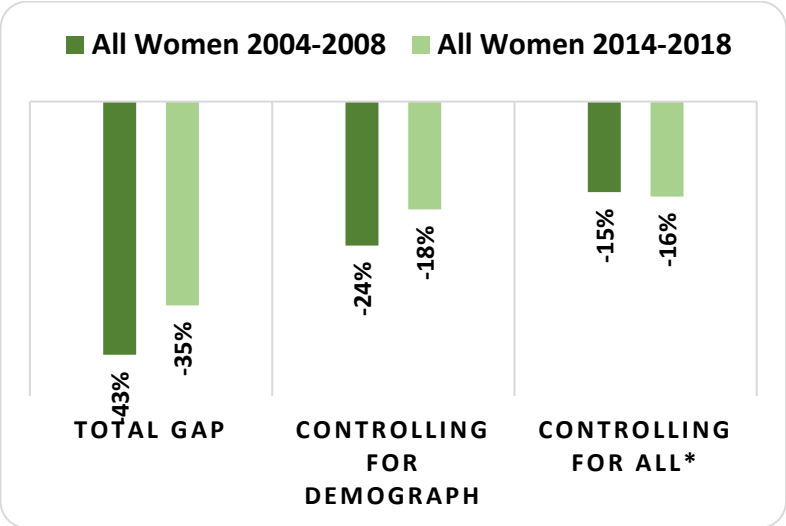
Note: We run a linear regression of log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, and *Bagrut* high tech. The "all" category includes the economic branch, field of study and type of institution in addition to demographic controls.

Source: Administrative Data CBS.

As for women, the data in Figure 10 reveals that Arab women who graduated with a BA degree between 2014-2018 earn 35% less than Jewish women in the first year after graduation. However, when comparing women with identical observable characteristics, including background, fields of study, type of institute, and economic branches, Arab women earn 16% less than Jewish women in the first year after graduation. This indicates that a significant portion of the wage gap can be explained by different factors, and there may be additional elements contributing to the disparity between Arab and Jewish women, such as variations in work hours, occupational choices, and personal preferences.

To gain a deeper understanding of wage disparities among women, we examined the wage gaps across various sectors. Figures 18 and 19 in the Appendix demonstrate that the wage differences between Arab and Jewish women are smaller in the public sector compared to the private sector. When controlling for background characteristics, economic branches, type of institution, and fields of study, we can see that Arab women who graduated between 2014-2018 earn 10% less than Jewish women in the public sector and 22% less in the private sector. Since Arab and Jewish women should theoretically get equal pay in the public sector, particularly in fields like education, we suspect that these disparities may be attributed to fewer working hours put in by Arab women, as well as their occupational choices.

Figure 10: Arab/Jewish women real wage gaps in the first year after graduation, when controlling for different factors



Note: We run a linear regression of log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, and *Bagrut* high tech, marital status, has children. The "all" category includes the economic branch, field of study and type of institution in addition to demographic controls.

Source: Administrative Data CBS.

Our administrative data set does not include information about work hours and occupational choices, factors which can potentially influence wage disparities. To address this limitation, we leveraged data from income and expenditure survey 2019 to help assess the proportion of wage disparities between Arab and Jewish women that could be attributed to differences in work hours and occupational choices. Our analysis revealed that a significant portion of the wage gap between these two groups can be explained when work hours and occupational choices are held constant.

It is important to acknowledge two primary constraints in using survey data in our analysis: First, the sample size of individuals with BA degrees, especially among Arab women, is considerably small. This can potentially affect the robustness of our findings. Second, our survey data does not allow us to exclusively focus on recent graduates. As a result, our analysis extends to all BA degree holders up to the age of 40. These limitations should be kept in mind when interpreting the results mentioned earlier.

5. Summary and conclusion

The current report presents the findings of our study, which focused on the labor market integration of Arab bachelor's degree holders in Israel. The study evaluates returns of an academic degree for Arab degree holder, the shifts in labor market outcomes over the past decade, and the comparative standing of Arab graduates versus those of Jewish graduates in terms of employment and wages. It is important to note that our results are affected by the issue of selection into education, which may overstate the actual impact of education.[15] However, despite this limitation, there are three main conclusions that can be drawn from the research:

1. **Higher education plays an important role in fostering employment opportunities, particularly for Arab women:** In 2019, Arab male and female BA graduates aged 29-31 displayed high employment rates (over 90%). Notably, the employment rates among Arab women were similar to those of Jewish women. Moreover, Arab BA graduates experienced no challenges in securing employment immediately after graduation, and this trend has intensified in recent years.
2. **Wage premiums of Arab BA degree holders are high and comparable to their Jewish counterparts.** In 2019, the wage premiums (returns) for a BA degree among Arabs aged 29-31 were 45% for men and 52% for women, very similar to those of their Jewish counterparts. Morever, the return on a BA degree varies depending on the field of study. High-tech and nursing fields offer the highest returns for both men and women, while humanities and education provide lower returns.
3. **Real wage gaps between Arab and Jewish graduates in the first year after graduation are fully explained for men but not for women:** While wage gaps between Arabs and Jews persist, it the gaps among men can be fully explained by accounting for background characteristics. Yet, this is not the case for women. Even after accounting for observable characteristics, Arab women still earn 10% less than Jewish women in the public sector and 22% less in the private sector. The remaining portion of the gaps can be attributed, at least partially, to differences in hours of work and occupational choices.

[15] Individuals who choose to pursue higher education possess certain qualities or characteristics that set them apart from those who do not. These advantages, such as higher abilities, stronger motivation, or better resources, can make the positive outcomes of education appear larger than they truly are.

The findings indicate that pursuing a bachelor's degree can greatly enhance the labor market integration of the Arab population in Israel. However, it is concerning that the number of Arab students pursuing higher education is significantly lower than their Jewish peers. In 2019, Arab men had a degree enrolment rate of only 17%, nearly three times lower than Jewish men, while Arab women had an enrolment rate of 36%, almost two times lower than Jewish women (Tehawkho, Larom and Jabali-Serhan, 2023). In addition, the enrolment rates into higher education among Arab youths are much higher than completion rates (see Figure 13 in the Appendix). Therefore, in addition to access, it is important to ensure that Arab students have equal opportunities to complete their degrees.

Recommendation: To improve labor market outcomes in Arab society, it is necessary to promote access to higher education and increase degree completion rates.

Accessing higher education can be challenging for Arab youth due to various barriers. The main barrier is lower levels of skills, which result in lower rates of completing full matriculation and lower scores on the entrance exams (psychometric tests). Additionally, many Arab youth face challenges related to insufficient digital literacy (Kalisher et al., 2022), low Hebrew proficiency (Tehawkho et al., 2022), a lack of information and guidance about available educational and labor market opportunities, and financial constraints. Furthermore, the educational mobility in Arab society is very low, as most students pursuing higher education have parents with a similar level of education.

Addressing these barriers can have a significant impact on Arab youth's ability to access higher education as well as their graduation rates. A comprehensive approach is required, which involves improving the quality of education in Arab schools, providing targeted support for students to improve their skills, offering financial assistance through scholarships or other programs, and ensuring that they have access to resources and information to help them navigate the higher education system.

The most crucial step in removing barriers involves addressing the Arab educational system. Tehawkho et al. (2022) found that student achievements, resources, and quality of education in Arab education are significantly lower compared to student achievements in Hebrew education. The authors outline detailed policy recommendations on how to improve the educational outcomes of Arab school students and equip them with the necessary soft skills to fulfill their full potential and integrate effectively into academia and the labor market. Implementing these recommendations would be an important step.

In addition, transitional gap year programs can also be very effective in reducing the obstacles to higher education. These programs should bridge the gap between high school and college, equipping students with vital skills and experience that may be lacking in their formal education. Offering a variety of valuable services such as educational and career counselling, upskilling, and fostering personal and community identity can be effective strategies to prepare Arab youths for higher education. In their study, Tehawkho, Larom and Jabali-Serhan (2023) provide comprehensive recommendations to enhance the effectiveness of transitional gap year programs in promoting quality employment opportunities for Arab youth.

To ensure all students have an equal opportunity to succeed in higher education, it is also crucial to provide support to those facing challenges in completing their degree. Potential strategies may include tracking student progress, offering academic support services, providing financial assistance, and promoting mentorship and peer support. These measures can help institutions in fostering an inclusive environment and facilitating student success. More research is required in this area to come up with policy recommendations.

Overall, promoting access to higher education for Arab youth is a critical step towards improving their labor market outcomes and reducing inequality in Israeli society. By addressing the barriers that prevent Arab students from pursuing higher education, policymakers and educators can create a more equitable and inclusive society for all.

Recommendation: To enhance the quality of labor market integration for Arab women, it is vital to address the factors contributing to wage disparities.

Our findings suggest that Arab women still earn less than Jewish women, even after accounting for observable factors. At least a portion of these differences can be attributed to variations in work hours and occupational choices made by these women. To encourage the realization of Arab women's full potential and address the remaining wage disparities, further research is necessary. This future investigation should aim to uncover why Arab women decide to work less hours and are less prevalent in the leadership positions. Additional cultural factors might contribute to the unexplained wage gaps. By gaining a deeper understanding of these factors, it will be possible to identify actionable measures and policies that can be implemented to promote improvement. The ultimate objective is to establish an inclusive environment that offers Arab women equal opportunities to realize their full potential and thrive.

6. Directions to future research

Three core areas warrant further exploration in order to better understand and promote the successful integration of Arab youth into higher education and the labor market. First, some Arab students may encounter challenges in completing their degrees due to lower levels of necessary skills. It is important to explore effective methods to assist these students, ensuring they successfully complete their academic pursuits. Second, a significant number of Arab youths opt for education abroad. While this fact presents an array of global learning opportunities, concerns arise regarding their successful reintegration into the local labor market upon return. Therefore, studying the labor market outcomes for these internationally educated students is crucial. A comparison of the value of studying abroad versus studying within Israel can help guide future educational decisions. Finally, further research is needed to dissect the observed wage disparities between Jewish and Arab women. Understanding the roots of these discrepancies can guide policies and interventions aimed at ensuring equitable wages across these groups.

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Appendix

Data

In this study, we utilize administrative data from databases compiled by the Central Bureau of Statistics of Israel. This data is an excellent source of information and provides us with detailed demographic data (such as age, gender and religion), household background (such as parents' education, income, and number of siblings), academic records (such as type of institution, field of study, and degree completion timing), and labor market information (such as industry, employment, and income). This comprehensive dataset allows for a thorough analysis of the factors influencing educational and labor market success in Israel.

The population of interest consists of individuals who obtained their academic certification within the Israeli educational system after studying in Israeli high schools. The sample excludes Arabs living in Eastern Jerusalem or studying towards higher education abroad, which limits the generalizability of the findings to these populations. In Chapter 2, the analysis focuses on the entire sample at ages 29-31 in 2019, as the wage data for this year represents the latest available information. In Chapters 3 and 4, the focus shifts to BA degree graduates specifically, excluding individuals who pursued advanced degrees within one year of graduation.

In terms of definitions of the main outcomes, the variable "earnings" refers to real monthly earnings derived from salaried work, specifically excluding income from business. To ensure consistency and reliability, individuals with monthly earnings below 100 and above 80,000 are excluded from the analysis. The definition of "employment" pertains to individuals who had earnings or business income during the specified period. This allows for a more accurate assessment of employment status and its relationship with other variables under investigation.

Model 1 - Return to education in terms of employment

In chapter 2, we employed a simple method of ordinary least squares (OLS) regression to estimate the probability of individuals with different qualifications being employed or not. The primary objective was to examine the relationship between the likelihood of employment and the highest degree completed, while considering the influence of other factors on employment status. The dependent variable used in the analysis was a binary indicator, indicating whether an individual was employed or not. The main independent variable of interest was the highest degree completed. Additionally, we included a range of control variables in the analysis to account for other factors that may affect employment outcomes.

Model 2 - Return to education in terms of earnings

In chapter 2, we employed a lean regression model to estimate the return to education. This approach is widely used in academic research to examine the association between earnings and various factors that could impact them. The primary objective of this analysis is to explore the relationship between monthly earnings and educational qualifications while controlling for other factors that may influence earnings.

To conduct the analysis, we used the natural logarithm of monthly earnings as the dependent variable. The highest degree completed was considered as the primary explanatory variable of interest. Additionally, we included a range of control variables such as age, tenure, region of residence, parent's education, family income at age 17 and quality of matriculation. The regression model was estimated separately for different ethnicities and genders. This approach allows us to examine potential variations in the relationship between education and earnings across these groups, providing a more nuanced understanding of the data.

Model 3 - Gap analyses

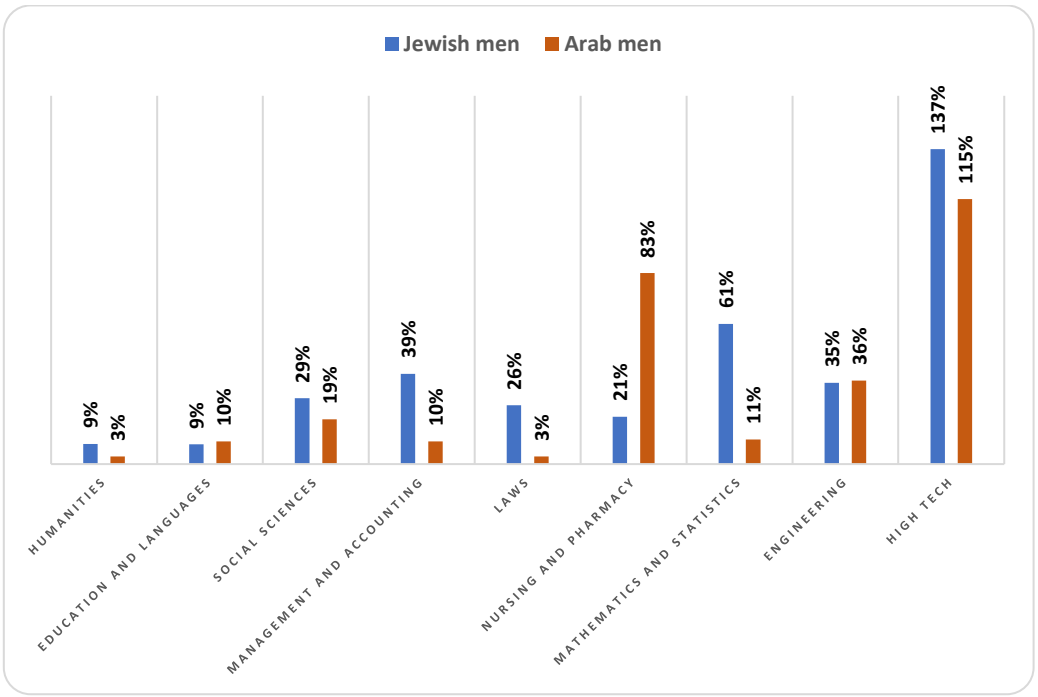
In chapters 3 and 4, we aimed to examine the factors that contribute to changes in wages over time and the wage disparities between Arabs and Jews. First, we investigated the changes in wages of recent graduates between the periods of 2004-2008 and 2014-2018. We controlled for various characteristics that could explain the wage changes over time, such as age, background characteristics, field of study, type of institution, and economic branch. The dependent variable in this analysis was the natural logarithm of the monthly salary, while the independent variable of interest was an indicator variable representing 2014-2018 graduates. Second, we examined the wage gaps between Arabs and Jews within each period, again controlling for the same set of variables. The dependent variable remained the natural logarithm of the monthly salary, while the independent variable of interest was an indicator variable representing Arab ethnicity. Lastly, we calculated the percentage of the wage gap between Arabs and Jews that could be explained by the included characteristics in each analysis specification. By employing these methodologies and considering a range of relevant variables, we aimed to gain insights into the factors driving changes in wages over time and the disparities between Arabs and Jews.

Table 1: Effect of education on employment among ages 29-31, 2019

	Jewish Men	Jewish Women	Arab Men	Arab Women
Humanities	0.12	0.09	0.04	0.30
Education and languages	0.14	0.13	0.10	0.31
Social Sciences	0.12	0.09	0.09	0.28
Management and accounting	0.15	0.10	0.11	0.29
Laws	0.18	0.11	0.05	0.28
Nursing and Pharmacy	0.20	0.15	0.12	0.35
Mathematics & statistics	0.11	0.13	0.13	0.31
High tech	0.17	0.07	0.09	0.32
Engineering	0.15	0.08	0.08	0.31

Source: Administrative Data CBS.

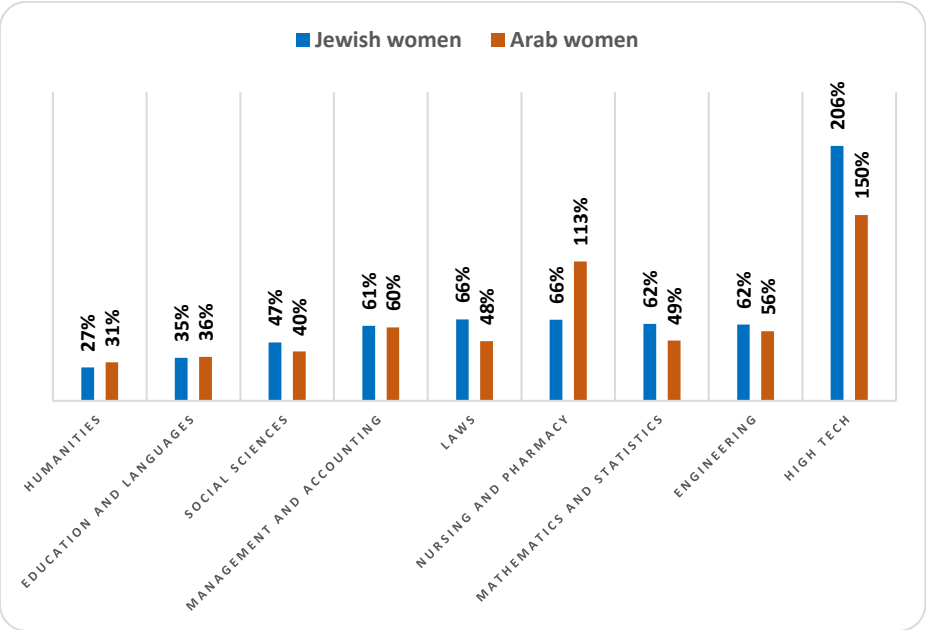
Figure 11: Returns to BA by fields of study, men 29-31 in 2019



Source: Administrative Data CBS.

Note: We ran a linear regression of log monthly income in relation to the highest degree obtained and field of study in BA considering other factors like age, experience, location, parents' education, income, religion, and *Bagrut* high tech. Our base category is those with less than full matriculation.

Figure 12: Returns to BA by fields of study, women 29-31 in 2019



Note: We ran a linear regression of log monthly income in relation to the highest degree obtained and field of study in BA considering other factors like age, experience, location, parents' education, income, religion, and tech education. Our base category is those with less than full matriculation.

Source: Administrative Data CBS.

Table 2: Fields of study ages 29-31, by gender and ethnicity in 2019

	Jewish Men	Jewish Women	Arab Men	Arab Women
Humanities	6%	9%	5%	6%
Education and languages	3%	12%	9%	30%
Social Sciences	19%	31%	**17%**	24%
Management and accounting	13%	14%	12%	6%
Laws	7%	7%	5%	2%
Medicine	1%	1%	2%	1%
Nursing and Pharmacy	1%	7%	**24%**	17%
Mathematics and statistics	1%	2%	2%	5%
Engineering	25%	5%	**12%**	1%
High tech	23%	12%	**11%**	7%

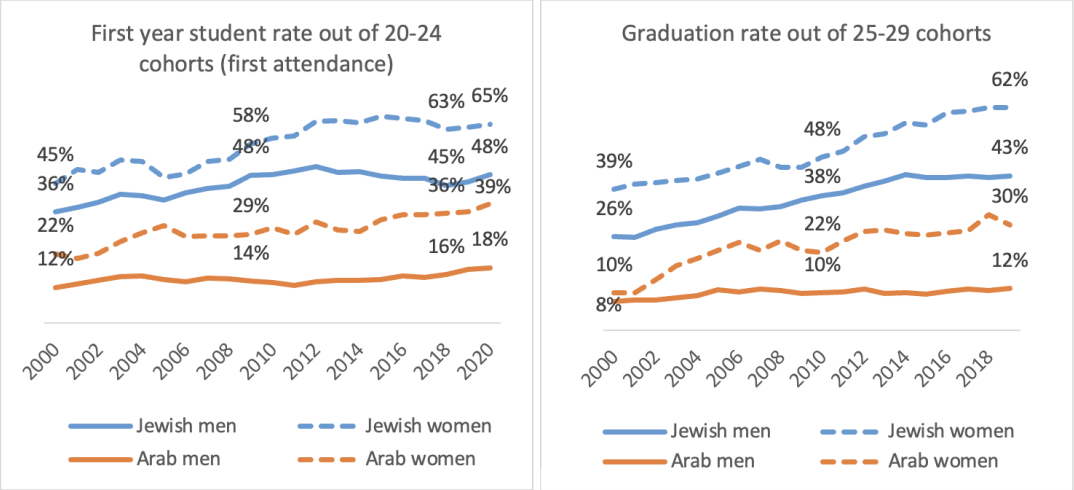
Source: Administrative Data CBS.

Table 3: Highest degree completed ages 29-31, by gender and ethnicity in 2019

	Jewish Men	Jewish Women	Arab Men	Arab Women
BA	30%	47%	13%	34%
Mahat	5%	2%	4%	2%
Bagrut	19%	16%	14%	19%
Less than *Bagrut*	45%	27%	71%	41%

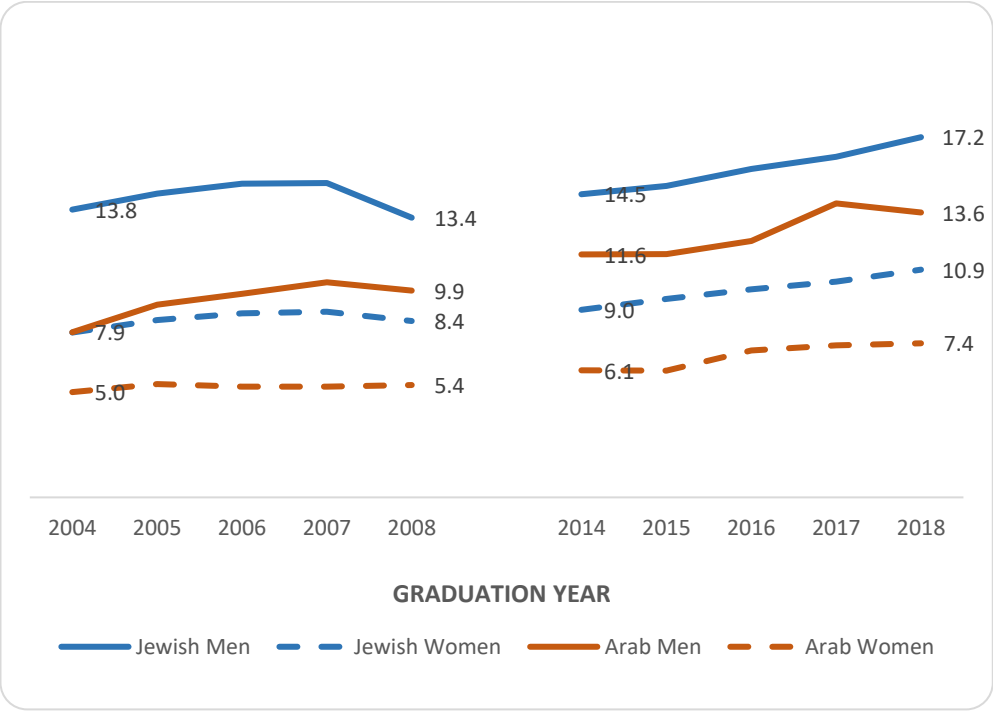
Source: Administrative Data CBS.

Figure 13: Proportion of new students and degree recipients, by population group and gender



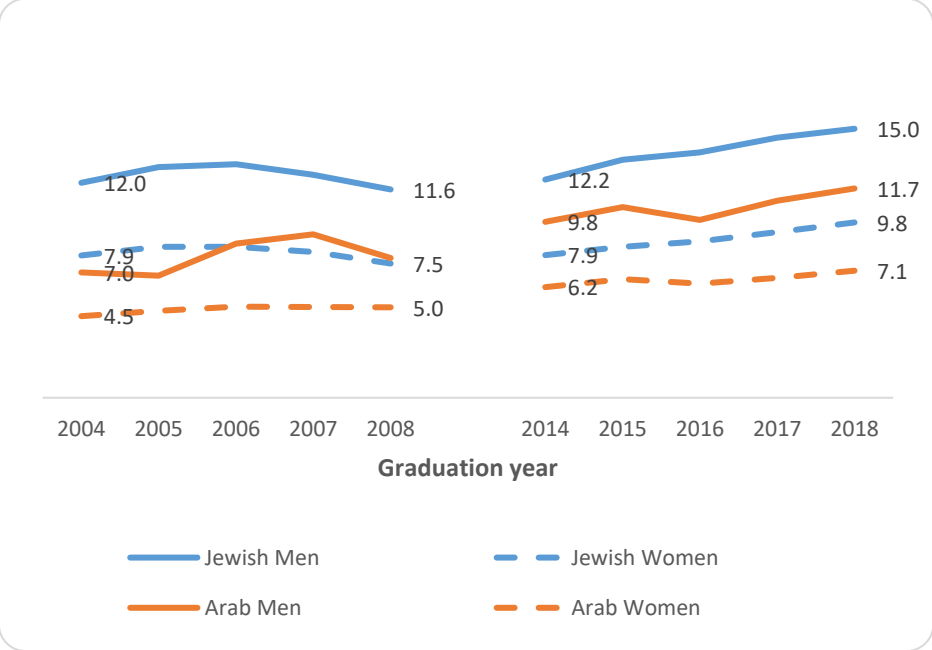
Source: Figures were sourced from the National Economic Council and the Central Bureau of Statistics (CBS) and processed by the Aaron Institute.

Figure 14: Real wages in the first year after graduation - University graduates



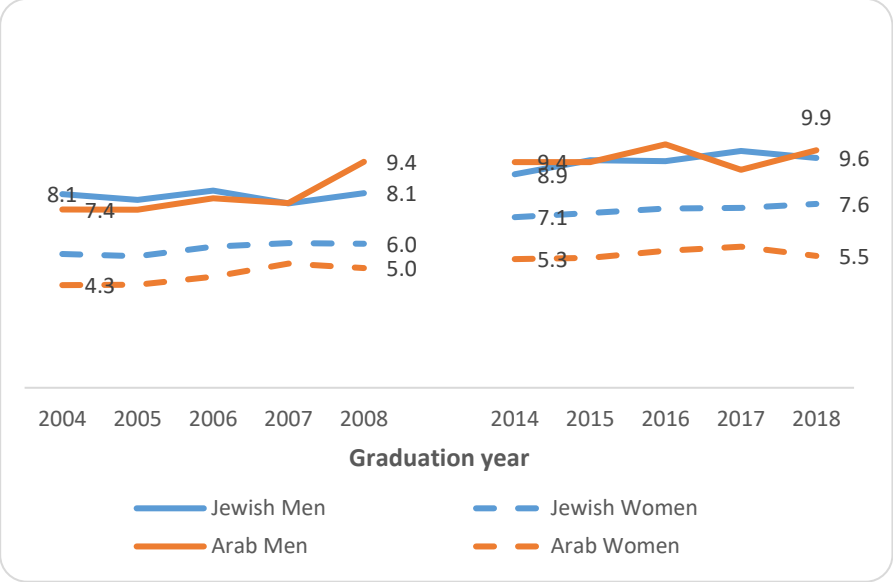
Source: Administrative Data CBS.

Figure 15: Real wages in the first year after graduation - Academic Colleges



Source: Administrative Data CBS.

Figure 16: Real wages in the first year after graduation – Education colleges



Source: Administrative Data CBS.

Table 4: Real wages of Arab men in the first year after graduation by field of study

Subject of Study	Arab Men Wage			Arab-Jewish Gaps	
	2004-2008	2014-2018	Wage growth	2004-2008	2014-2018
High tech	12,443	17,709	42%	31%	15%
Mathematics and statistics	7,290	9,395	29%	53%	43%
Engineering	8,352	11,255	35%	37%	23%
Accounting and management	8,036	8,429	5%	37%	35%
Nursing, pharmacy	12,951	16,735	29%	-12%	-36%
Laws	6,451	8,437	31%	39%	21%
Social Sciences	7,458	8,479	14%	27%	28%
Humanities	6,979	10,282	47%	19%	-1%
Languages and education	7,696	8,917	16%	11%	12%

Source: Administrative Data CBS.

Table 5: Real wages of Arab women in the first year after graduation by field of study

Subject of Study	Arab Women Wage			Arab-Jewish Gaps	
	2004-2008	2014-2018	Wage growth	2004-2008	2014-2018
High tech	7,982	12,415	56%	47.0%	33%
Mathematics and statistics	4,409	5,491	25%	48.0%	35%
Engineering	4,740	6,587	39%	51.0%	40%
Accounting and management	6,934	7,176	3%	23.0%	20%
Nursing, pharmacy	8,352	10,515	26%	-2.0%	-3%
Laws	5,379	6,097	13%	35.0%	30%
Social Sciences	4,238	5,027	19%	41.0%	39%
Humanities	4,294	5,234	22%	31.0%	27%
Languages and education	4,753	5,683	20%	23.0%	24%

Source: Administrative Data CBS.

Table 6: Real wages of Arab men in the first year after graduation by economic branch

Economic branch	Arab Men Wage			Arab-Jewish Gaps	
	2004-2008	2014-2018	Wage growth	2004-2008	2014-2018
Industry	7,706	9,885	28%	37%	33%
Services	6,711	8,136	21%	36%	28%
High tech	14,870	18,834	27%	19%	7%
Public Administration	8,814	14,138	60%	10%	-15%
Education	7,198	8,862	23%	2%	-4%
Human Health	11,718	13,488	15%	-23%	-31%

Source: Administrative Data CBS.

Table 7: Real wages of Arab women in the first year after graduation by economic branch

Economic branch	Arab Women Wage			Arab-Jewish Gaps	
	2004-2008	2014-2018	Wage growth	2004-2008	2014-2018
Industry	4,519	5,277	17%	42%	42%
Services	4,770	5,335	12%	38%	37%
High tech	11,018	11,838	7%	13%	19%
Public Administration	5,002	7,385	48%	26%	16%
Education	4,156	5,724	38%	23%	18%
Human Health	5,887	7,970	35%	15%	7%

Source: Administrative Data CBS.

Table 8: BA graduates by ethnicity and cohort of study

	Jewish Men 2004-2008	Jewish Men 2014-2018	Arab Men 2004-2008	Arab Men 2014-2018
age	29.5	30.8	26.7	27.8
exp	9.4	11.5	8.9	10.2
Educated parents	62%	62%	85%	85%
Parental Income	133,393	260,673	104,682	125,871
***Bagrut* High Tech**	0.20	0.18	0.13	0.11
Area				
Jerusalem	6%	6%	1%	4%
North	8%	9%	64%	60%
South	10%	12%	4%	4%
Haifa	12%	10%	19%	19%
Center	27%	27%	10%	10%
Yehuda and Shomron	3%	5%	0%	0%
Tel Aviv	33%	30%	2%	3%
Family status				
single	61%	50%	77%	72%
married	38%	49%	23%	28%
divorced	1%	1%	0%	0%
	Jewish Women 2004-2008	**Jewish Women 2014-2018**	**Arab Women 2004-2008**	**Arab Women 2014-2018**
age	28.0	29.22406	26	27
exp	9	11	7	8
Educated parents	67%	68%	89%	90%
Parental Income	177,695	236,487	91,552	108,616
***Bagrut* High Tech**	7%	6%	8.5%	7%
Area				
Jerusalem	7%	7%	2%	3%
North	10%	10%	64%	57%
South	13%	14%	4%	8%
Haifa	11%	10%	19%	17%
Center	27%	28%	11%	13%
Yehuda and Shomron	5%	6%	0%	0%
Tel Aviv	28%	25%	1%	2%
Family status				
single	54%	45%	36%	38%
married	44%	53%	62%	60%
divorced	1%	2%	1%	2%
Has Child	32%	40%	52%	47%

Table 9: BA graduates by fields of study

	Jewish Men 2004-2008	Jewish Men 2014-2018	Arab men 2004-2008	Arab men 2014-2018
Humanities	*6.1%*	*7.0%*	*6.1%*	*5.7%*
Education and languages	*2.1%*	*2.6%*	*14.6%*	*8.6%*
Social Sciences	*19.1%*	*20.3%*	*18.4%*	*19.9%*
Management and accounting	*14.7%*	*17.3%*	*8.7%*	*14.6%*
laws	*9.6%*	*8.3%*	*9.2%*	*7.2%*
Nursing & Pharmacy	*1.3%*	*1.3%*	*14.0%*	*17.1%*
Mathematics & statistics	*1.9%*	*1.0%*	*4.6%*	*2.2%*
High tech	*27.3%*	*22.2%*	*11.0%*	*13.9%*
Engineering	*17.8%*	*20.0%*	*13.3%*	*10.8%*
	Jewish Women 2004-2008	**Jewish Women 2014-2018**	**Arab Women 2004-2008**	**Arab Women 2014-2018**
Humanities	11.6%	10.1%	8.6%	6.4%
Education and languages	12.3%	13.0%	45.6%	29.0%
Social Sciences	33.5%	32.2%	16.7%	25.1%
Management and accounting	10.6%	14.8%	1.9%	7.4%
Laws	8.7%	7.3%	2.7%	2.9%
Nursing and Pharmacy	6.3%	7.0%	7.8%	13.7%
Mathematics and statistics	2.1%	1.9%	9.0%	7.0%
High tech	4.7%	4.3%	1.3%	1.5%
Engineering	10.2%	9.4%	6.4%	7.1%

Source: Administrative Data CBS.

Table 10: BA graduates by economic branch

	Jewish Men 2004-2008	Jewish Men 2014-2018	Arab men 2004-2008	Arab men 2014-2018
industry	7.8%	10.4%	9.3%	11.6%
Services	46.1%	40.8%	40.0%	35.6%
Public Administration	3.1%	6.3%	24.9%	17.9%
Education	2.9%	4.9%	4.6%	7.5%
Human Health	2.0%	2.7%	11.0%	12.0%
Other Activities	1.3%	2.9%	1.5%	1.9%
High Tech	36.9%	32.1%	8.5%	13.5%
	Jewish Women 2004-2008	**Jewish Women 2014-2018**	**Arab Women 2004-2008**	**Arab Women 2014-2018**
industry	5.5%	5.0%	2.2%	5.0%
Services	48.2%	39.1%	18.5%	28.4%
Public Administration	13.6%	13.8%	51.4%	19.1%
Education	7.2%	14.0%	10.6%	23.6%
Human Health	8.5%	10.5%	11.5%	16.7%
Other Activities	3.1%	4.8%	4.7%	4.7%
High Tech	13.9%	12.7%	1.1%	2.4%

Table 11: BA graduates by type of institution

	Jewish Men 2004-2008	Jewish Men 2014-2018	Arab men 2004-2008	Arab men 2014-2018
University	50.4%	46.1%	53.9%	48.7%
College	47.0%	49.5%	29.4%	43.7%
Educ. Coll	2.6%	4.4%	16.7%	7.6%
	Jewish Women 2004-2018	**Jewish Women 2014-2018**	**Arab Women 2004-2008**	**Arab Women 2014-2018**
University	52.8%	41.1%	39.4%	44.6%
College	33.8%	43.7%	7.6%	25.5%
Educ. Coll	13.4%	15.2%	53.0%	29.8%

Source: Administrative Data CBS.

Table 12: Employment rates of Arab men in the first year after graduation by field of study

Subject of Study	Arab Men Employment		Arab - Jewish Men Ratio	
	2004-2008	2014-2018	2004-2008	2014-2018
Humanities	84%	89%	1.08	1.04
Languages and education	97%	97%	1.15	1.09
Social Sciences	90%	91%	1.06	1.07
Accounting & management	96%	96%	1.07	1.06
Laws	87%	95%	0.95	1.02
Nursing, pharmacy	97%	99%	1.04	1.04
Mathematics and statistics	97%	99%	1.31	1.68
High tech	92%	96%	1.06	1.12
Engineering	90%	93%	1.06	1.04

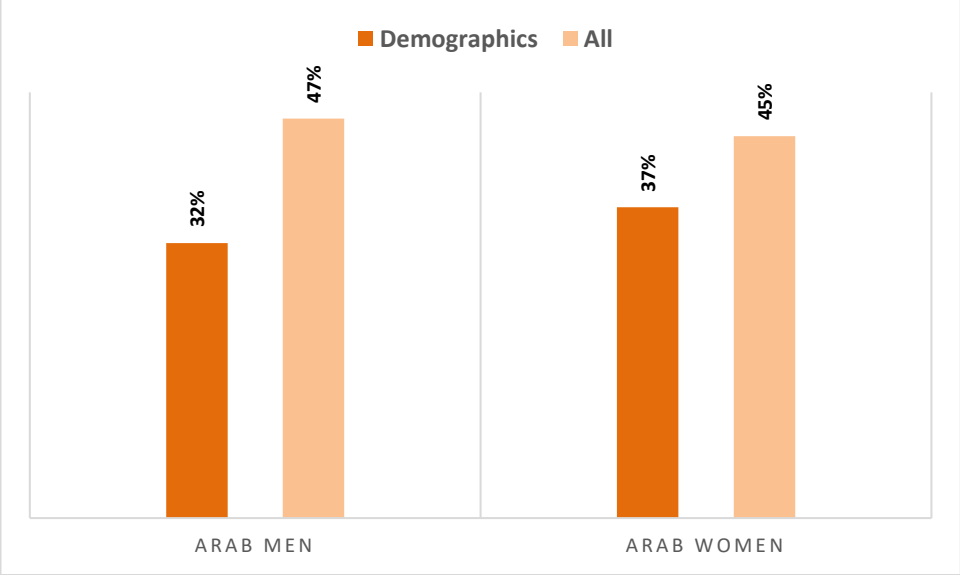
Source: Administrative Data CBS.

Table 13: Employment rates of Arab women in the first year after graduation by field of study

Subject of Study	Arab Women Employment		Arab - Jewish Men Ratio	
	2004-2008	2014-2018	2004-2008	2014-2018
Humanities	88%	92%	0.99	1.00
Languages and education	95%	92%	1.03	0.97
Social Sciences	88%	89%	0.96	0.96
Accounting & management	89%	92%	0.95	0.98
Laws	90%	94%	0.97	1.00
Nursing, pharmacy	96%	98%	1.02	1.01
Mathematics and statistics	94%	95%	1.02	1.00
High tech	94%	97%	1.03	1.08
Engineering	91%	93%	1.01	1.01

Source: Administrative Data CBS.

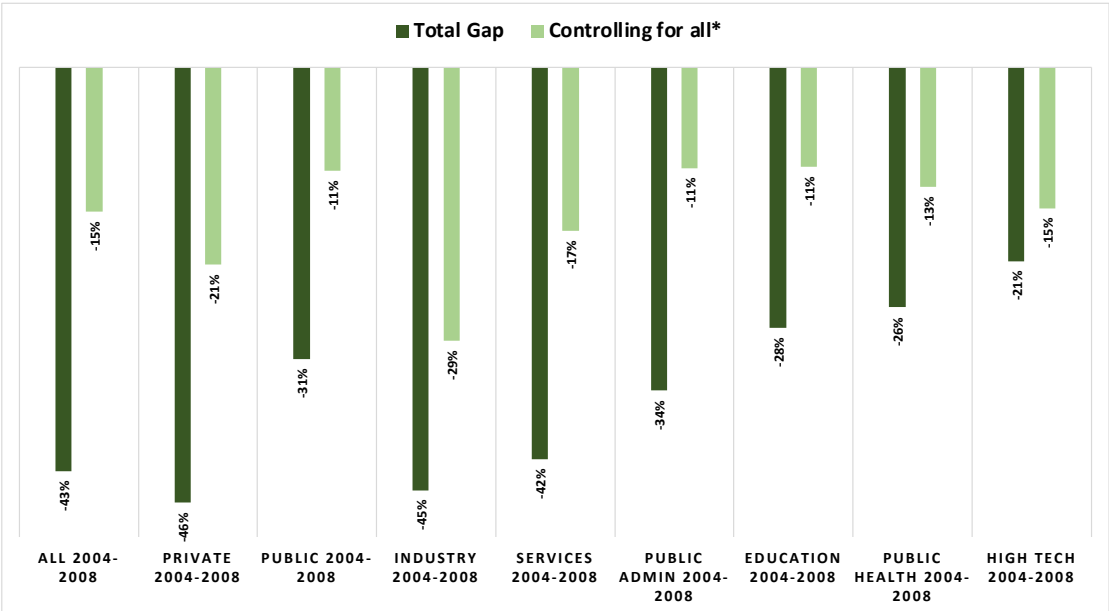
Figure 17: What factors explain the wages increase in the first year after graduation?



Note: We ran a linear regression of log monthly income in relation to the of period variable 2014-2018, field of study in BA considering other factors like age, experience, location, parents' education, income, religion, and *Bagrut* high tech.

Source: Administrative Data CBS.

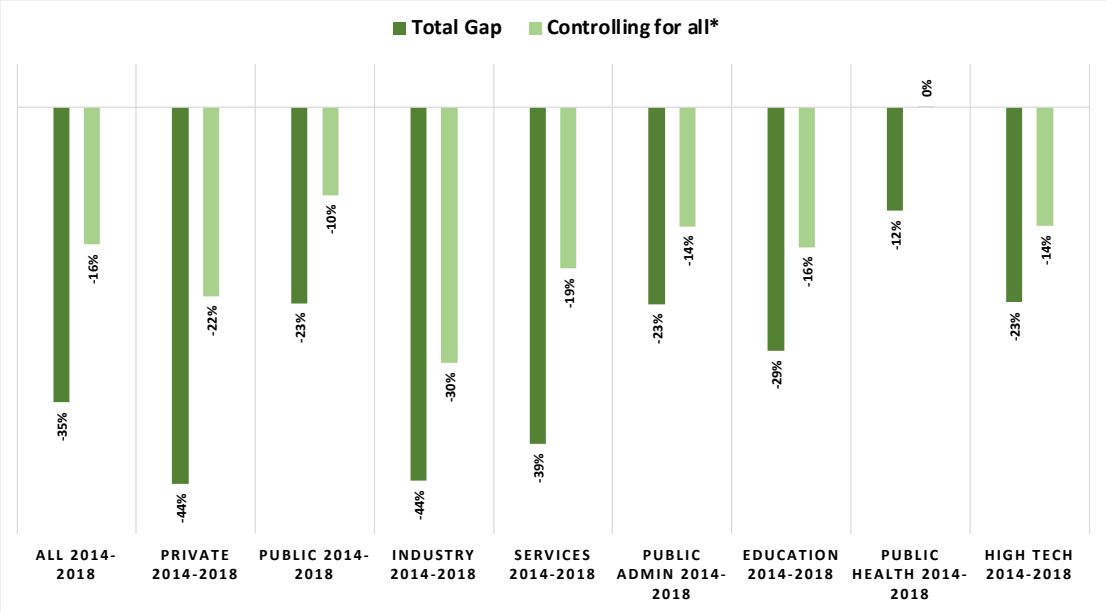
Figure 18: Arab/Jewish women real wage gaps in the first year after graduation, with and without controlling for various factors, by economic branches 2004-2008



Note: We run a linear regression of log wage on an Arab indicator, demographic controls age, age2, area, parent's education, parental income, religion, and *Bagrut* high tech. The "all" category includes the economic branch, field of study and type of institution.

Source: Administrative Data CBS.

Figure 19: Arab/Jewish women real wage gaps in the first year after graduation, with and without controlling for various factors by economic branches 2014-2018



Note: We run a linear regression of log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, and *Bagrut* high tech. The "all" category includes the economic branch, field of study and type of institution.

Source: Administrative Data CBS.