



Paving the Way

to Labor Market Success

for Arab Higher Education Graduates

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

This study examines the quality of labor market integration among Arab BA degree holders who have obtained their degrees in Israeli academic institutions. It utilizes rich administrative data compiled by the Central Bureau of Statistics of Israel. The findings of the study indicate that Arab BA degree holders, both men and women, exhibit high employment rates and are able to secure employment immediately after graduation. The returns 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 wage disparities between Arab and Jewish male graduates upon entering the job market can be entirely accounted for by demographic differences. 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 may significantly contribute to 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 skills¹. 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: *Does pursuing an academic degree in Israel pay off for Arab degree holders? Have recent years seen shifts in labor market outcomes for Arab degree holders compared to a decade ago? Where do Arab recent graduates stand in comparison to Jewish graduates in terms of employment and wages?*

To answer the first question, we provide a comprehensive analysis of the effects of obtaining a bachelor's degree (BA) on the employment and wages of individuals aged between 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 but share similar demographic attributes including age, place of residence, and socio-economic status². 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.

Further, 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.

¹ Tehawkho M. (2019). Policy Paper: The Arab population as an engine of growth in the Israeli economy. Aaron Institute for Economic Policy.

² We chose this group for comparison 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.

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 has a significant positive impact on 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 earned an average of 41% and 53% more, respectively, than their Arab peers with the same background characteristic but with education which is less than full matriculation. These returns 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 degree completion, regardless of their field of study. Employment rates have remained stable over time with a slight increase noted among Arab males.
- **Wages:** There has been substantial growth in real wages for Arab graduates. In the first year post-graduation, Arab men and women experienced a 36% and 40% increase in real wages, respectively. Changes in demographics (primarily age) and fields of study explain nearly half of this increase.

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.
- **Wages:** Arab graduates enter the job market with lower average salaries than Jewish graduates. However, the wage gap has significantly narrowed over the past decade due to faster wage growth among Arabs. For 2014-2018 cohort Arab men 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 than Jewish women, even after considering demographics, fields of study, institution types, and economic sectors. Factors such as work hours and occupations, which are not captured in the administrative data, may contribute to these differences.

- **Wage disparities ten years after graduation:** Real wage gaps remain stable in the first ten years after graduation for men and even decrease for women.

Our findings suggest that pursuing an academic degree is highly beneficial for Arab degree holders, leading to improved employment prospects and higher wages. However, it is concerning that the percentage of Arab students pursuing higher education is significantly lower than their Jewish peers (Larom et al 2022). Furthermore, the same study highlights a significant disparity between enrolment rates and completion rates, suggesting a higher attrition rate among Arabs.

Previous studies conducted by 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 guidance³. Furthermore, there is low educational mobility in Arab society, where most students pursuing higher education have parents with a similar level of education.

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

Promote Access to Higher Education: We advocate for strategies that address barriers to higher education for Arab youth. Collaborative efforts involving educational institutions, government agencies, non-profits, and stakeholders are essential in enhancing skills, improving language proficiency, promoting digital literacy, providing information and guidance, and encouraging educational mobility.

Support Degree Completion: To ensure equal opportunities for success in higher education, supporting students facing challenges in degree completion is vital. Strategies can involve tracking student progress to identify areas of need, offering academic support services such as tutoring and counselling, providing financial assistance to alleviate financial burdens, and promoting mentorship and peer support programs.

³ Larom et al 2022 “A policy to promote quality employment among young people in the Arab society”, Aaron institute for economic policy (Hebrew)

Kalisher et al 2022 “The digital challenge in Arab education lessons from the Corona crisis”, Aaron institute for economic policy (Hebrew)

Tehawkho et al 2022 “The benefits of learning the Hebrew language in Arab society: limitations in language acquisition and options for overcoming them”, Aaron institute for economic policy (Hebrew)

It's 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 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 contributing to these wage disparities:

Addressing Wage Disparities: It is essential to delve deeper into the reasons behind Arab women working fewer hours and holding fewer leadership positions. Cultural factors may influence these outcomes, and understanding these factors could be crucial to identifying appropriate interventions.

Further research is required to comprehend these underlying factors fully. This understanding will aid 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 incomes compared to Jewish nonorthodox households, with an income disparity of roughly 50%⁴. 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.

This 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: Does pursuing an academic degree in Israel pay off for Arab degree holders? Have recent years seen shifts in labor market outcomes for Arab degree holders compared to a decade ago? 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 influencing their employment prospects and wage levels.

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

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.

⁴ Tehawkho M. (2019). Policy Paper: The Arab population as an engine of growth in the Israeli economy. Aaron Institute for Economic Policy.

The study proceeds as follows: Section 2 investigates the effect of earning a bachelor's degree on employment and 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 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 determine the effect of obtaining a BA degree on employment and wages, which we refer to as the *returns to education and employment* associated with pursuing this degree.

Sections 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 2014-2018. It begins by examining changes over time in the employment rates and wages and proceeds by investigating the factors that contribute to the disparities in labor market outcomes between Arab and Jewish graduates.

Section 5 summarizes our findings, offering recommendations based on the insights obtained from the analysis. The section 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.

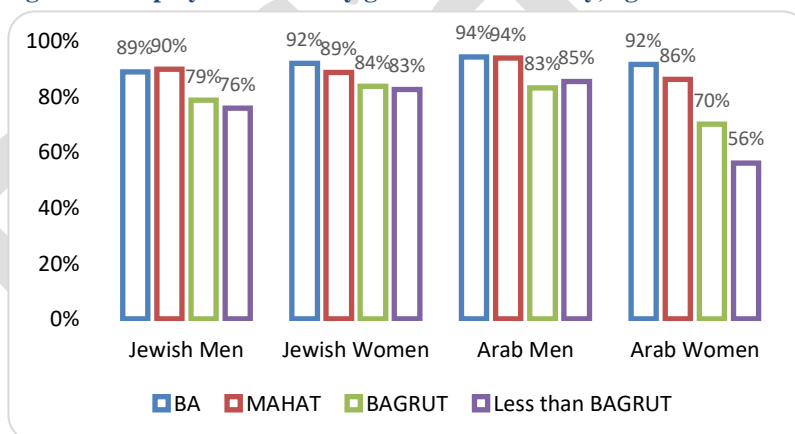
2. Does it pay off to have an academic degree in Israel?

This section explores how education impacts employment and wages for Arab men and women aged 29-31 in 2019. We compare the employment and wages of BA graduates to those whose highest education level is less than full matriculation while controlling for various background characteristics⁵. 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.

2.1 Effect of Education on Employment

Our data demonstrates a substantial positive effect of education on employment, especially for Arab women. Around 91% of Arab women holding a bachelor's degree are employed, a figure aligning with Jewish women with the same level of education (see Figure 1). However, for Arab women who didn't achieve full matriculation, employment rates drop significantly to 56%, considerably lower than the 83% rate for Jewish women at the same educational level⁶.

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



Source: Administrative Data CBS

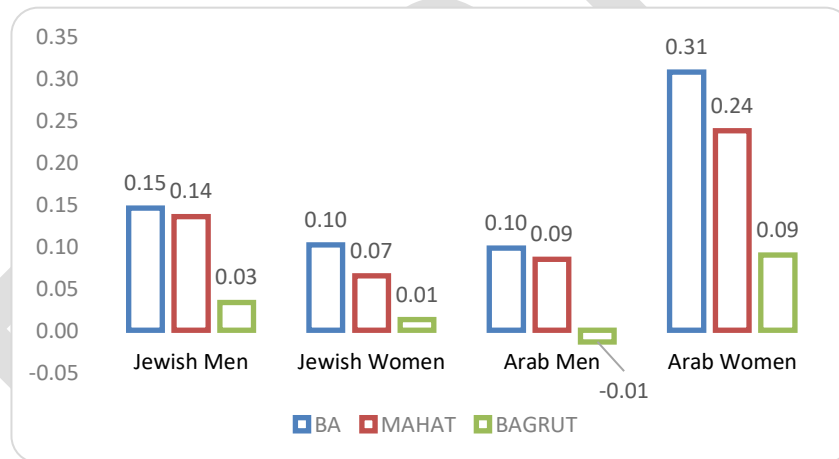
⁵ We have chosen to compare with this specific group rather than high school with full matriculation graduates, as many individuals from the Arab society pursue studies abroad, and it becomes difficult to identify their educational qualifications accurately. This lack of identification may result in lower wage premiums when comparing to high school graduates in this case.

⁶ 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.

Comparing Arab women with similar backgrounds but different education levels enable us to isolate education's effect on employment. Our findings indicate that obtaining a bachelor's degree considerably improves the employment rate for Arab women relative to those who didn't achieve full matriculation, increasing it by an average of 31 percentage points (see Figure 2). This suggests that higher education plays a crucial role in enhancing the employment opportunities for Arab women.

Education also significantly impacts Arab men's employment outcomes, albeit somewhat less markedly than for Arab women. Gaining a bachelor's degree increases the employment rate for Arab men relative to those who didn't achieve full matriculation by an average of 10 percentage points (see Figure 2). Furthermore, Arab men with a BA degree exhibit higher employment rates than their Jewish counterparts (Figure 1). However, it's 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.

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



Source: Administrative Data CBS. 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, bagrut high tech. We compared these results to the employment rate of those with less than full matriculation

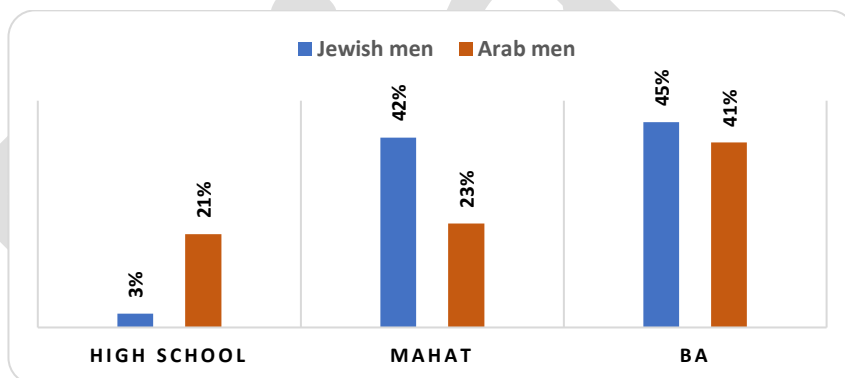
The analysis is further broken down by subject of study, which can provide valuable insights into the employment prospects of different fields. There is some variation in employment rate by field of study but most of the fields of study, especially nursing has a significant effect on employment (Table 1 in the Appendix). Overall, these findings suggest that Arab BA graduates exhibit high employment rates regardless of field of study, typically exceeding 90%.

In conclusion, our findings strongly suggest that higher education is a significant driver for employment amongst Arab men and women. Bachelor's degree holders typically enjoy employment rates exceeding 90%, with the impact of higher education being particularly profound for Arab women's employment prospects.

2.2 Effect of Education on Wages

For Arab individuals aged 29-31, earning a bachelor's degree yielded significant wage premiums in 2019, comparable to those seen in the Jewish community. Both Arab men and women with bachelor's degrees earned on average 41% and 53% more, respectively, than their counterparts whose highest educational attainment did not surpass full matriculation but share the same background characteristics (see Figure 3 and Figure 4). It's 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 influences⁷.

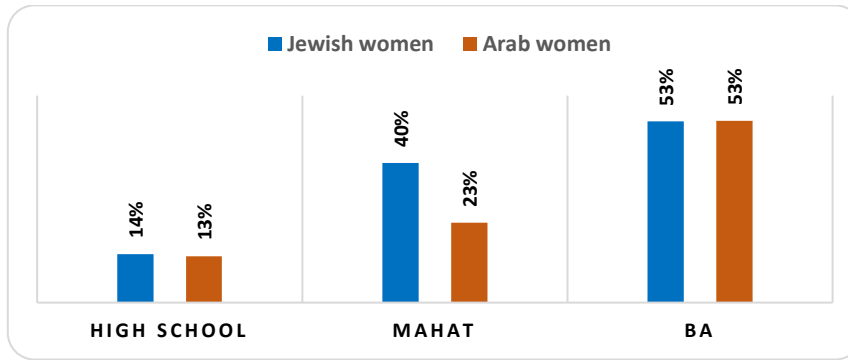
Figure 3: Returns to education, men 29-31 in 2019.



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

⁷ Dougherty, C., 2003. Why is the Rate of Return to Schooling Higher for Women than for Men? (No. 581). Centre for Economic Performance, London School of Economics and Political Science.

Figure 4: Returns to education, women 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, considering other factors like age, experience, location, parents' education, income, religion, and tech education. Our base category is those with less than full matriculation.

Wage premiums from obtaining 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 provide the lowest returns (see Figure 11 and Figure 12 in the Appendix). Also, it is important to note that Arab men, in particular, have lower wage premiums compared to Jewish men in fields such as Mathematics, Statistics, Management, and Accounting (see Figure 11). Therefore, considering the field of study when assessing the economic benefits of an undergraduate degree is important. 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 Figure 3 and Figure 4)⁸. 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 are high for Arab men compared to Jewish men. However, it is crucial to acknowledge a potential upward bias in the coefficient since many Arab graduates pursue studies abroad, which is not captured in the sample. Ultimately, personal interests, goals, and market demands should be considered when choosing the most appropriate educational path.

⁸ Students pursuing MAHAT certification earn 30% more than those whose highest degree was less than full matriculation.

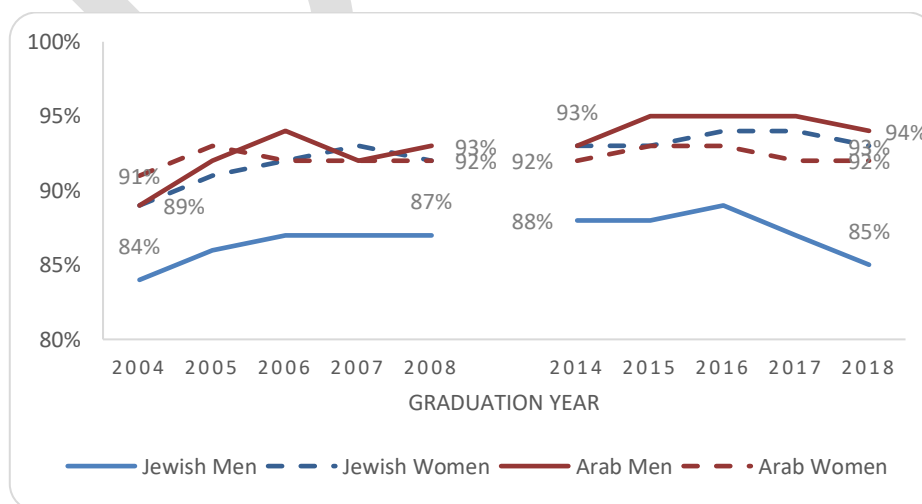
3. Have recent years seen shifts in labor market outcomes for Arab degree holders compared to a decade ago?

In the previous chapter, we examined how acquiring a bachelor's degree impacts employment and wages. This chapter seeks to identify if there have been shifts in labor market outcomes for Arab degree holders in recent years as compared to a decade ago. We compare two groups of graduates: those who completed their degrees between 2004-2008 and those who did so between 2014-2018. Our objective is to identify factors that can explain these 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. These rates have remained steady, with a minor upward trend among Arab males. Furthermore, Arab graduates consistently display high employment rates across all study fields (see Table 12 and Table 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 strong demand for Arab graduates in various sectors of the job market.

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

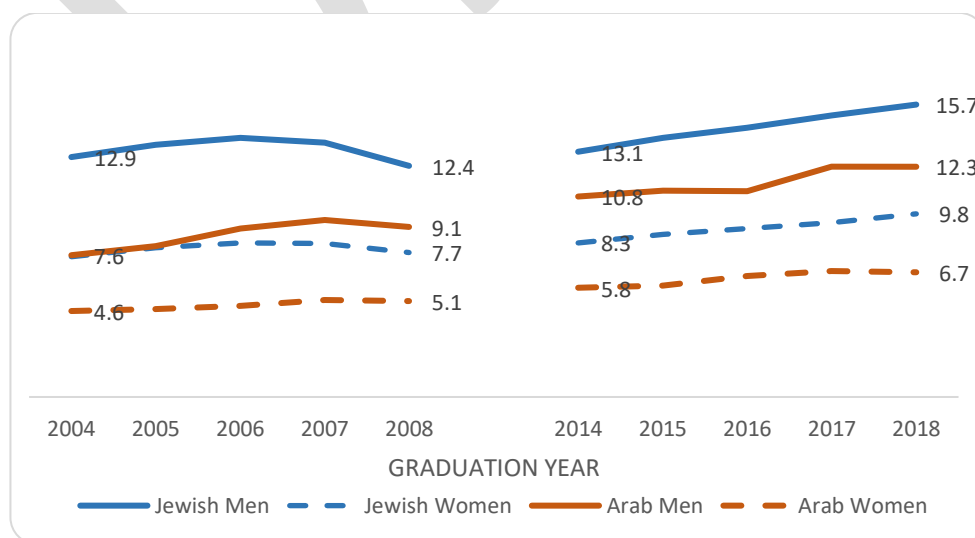


Source: Administrative Data CBS

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 the cohorts that graduated between 2014-2018 and 2004-2008, Arab men witnessed a 36% upswing in real monthly earnings in the first-year post-graduation. 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 Table 4 and Table 5), economic sectors (Table 6 and Table 7), and institution types (see Figure 14-Figure 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 slower wage growth. Regarding 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 wage (monthly thousands NIS) in the first year after graduation, by population group between 2004-2008 and 2014-2018



Source: Administrative Data CBS

3.3 Factors Contributing to the Increase in Real Wages Over Time for Arab Graduates

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 achieve this, we compare wages across these two periods and accounting for changes in observable characteristics that occurred during this time, with the goal to identify the factors that partially explain the increase in wages of Arab BA degree holders.

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 a declining trend of graduates from colleges of education (refer to Table 11 in the Appendix). There has been also an increase in the number of graduates in fields of nursing, management and accounting for both genders and high tech (for men) (refer to 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's 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 (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 are able to 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.

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 draw a comparison between Arab graduates and their Jewish peers in the first-year post-graduation, examining disparities in employment and wage and identifying the factors driving these differences.

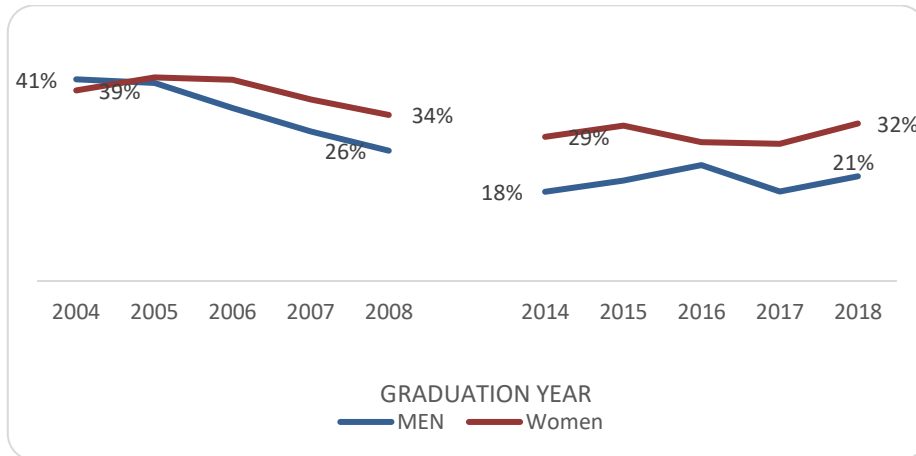
4.1 Employment

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 (Table 12 and Table 13). This 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 reduced the wage gap between Arabs and Jews substantially. The real monthly salary for Arab graduates has increased considerably, as shown in the 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 job market post-graduation.

Figure 7: Arab/Jewish Real Wage Gap 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 Table 4 and Table 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 in some of these fields among the Arab population (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 among Jews and Arabs graduation from university and colleges (see Figure 14 – Figure 16 in the Appendix). In addition, there has been a noticeable shift in the choice of educational institutions between these groups. There is a growing trend of graduates from academic colleges and a declining trend of graduates from colleges of education over time (see Table 11 in the Appendix).

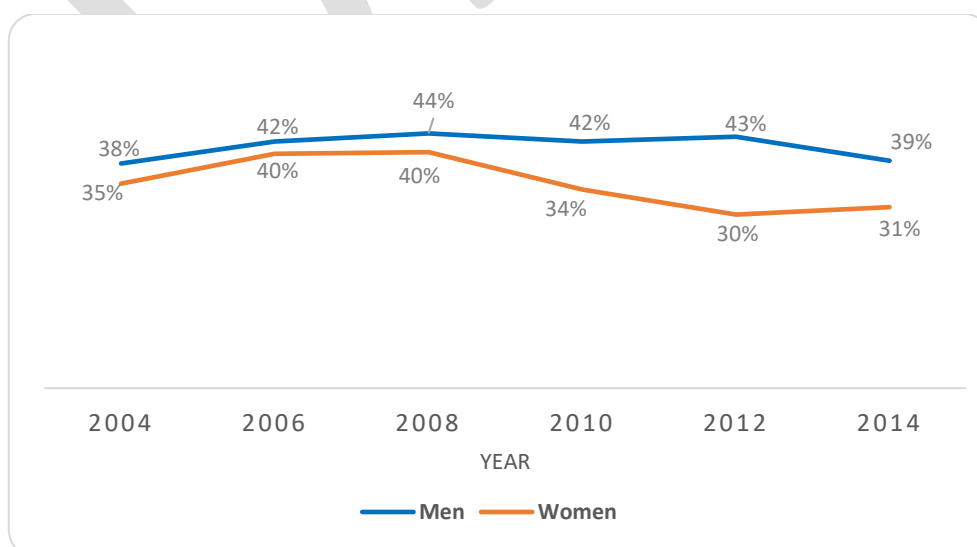
4.2.3 Economic Branches

The wage disparities between Arab and Jewish graduates are notably smaller in the public sector compared to the private sector (see Table 6 and Table 7). In fact, Arab men, on average, earn higher salaries in the public sector in their first-year post-graduation than 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.

4.2.4 Years since graduation

Finally, we have examined the wage gaps in the long run, up to 10 years since graduation, with concerns 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 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: Real Wage Gaps Arab Jewish over 10 years, by gender, 2004 graduates



Source: Administrative Data CBS

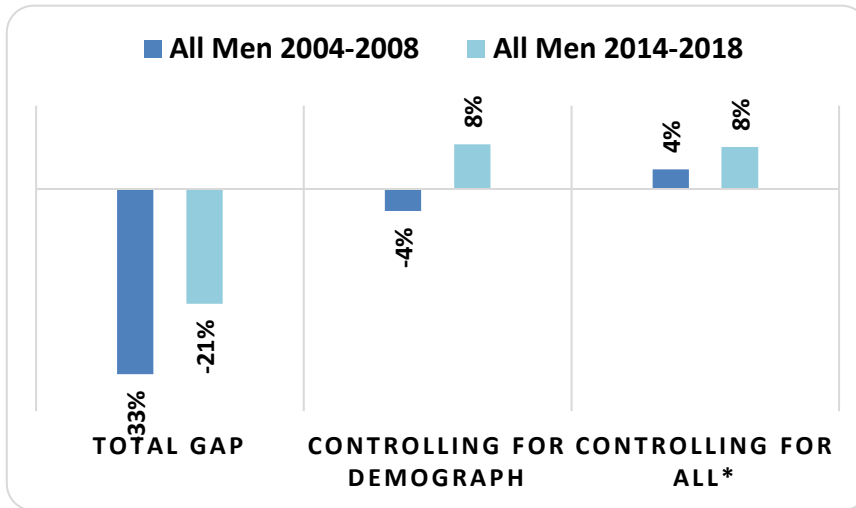
4.3 What factors explain the wage gaps between Arab and Jewish graduates?

Our goal is 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.

Based on the data presented in the 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, where salaries are lower, while fewer choose high-paying fields of study like high tech and engineering with the exception of nursing (see Table 9 - Table 11 in the Appendix). Furthermore, a greater number of Arabs are employed in the public sector, where salaries are lower but more evenly distributed (Table 10 in the Appendix).

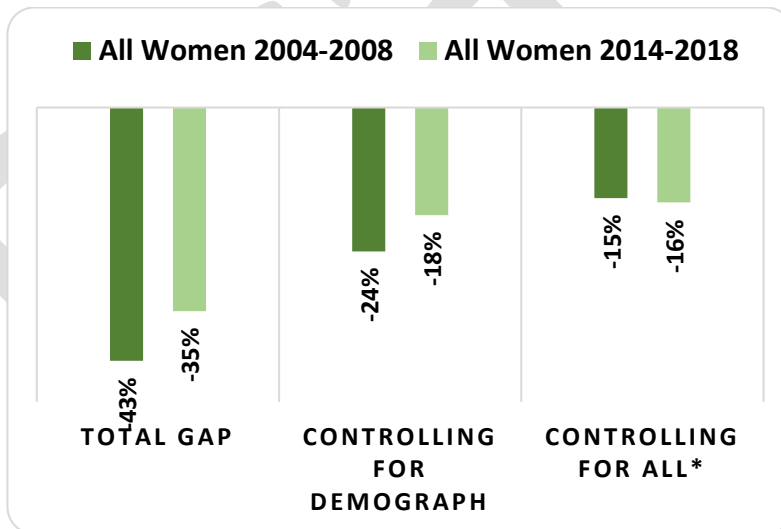
Based on the information presented in Figure 9, it appears that the wage gaps in the first year after graduation between Arab and Jewish men can be fully explained by background characteristics such as age, area, and socio-economic status. When additional variables such as the type of college, field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

Figure 9: Wage gaps between Arab and Jewish men in the first year after graduation, when controlled for different factors



Source: Administrative Data CBS. Note: We run a linear regression log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, bagrut high tech. All category includes the economic branch, field of study and type of institution in addition to demographic controls.

Figure 10: Wage gaps between Arab and Jewish women in the first year after graduation, when controlled for different factors.



Source 1: Source: Administrative Data CBS. Note: We run a linear regression log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, bagrut high tech, marital status, has children. All category includes the economic

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, occupation choices, and personal preferences.

To gain a deeper understanding of wage disparities among women, we examined the wage gaps across various sectors. Figure 18 and Figure 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 institutions, and fields of study, 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 receive 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 and occupational choices.

Our administrative data set does not include information on work hours and occupational choices, factors which can potentially influence wage disparities. To address the 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's important to acknowledge two primary constraints in using survey data in our analysis. Firstly, the sample size of individuals with BA degrees, especially among Arab women, is considerably small. This can potentially affect the robustness of our findings. Secondly, our survey data doesn't 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

This report presents the findings of our study 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 against those of Jewish graduates in terms of employment and wages.

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 BA graduates aged 29-31, including both men and women, displayed high employment rates (over 90%). Notably, Arab women had employment rates 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. These are very similar to those of their Jewish counterparts. Moreover, 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 is possible to fully explain these disparities in the case of men through background characteristics. However, 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.

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 women⁹. In addition, the enrolment rates into higher education among Arab youths are much higher than completion rates figure (see Figure 13). 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.

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 literacy¹⁰, low Hebrew proficiency¹¹, a lack of information and guidance about available educational and labor market opportunities, and financial constraints. Furthermore, there is very low educational mobility in Arab society, where 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 and their success once they enroll in a program. It will require a comprehensive approach that 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.

⁹ Larom et al 2022 "A policy to promote quality employment among young people in the Arab society", Aaron institute for economic policy (Hebrew)

¹⁰ Kalisher et al 2022 "The digital challenge in Arab education lessons from the Corona crisis", Aaron institute for economic policy (Hebrew)

¹¹ Tehawkho et al 2022 "...", Aaron institute for economic policy (Hebrew)

Removing the barriers must start with 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 children and equip them with the necessary soft skills to fulfil their full potential and integrate effectively into academia and the job 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 experiences 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, Larom et al. (2022) provide comprehensive recommendations to enhance the effectiveness of transitional 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 a degree. Potential strategies include tracking student progress, offering academic support services, providing financial assistance, and promoting mentorship and peer support. These measures help institutions in fostering an inclusive environment and facilitating student success. More research needs to be done 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.

Based on our findings, it has been determined that Arab women still earn less than Jewish after accounting for observable factors. At least a portion of these differences can be attributed to variations in hours of work and occupational choices made by these women. To foster 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.

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6. Directions to Future Research

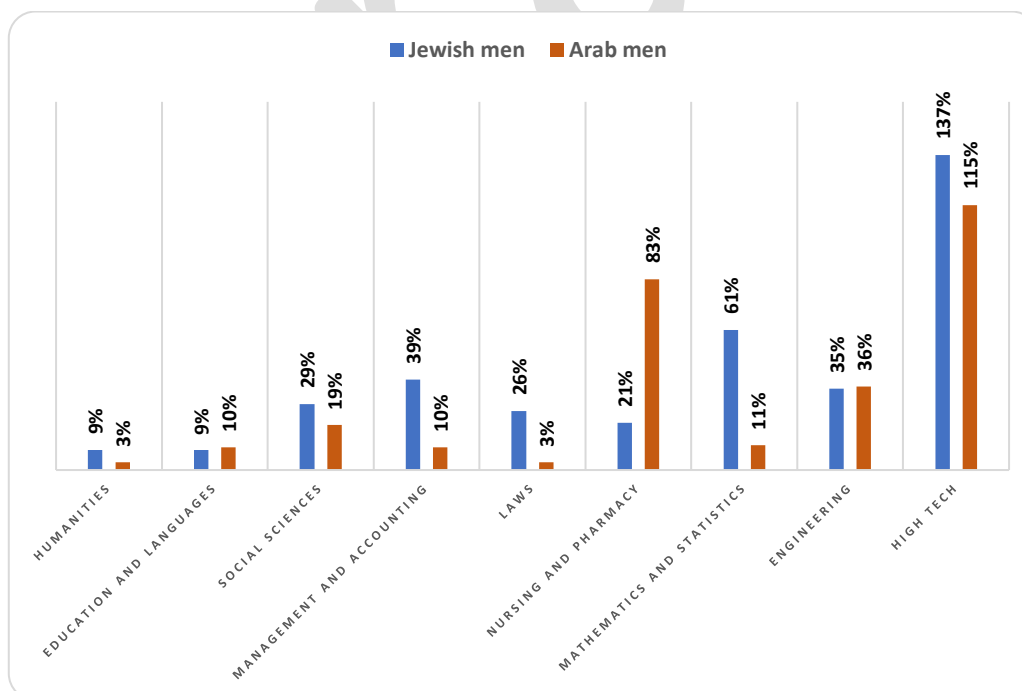
There are three core areas warrant further exploration in order to better understand and promote the successful integration of Arab youth into higher education and the labor market. Firstly, some Arab students may encounter challenges in completing their degrees due to a deficit of necessary skills. It is important to explore effective methods to assist these students, ensuring they successfully complete their academic pursuits. Secondly, a significant number of Arab youths opt for education abroad. While this 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. Lastly, 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. By addressing these issues, we can provide more comprehensive support to Arab youth in fulfilling their educational and career goals, thereby contributing to the advancement of the region's workforce and economy.

Appendix

Table 1: Effect of Education on Employment among ages 29-31, 2019

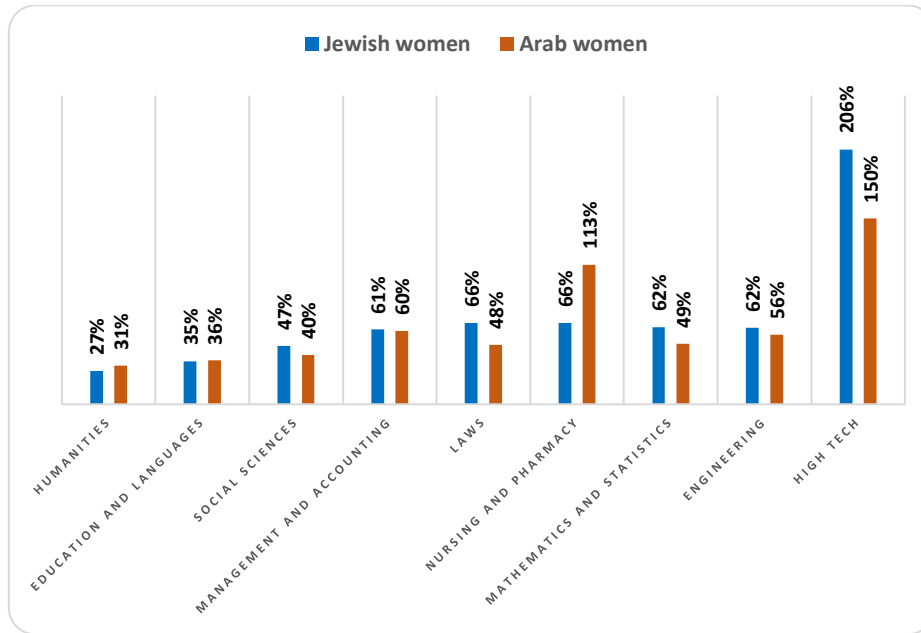
	Jewish Men 2019	Jewish Women 2019	Arab Men 2019	Arab Women 2019
Humanities	0.12	0.09	0.04	0.30
Education and languages	0.14	0.13	0.10	0.31
Social Sciences	0.12	0.09	0.09	0.28
Management & accounting	0.15	0.10	0.11	0.29
Laws	0.18	0.11	0.05	0.28
Nursing and Pharmacy	0.20	0.15	0.12	0.35
Mathematics & statistics	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

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 tech education. Our base category is those with less than full matriculation.

Figure 12: Returns to BA by Fields of study, women 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 tech education. Our base category is those with less than full matriculation.

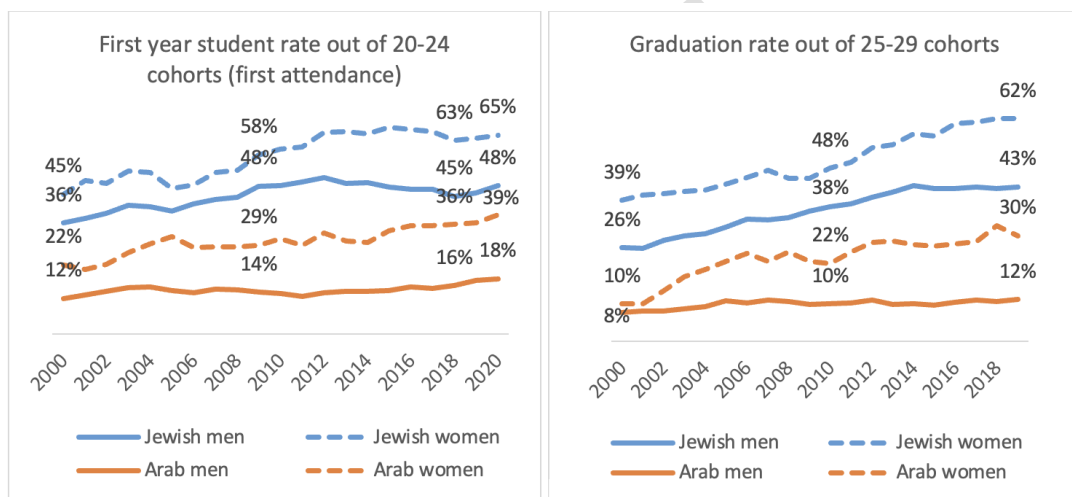
Table 2: Fields of study Ages 29-31, by gender and ethnicity in 2019

	Jewish			
	Jewish Men	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%

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

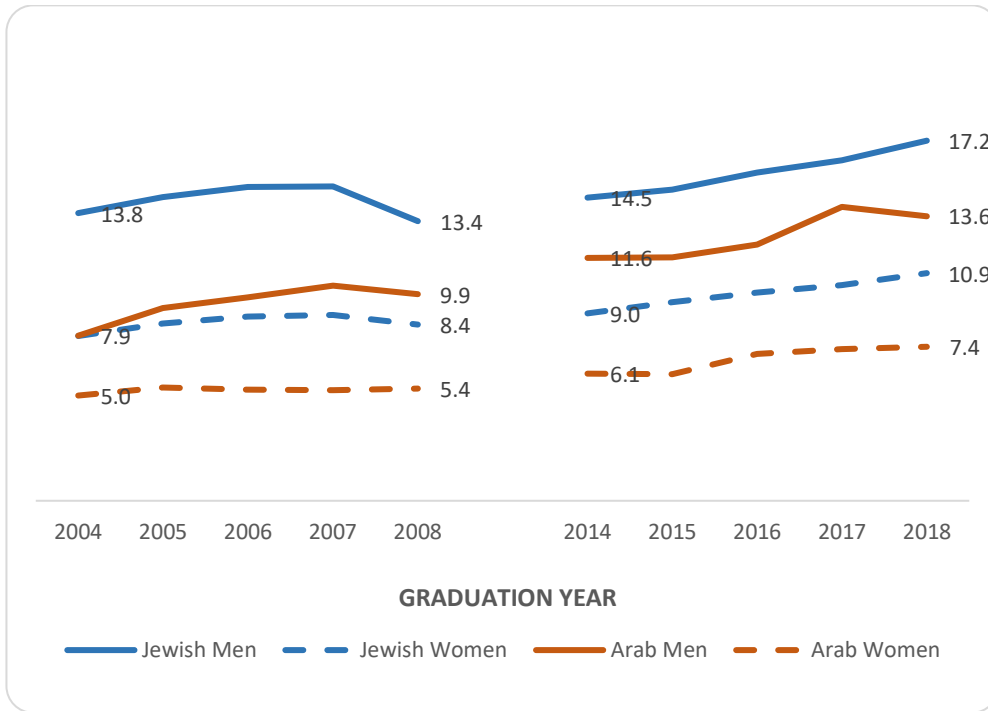
	Jewish			
	Jewish Men	Women	Arab Men	Arab Women
BA	30%	47%	13%	34%
Mahat	5%	2%	4%	2%
Bagrut	19%	16%	14%	19%
Less than Bagrut	45%	27%	71%	41%

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



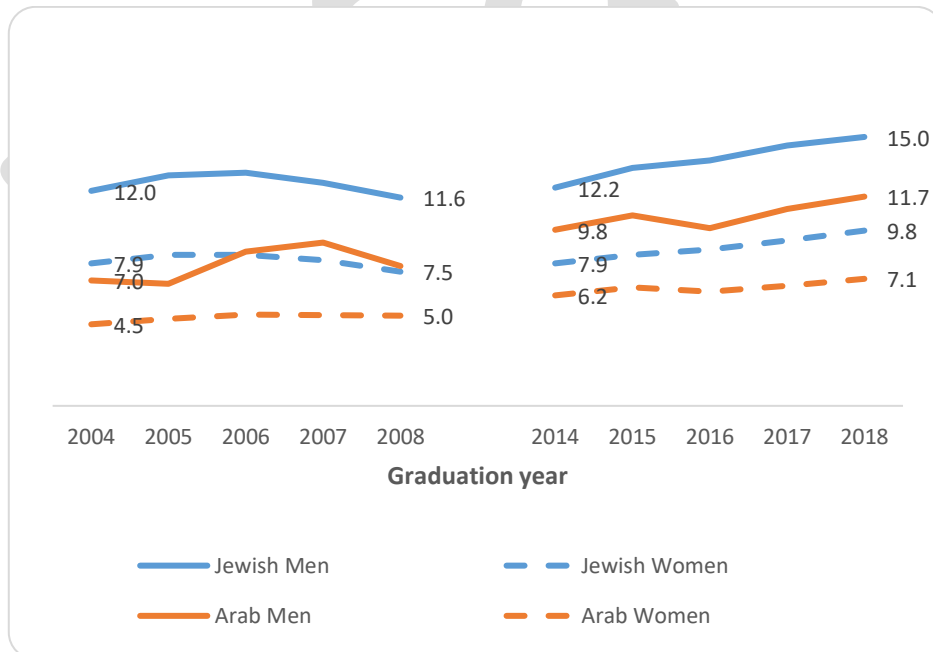
Source: Figures were sourced from the National Economic Council and the Central Bureau of Statistics (CBS) and processed by the Aaron Institute.

Figure 14: Real wage in the first year after graduation by type of institution - universities



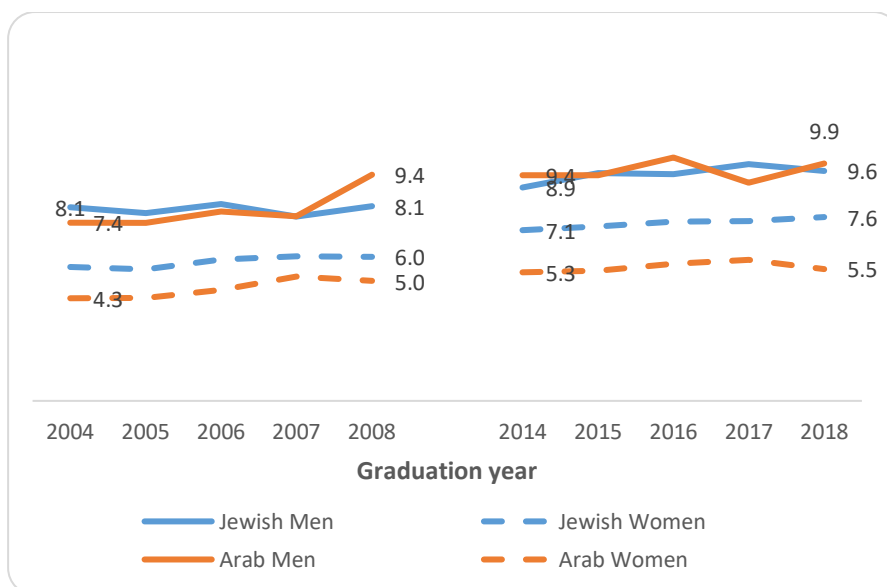
Source: Administrative Data CBS

Figure 15: Real wage in the first year after graduation by type of institution - colleges



Source: Administrative Data CBS

Figure 16: Real wage in the first year after graduation by type of institution - colleges of education



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	
	2004-2009	2014-2019	Wage growth	2004-2009	2014-2019
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%

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	
	2004-2009	2014-2019	Wage growth	2004-2009	2014-2019
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%

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

Economic branch	Arab Women Wage			Arab~Jewish Gaps	
	2004-2009	2014-2019	Wage growth	2004-2009	2014-2019
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%

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

Economic branch	Arab Men Wage			Arab~Jewish Gaps	
	2004- 2009	2014- 2019	Wage growth	2004- 2009	2014- 2019
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%

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Table 8: BA Graduates by Ethnicity and Cohort of Study

	Jewish Men	Jewish Men	Arab Men	Arab Men
	2004-2008	2014-2018	2004-2008	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%
Parential Inc	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 & Shomron	3%	5%	0%	0%
Tel Aviv	33%	30%	2%	3%
MatzavMishp				
single	61%	50%	77%	72%
married	38%	49%	23%	28%
divorced	1%	1%	0%	0%
	Jewish Women	Jewish Women	Arab Women	Arab Women
	2004-2008	2014-2018	2004-2008	2014-2018
age	28.0	29.22406	26	27
exp	9	11	7	8
Educated parents	67%	68%	89%	90%
Parential Inc	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 & Shomron	5%	6%	0%	0%
Tel Aviv	28%	25%	1%	2%
MatzavMishp				
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 & 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%

Table 10: BA graduates by economic branch

	Jewish Men	Jewish Men	Arab men	Arab men
	2004-2008	2014-2018	2004-2008	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			
	Jewish Women	Women	Arab Women	Arab Women
	2004-2008	2014-2018	2004-2008	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	Jewish Men	Arab men	Arab men
	2004-2008	2014-2018	2004-2008	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	Women	Arab Women	Arab Women
	2004-2018	2014-2018	2004-2008	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%

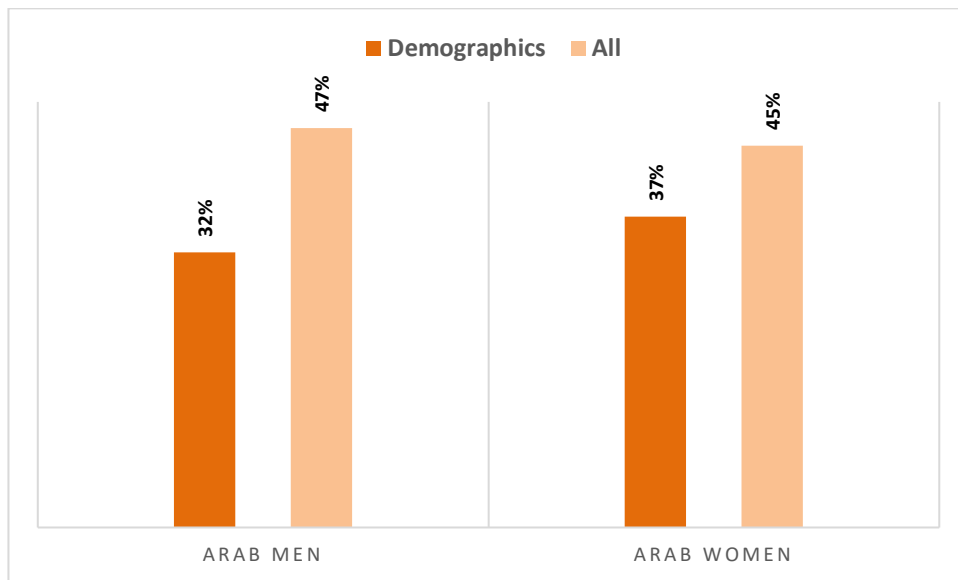
Table 12: Employment rates of Arab men in the first year after graduation by field of study.

Subject of Study	Arab	Men	Arab ~ Jewish Men	
	Employment		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

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

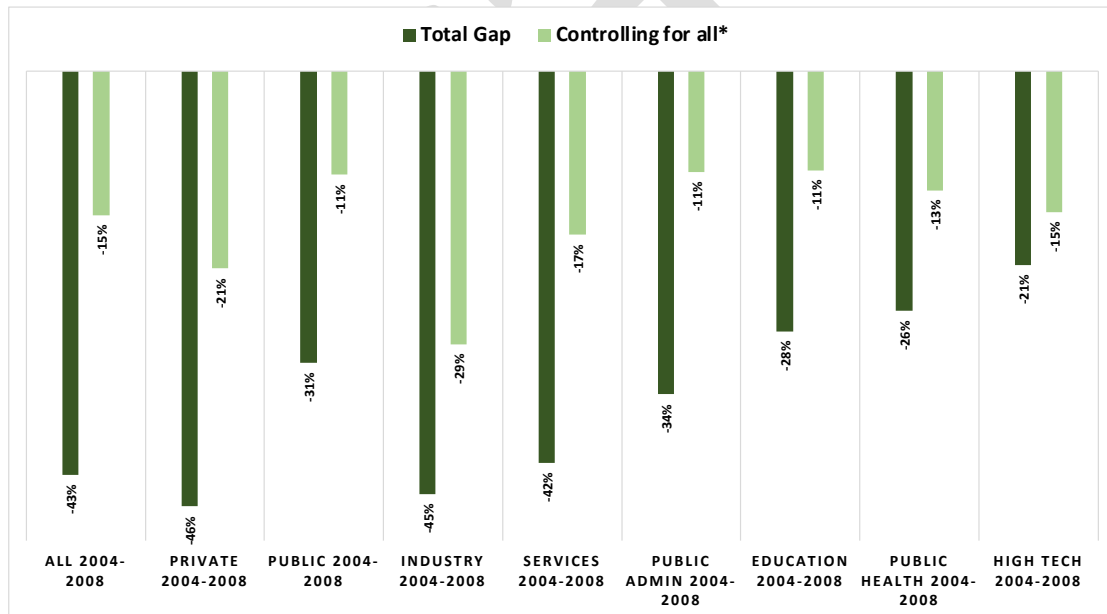
Subject of Study	Arab	Women	Arab ~ Jewish Women	
	Employment		Ratio	
	2004-2008	2014-2018	2004-2008	2014-2018
Humanities	88%	92%	0.99	1.00
Languages and education	95%	92%	1.03	0.97
Social Sciences	88%	89%	0.96	0.96
Accounting & management	89%	92%	0.95	0.98
Laws	90%	94%	0.97	1.00
Nursing, pharmacy	96%	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

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



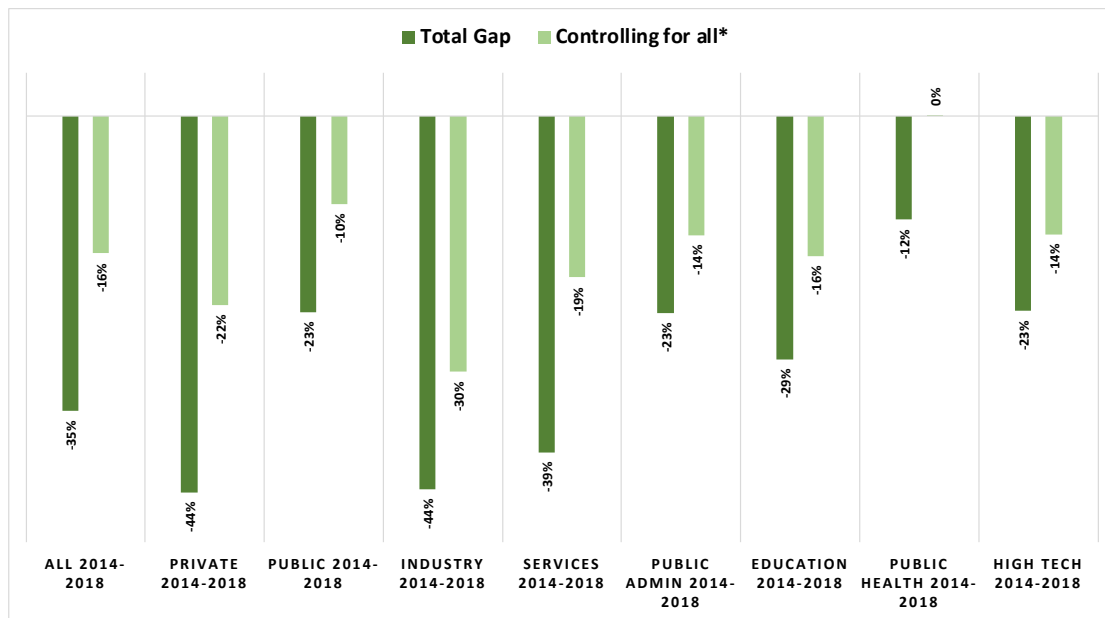
Source 2: Source: Administrative Data CBS. Note: We ran a linear regression of log monthly income in relation to the of period variable 2014-2018, field of study in BA considering other factors like age, experience, location, parents' education, income, religion, and tech education.

Figure 18: Wage gaps between Arab and Jewish women in the first year after graduation, with and without controlling for various factors by economic branches.



Source 3: Source: Administrative Data CBS. Note: We run a linear regression log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, bagrut high tech. All category includes the economic branch, field of study and type of institution

Figure 19: Wage gaps between Arab and Jewish women in the first year after graduation, with and without controlling for various factors by economic branches.



Source: Administrative Data CBS. Note: We run a linear regression log wage on Arab, demographic controls age, age2, area, parent's education, parental income, religion, bagrut high tech. All category includes the economic branch, field of study and type of institution