



Age in the Labor Market:

Why and how does age affect the chances of
employment?

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Abstract

In this research, we show how different age groups of individuals compare to 30-44-year-olds in terms of the likelihood of employment. We showcase this using a binary logit regression model with dummy variables which has been used in recent successful studies, as it best encapsulates the effect, presented in a percent. The motivation stems from the fact that older individuals face difficulties entering the labor market due to the presence of age discrimination from employers, an ongoing issue in today's labor market. This is shown by the coefficients of lower likelihood of getting employed, as the individual gets older. In addition to age groups, we found that the other explanatory variables in the regression model affect the outcome of getting a job - education, gender, and marital status playing a role.

Introduction

Unemployment is defined as the proportion of the labor force that does not have a job but is actively seeking opportunities. According to the CEIC Data, in 2022, Israel reported an unemployment rate of 3.48%, marking a notable decrease of 0.84% from the previous year. In 2021, the unemployment rate stood at 4.32%, experiencing a slight decrease of 0.01% compared to 2020.

Axelrad (2018) shows that younger individuals have a higher chance of getting hired compared to the base group aged 30-44. Specifically, the statistical data indicates that the likelihood of employment decreases as individuals get older, with those aged 45-54 and 55-59 facing lower employment prospects. This highlights the importance of addressing age-related biases in hiring practices. These age-related trends influence individuals' success in the job market.

To tackle this issue, we need tailored policies. For the younger workforce, improved education and training opportunities are key. Creating age-inclusive workplaces and offering reskilling options could help older workers stay competitive. This paper aims to present how age influences the chances of employment in Israel's job market and why older workers may struggle to be involved in the job market.

Background and Significance

Following the pensionable age change in 2004, where the age for men increased from 65 to 67 and the age for women increased from 60 to 62, Israel saw an increase in labor participation of workers aged 55+ (Axelrad, 2020). However, even though this increase was present, partially contributing to Israel's average GDP growth rate of roughly 7.2% (World Bank, 2023), several studies have found that older workers (50+ years old) take 46 weeks on average to get employed, almost four times more than what it takes for the average individual to get employed in Israel, which is 12 weeks (Peer, 2010). This could stem from the potential negative stereotypes and prejudices made by employers/managers, towards older workers (Axelrad et al., 2013; Henkens & Schippers, 2008; Karpinska et al., 2013; Keese et al., 2006), which has been proven to make an impact in the Israeli labor market.

Employers tend to assume older workers have inferior performance, flexibility, adaptability, and higher costs than younger employees. These stereotypes are under the theory of 'ageism' (Axelrad, 2020). Ageism refers to the intuitive, statistical discrimination that employers make, causing them to prefer certain age groups over others when hiring (Phelps, 1972). As these practices might grow in today's market, more employers could develop habits to intuitively categorize potential employees on assumptions that may not even be true. This form of treatment for older workers could become demotivating. Furthermore, with Israel experiencing a balanced 0.18% growth in their life expectancy (Macrotrends), it is important to understand that its citizens desire a longer period in the labor force to provide for their later life. It is more than their contribution but the fact that they will not have enough funds to support themselves for many years and may need welfare and public funding. In all, this investigation aims to reveal the impact of age on the chances of employment in the Israeli labor market.

Literature Review

In an article written by Axelrad, Malul, and Luski in 2018, one regression model indicates a negative coefficient for the 45-59 age group, suggesting they were less likely to find a job than the base group (30-44 age group). A logit regression model, derived from a survey, visualizes the likelihood of employment for different age groups. This analysis encompasses both a collective sample and separate breakdowns by gender. Additionally, the findings underline a crucial insight: the challenges faced by older workers are often associated with their age, as they get older, the chances of getting employed shrink - 0.245 for age group 45-54 and -1.122 for ages 55-59. This highlights the need for policymakers to create different plans to tackle unemployment among people of different age groups. For younger individuals, it's important to make more job options available. To support older individuals in finding work, there should be a focus on providing training, offering flexible job options, and making workplaces more age-friendly, rather than just adjusting the minimum wage because many older workers have earned more than that throughout their careers.

But there is a paradox involved - as people are living longer, the retirement age is increasing, and many older individuals in good health desire or need to remain in the workforce. Simultaneously, employers exhibit a growing preference for younger workers. This trend has the potential to neglect skilled and experienced workers, diminishing their opportunities to earn a living and accumulate pension rights. (Axelrad, Malul & Luski, 2018) Consequently, when employers are hesitant to hire older workers, it adds to a cycle of poverty and challenges. This puts more pressure on social institutions that are already dealing with high demand, and it negatively affects the productivity and GDP of the economy.

Axelrad (2020), tackles the issue of unemployment of older workers, through the concept of 'ageism'. A questionnaire was sent out to employers and managers of employees, to get an understanding of their knowledge and idealistic views regarding the labor market, particularly older workers. These perceptions were compared to official data and the gaps between them were tested for significance for the relevant, first part of the investigation (Axelrad, 2020).

According to Axelrad (2020), it was found that employers are uneducated when it comes to labor market data as a whole. For example, a part of the questionnaire revealed that employers believed the average retirement age for women is 61.5 when in reality, it is 65.1. Additionally, they thought 66% of 45-65 year-olds are in good health when in reality, it is almost 80% (Axelrad, 2020). These misjudgments, along with other findings, create a broad understanding as to why older workers struggle to get employed. An employer wouldn't want to hire a 60-year-old woman if he/she expects her to stick around solely for a year. On top of that, they wouldn't want to hire as many older workers due to the wrong assumption that they are unhealthier and not as productive as the younger people. These incorrect judgments could create division in the market. (Axelrad, 2020). Understanding what employers think matters because it affects who gets hired, how workplaces function, and ultimately, people's ability to earn a living and participate in society. Overall, this journal by Hila Axelrad offers a foundational understanding of the roots of the issue. Through the concept of ageism and the result of the questionnaire, we can analyze why older individuals face difficulties entering the labor market.

Lastly, Carlsson, M., & Eriksson, S. (2019) offers an interesting take on age, gender, and callback rates among Swedish employers - "For both women and men, the callback rate drops substantially early in the age interval we consider, and there is a clear negative relationship between the callback rate and age". The older you become, it is evident that you are less likely that you will be called back to your original position. It was found that nearing retirement, which is approximately 63 years of age, the callback rate falls to 2-3% (Carlsson & Eriksson, 2019).

Along with age discrimination in callback rates, it was also found that according to the survey investigation, workers aged 60+ years are less flexible, less capable of learning new tasks, and less ambitious. To a certain extent, this could validate why older workers are less likely to be called back after finding out their production isn't the same, compared to a more ambitious, flexible, and skilled 30-year-old. However, though this investigation offers valuable insight into the labor market, the survey responses came from firms with low to medium-skilled employees. "The fact that experience may be more important in high-skilled occupations suggests less age discrimination," (Carlsson & Eriksson, 2019). Nevertheless, it is important to acknowledge this

literature and its findings, as part of our investigation as it shows age discrimination in the labor market outside of Israel.

Methodology

In examining the employability of both younger and older individuals, we utilized a logit regression model with established validation from prior research (Axelrad et al., 2018; Brander et al., 2002; Flug and Kassir, 2001). Representing the current employment situation, the dependent variable functioned as a dummy variable, assigned a value of 1 and 0. Using this method, we are estimating and comparing how likely people of different ages are to get a job in comparison to 30-44-year-old, single males, who are the base group in this case.

$$\text{logit}(p_i) = \log \left(\frac{p_i}{1 - p_i} \right) = \beta X_i$$

This regression can be used to estimate the chances of finding a job, and how much the independent variables come into effect. The raw data for this investigation lies in the 2022 Labor Force Survey, conducted by the Israeli Central Bureau of Statistics (CBS). This major annual survey illustrates the movement and characteristics of the Israeli labor force. Using this survey, we can analyze the magnitude of unemployment trends, and deduce potential reasons as to why certain age groups are on different employment levels.

The reduced data sample only delves into Jewish individuals between the ages of 25 and 59. In addition, the dataset excludes the ultra-Orthodox population, due to their different way of life which limits the participation of men in the labor market. Lastly, this investigation filters out the people in the survey who had worked more than nine months in the previous year. After filtering the survey according to the criteria explained, we came to a total of 9,795 respondents. Out of these respondents, 5,944 were female and 3,851 were male, with approximately 54.32% of them married. Out of the condensed sample, 59.03% of participants completed at least 13 years of education, and 36.64% proceeded to complete any form of academic degree. 50.83% of people have at least one child under the age of 17, and lastly, 28.75 of individuals are Mizrachim or have Mizrahi roots.

Explanation of Variables

As explained, the investigation aims to use the logit regression model to estimate the probability of finding a job, after filtering the 2022 Labor Force Survey according to the criteria explained. For these reasons, we must refer to similar explanatory variables that were used in previous Israeli studies (Brander et al. 2002; Flug and Kassir, 2001; Axelrad et. al., 2018).

Age

We referred to the age groups given by the CBS, which are 25-29, 30-44, 45-54 and 55-59. In this regression, the different age groups are divided into three dummy variables and only turn 1 if the specific individual is included in that age group - logically would turn 0 if it did not. The control group under the age variable for this investigation is the 30-44-year-old age group.

Unfortunately due to changes in the Labor Force Survey over the past 10 years, the younger group of individuals (18-24) have been excluded from the investigation. This is because, in the updated survey, this age group includes individuals in mandatory military service. Since soldiers have been excluded in previous research, we decided to exclude them too, as there was no way to isolate them.

Gender

In the regression model, the gender variable is coded 1 if the person surveyed is a female, and 0 if male. This variable is also tested in interaction with the age groups, to see if the two have a combined effect on the dependent variable - being employed.

Marital Status

Derived from the Labor Force Survey, this variable is split into 2 columns. In one column, the variable returns 1 if the respondent is married and 0 otherwise. In the other column, the variable returns 1 if the individual is divorced or widowed, and 0 otherwise. This leaves the control group for 'marital status' to be a single individual.

Children

To keep the consistency of previous studies (Brander et al. 2002; Flug and Kassir 2001; Axelrad et al., 2018), we stayed consistent in defining this variable. This dummy variable returns 1 if the individual has at least one child under the age of 17, and 0 otherwise.

Ethnicity

Ethnicity refers to the individual's nation of birth. The variable returns 1 if the person was born in an Asian country, an African country other than South Africa and Zimbabwe, or an Arabic-speaking country.

It is important to mention that the father's nationality may also determine the ethnicity of the child. For these reasons, if the father of the individual was born in Asia or Africa, given that the individual was born in Israel, the variable still returns 1. Any other result returns 0. The combination of the two variables in the Labor Force Survey allows us to create the ethnicity base group which is non-Mizrachim. If the variable returns 1, the individual has Mizrachi descent.

Education

The education variable returns the number 1 if the individual has gone through 13 or more years of schooling, and 0 if otherwise. The education variable is also crossed with the age groups to see if the interaction variable has an impact on the outcome.

Vocational Education

Vocational education refers to any secondary or post-secondary school diploma that is not classified as an academic degree. In the regression model, the variable returns 1 if the individual has some sort of vocational education, and 0 otherwise. Vocational education is also tested for an interactive effect with age, to see if individuals with these credentials have a higher or lower chance to get a job than the people without them.

Academic Education

The academic education variable returns 1 if the person has either a bachelor's, master's, or Ph.D degree, and 0 otherwise. Similarly to the other education-related variables, this variable is also

tested in interaction with the age groups to complete the set of interaction variables for this investigation.

Results

In order to showcase the different factors that change the probability of getting employed, we created tables to present what variables impact the likelihood of finding a job, and at what magnitude they affect the outcome variable.

Table 1 - probability of employment (complete sample)

This table consists of two regressions, conducted similarly to previous research (Axelrad et al. 2018). The main difference between them is the types of interactive variables included.

	Model 1 Coefficient (std. error)	Model 2 Coefficient (std. error)
C	-1.29458*** (0.07931)	-1.23236*** (0.07438)
Gender	-0.12143 (0.07566)	-0.20578** (0.07703)
Ages 25-29	0.29171* (0.12791)	0.24155* (0.10308)
Ages 45-54	-0.11063 (0.11963)	-0.16247 (0.11481)
Ages 55-59	-0.37466* (0.15183)	-0.51369*** (0.14791)
Educated	0.75211*** (0.07315)	
Vocational Education		0.39442** (0.12250)
Academic Education		0.92514*** (0.07346)
Children	0.28471*** (0.05317)	0.28248*** (0.05643)
Ethnicity	-0.07352 (0.05607)	-0.05825 (0.05643)
Gender: '25-29'	0.21226 (0.12059)	0.10647 (0.12507)
Gender: '45-54'	-0.20466 (0.12564)	-0.12558 (0.12669)
Gender: '55-59'	-0.19674 (0.17059)	-0.10020 (0.17190)
Education: '25-29'	-0.48949*** (0.12999)	
Education: '45-54'	-0.19480 (0.12600)	
Education: '55-59'	-0.70932*** (0.16934)	
Vocational Education: '25-29'		-0.21357 (0.24980)
Vocational Education: '45-54'		0.20064 (0.19040)
Vocational Education: '55-59'		0.11343 (0.24067)
Academic Education: '25-29'		-0.01452 (0.13261)
Academic Education: '45-54'		-0.36996** (0.13247)
Academic Education: '55-59'		-0.91578*** (0.19320)

Dependent variable: being employed

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

In model 1, the featured interactive variable is the education crossed with the age groups. In model 2, this interactive variable splits into vocational education and academic education with the age groups, to see if there is a more specific interactive variable effect.

This table shows that women are approximately 20.58% less likely to find a job than the base group according to model 2, who are 30-44 aged men.

Older-age male groups like 55-59, are much less likely to find a job than the base group, with their likelihood dropping by 37.47% and 51.37% in models 1 and 2 respectively. The younger group of 25-29 are more likely to be employed, as shown by the positive, significant coefficient.

Education boosts the chances of being employed in comparison to the base

group of individuals with less than 13 years of education (the coefficient is positive and significant), while it decreases the chances for any other age group. To be more precise, vocational and academic education are boosting the chances of being employed as both coefficients are positive and significant. Age groups 25-29 and 55-59 both show negative coefficients and significance which translate to a less likely scenario of getting employed after being at schooling for 13 years minimum. Having an academic degree positively influences the probability of finding employment while it also is statistically significant. Having children boosts the chances by 28.47% and 28.29% in models 1 and 2 respectively while surprisingly, non-Mizrahi are less likely to find a job, which may provoke an element of racial preference according to stereotypes.

Table 2 - probability of employment (separated by gender)

Sample Size	Males		Females	
	3851		5944	
	Model 1	Model 2	Model 1	Model 2
	Coefficient (std. error)	Coefficient (std. error)	Coefficient (std. error)	Coefficient (std. error)
C	-1.27611*** (0.11058)	-1.3628*** (0.10397)	-1.542080*** (0.109967)	-1.43905*** (0.10280)
Education	0.49347*** (0.12264)		0.888851*** (0.093644)	
Ages 25-29	0.24174 (0.17320)	0.26642* (0.13228)	0.619887 (0.160343)	0.41692** (0.12861)
Ages 45-54	-0.29235 (0.17231)	-0.19496 (0.16483)	-0.017716 (0.156391)	-0.04974 (0.14851)
Ages 55-59	-0.61468* (0.23942)	-0.55744* (0.23013)	-0.264771 (0.212182)	-0.41523 (0.21319)
Married	0.59937*** (0.11307)	0.56631*** (0.11420)	0.065104 (0.091148)	0.00044 (0.09206)
Divorced/Widowed	0.26051 (0.15933)	0.25338 (0.16001)	0.003302 (0.119790)	-0.02825 (0.12024)
Children	0.06378 (0.10369)		0.160945 (0.084546)	
Ethnicity	-0.33982* (0.14531)		0.332387*** (0.101000)	
Vocational Education		0.63641*** (0.19040)		0.22142 (0.163247)
Academic Education		0.82962*** (0.13198)		0.96385*** (0.09030)
Education: '25-29'	-0.29279 (0.19797)		-0.574943** (0.178211)	
Education: '45-54'	0.11306 (0.19900)		-0.451314** (0.168693)	
Education: '55-59'	-0.63470* (0.26093)		-0.864660*** (0.237753)	
Ethnicity: '25-29'	0.64752* (0.26432)	0.69330** (0.26543)	-0.387426 (0.228122)	0.34594 (0.23089)
Ethnicity: '45-54'	-0.09595 (0.21603)	-0.13931 (0.21750)	-0.561854** (0.172966)	-0.57595*** (0.17396)
Ethnicity: '55-59'	0.11491 (0.27181)	0.07699 (0.27231)	-0.857438*** (0.245233)	-0.84256*** (0.24655)
Vocational Education:		-0.48301 (0.34840)		0.00665 (0.36791)
'25-29'				
Vocational Education:		0.09710 (0.29092)		0.21921 (0.25602)
'45-54'				
Vocational Education:		-0.55468 (0.36216)		0.49406 (0.33022)
'55-59'				
Academic Education:		0.19819 (0.22522)		-0.13105 (0.16668)
'25-29'				
Academic Education:		-0.22053 (0.21839)		-0.56839** (0.17338)
'45-54'				
Academic Education:				

'55-59'

-0.96245* (0.30552)

-1.0160*** (0.26714)

Dependent variable: being employed

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

To sharpen our analysis and strengthen our conclusions, we separated the sample into male and female and compared both models listed before. Table 2 shows that men aged 25-29 are more likely to find a job than the base group, but the probability of employment declines with age, as shown by the negative coefficients which compare the explanatory variables to the base group. The same goes for the women - the 25-29 age group are more likely to find employment, while those aged 45+ are less likely to do so. If we look at education as the variable by itself, it is statistically significant that men and women are more likely to find a job given that they have 13 or more years of education. Education almost doubles the chances for women, an 89% increase in likelihood.

If we separate the age group in terms of education for men and female, we find different results: Men aged 25-29 are less likely to find a job, while 45-54-year-old males are more likely to find employment, but both of them are not significant at all. In previous research (Axelrad, 2018), men aged 25-29 or 45-54 were both less likely to be employed and both were statistically significant. This could be because changes in education levels affected job prospects over time. For example, if younger people are getting more education, they might have an easier time finding jobs compared to older people.

Surprisingly, married men are more likely to find a job than married women, with the coefficients reading 59.94% and 6.51% respectively in model 1. The coefficient for married men is significant while for women it is not. Comparing the likelihood for married women to be employed, married women were less likely to find employment, but with significance, in our table, it is not significant at all, which is an interesting comparison.

Having a child under the age of 17 is both beneficial for men and women in finding a job. In past research (Axelrad, 2018), having children had a negative effect on getting employed. This could be due to workplaces being more family-friendly, offering flexible hours and remote work. Employers may be more understanding of parents, and policies like parental leave and

childcare support have improved, ever since remote work became present in today's labor force. These changes help parents balance work and family, making it easier for them to find jobs. Taking a look at ethnicity, Mizrahi males are almost 40% less likely to be employed, while Mizrahi women are 33.24% more likely to find employment.

Interestingly, looking specifically into the ethnicity and the age group, 25-29-year-old males are more likely to find employment while on the other hand, Mizrahi women in all older age groups are less likely to find a job, with their coefficients reading 56.19%, 85.74%, 57.96%, and 84.26% in models 1 and 2 respectively. If we compare it with past research (Axelrad, 2018), Mizrahi females aged 25-29 had a higher chance of getting employed.

The reason might be that for women, job chances may decline with age due to career breaks for family responsibilities. For men, those aged 45-54 may find it harder to get jobs compared to those aged 55-59 because older workers might now be valued more for their experience. Changes in societal attitudes and economic conditions could also play a role. This could explain why Mizrahi women aged 25-29 had better job chances in the past.

Separating education into two groups, vocational education, and academic education, men aged 25-29 and 55-59 are less likely to find a job, while 45-54 are gaining from a vocational learning experience. For women, vocational education benefits all age groups, but statistically, it is neither significant for men nor women.

With regard to academic education, women are worse off than men in all age groups - it declines with age for women and is statistically significant for age groups 45-54 and 55-59. For men, having an academic degree benefits the younger generation aged 25-29 by about 65%, while it also declines with age, having a statistical significance for men aged 55-59. Interestingly, for both men and women, an academic degree at age 55-59 affects both with nearly the same negative magnitude of 100%.

Conclusion

Based on the study and analysis, we've learned important things about the Israeli job market, according to our funneling of the 2022 CBS Labor Force Survey. Younger men, especially those aged 25-29, have better chances of finding work compared to older men, like those aged 45-54, who find it harder to get hired. This is shown by the negative and significant coefficients in tables 1 and 2. These findings highlight the need for specific actions to help older workers in finding jobs. Policies that support training programs for older adults, create workplaces that welcome people of all ages, and fight against unfair ideas about age in hiring can reduce the job differences we see among older people.

Another interesting point is that having young children now helps both men and women find jobs, which is different from what research used to say.

Moreover, it was interesting to see significance levels switch from one research being statistically significant and in our regression not, such as in the married coefficient where in previous research it was significant that women had a harder time getting a job while nowadays it is not the case.

Additionally, education makes a big difference: both vocational education and academic degrees affect how likely someone is to get a job, depending on their age and gender. There are also differences based on ethnicity: non-Mizrahi women see their job chances decline as they get older, while non-Mizrahi men aged 45-54 struggle more compared to those aged 55-59.

These findings suggest that policies should focus on supporting workplaces that help parents, making education easier to get, and dealing with biases in hiring. By doing this, policymakers can create a fairer job market that supports everyone's needs and helps Israel's economy grow. Understanding these changes can help make better decisions that benefit both workers and employers, creating a fairer and more successful society in Israel.

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