The Taub Center was established in 1982 under the leadership and vision of Herbert M. Singer, Henry Taub, and the American Jewish Joint Distribution Committee. The Center is funded by a permanent endowment created by the Henry and Marilyn Taub Foundation, the Herbert M. and Nell Singer Foundation, Jane and John Colman, the Kolker-Saxon-Hallock Family Foundation, the Milton A. and Roslyn Z. Wolf Family Foundation, and the American Jewish Joint Distribution Committee.
The research upon which most of the figures and analyses in this booklet are based can be found in the *State of the Nation Report 2018* and other Taub Center publications.
The Taub Center for Social Policy Studies in Israel

The Taub Center was established in 1982 under the leadership and vision of Herbert M. Singer, Henry Taub, and the American Jewish Joint Distribution Committee (JDC). The Center is funded by a permanent endowment created by the Henry and Marilyn Taub Foundation, the Herbert M. and Nell Singer Foundation, Jane and John Colman, the Kolker-Saxon-Hallock Family Foundation, the Milton A. and Roslyn Z. Wolf Family Foundation, and the JDC.

The Taub Center is an independent, nonpartisan, socioeconomic research institute based in Jerusalem. The Center conducts quality, impartial research on socioeconomic conditions in Israel, and develops innovative, equitable and practical options for macro public policies that advance the well-being of Israelis. The Center strives to influence public policy through direct communications with policy makers and by enriching the public debate that accompanies the decision making process.

This volume, like all Center publications, represents the views of its authors only, and they alone are responsible for its contents. Nothing stated in this book creates an obligation on the part of the Center, its Board of Directors, its employees, other affiliated persons, or those who support its activities.

Center address:
15 Ha’ari Street, Jerusalem, Israel
Tel: 972 2 567 1818
Fax: 972 2 567 1919
Email: info@taubcenter.org.il
Website: www.taubcenter.org.il

English lay-out: Laura Schreiber
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It is with great pleasure that I present *A Picture of the Nation 2019*, the Taub Center’s annual story-per-page publication. The book is generously supported by the Koret Foundation (for the second consecutive year) and the figures and findings presented are compiled to tell a continuous and comprehensive story of socioeconomics in Israel. The story is laid out in an easily accessible format that can be of value to policy makers and the public in Israel and abroad. As in the past, most of the figures are based on studies carried out by the Center’s research staff during the past year, with the remainder published here for the first time.

In this year’s book, we present key information in each of our five policy areas — macroeconomics, education, employment, health, and social welfare. The findings presented in each section are significant for their impact on the standard of living, and the quality of education, health, and social welfare of all Israelis. In addition to the overall picture, we have included four spotlights to give the reader a deeper understanding of central issues in Israeli society. The first looks at fertility patterns in Israel and shows just how truly unusual they are. The second spotlight zooms in on technological-vocational education in Israel, which, thanks to the support of the Ministry of Education, can claim positive achievements in the past few years. We then take a closer look at the industry that is most highly recognized and respected worldwide — Israel’s high tech industry — and consider the suitability of Israel’s existing labor force for the expansion of this success story in the future. Finally, in the last spotlight, we consider the gender gap in pension payments, and demonstrate the importance of increasing the retirement age for women in order to improve their post-retirement livelihood and long-term financial situation.
I would like to once again thank the Koret Foundation for partnering with us in creating this publication and making it freely available to anyone interested in the Israeli economy and society. I trust that this book in particular, and the Taub Center’s research in general, will continue to serve as a useful and trustworthy source for unbiased and instructive information.

Professor Avi Weiss  
_President, Taub Center_  
_Department of Economics, Bar-Ilan University_
Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BOI</td>
<td>Bank of Israel</td>
</tr>
<tr>
<td>BRIC</td>
<td>Brazil, Russia, India, China; countries deemed to be at a similar stage of newly advanced economic development</td>
</tr>
<tr>
<td>CBS</td>
<td>Central Bureau of Statistics</td>
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<tr>
<td>CPI</td>
<td>Consumer Price Index</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communications technology</td>
</tr>
<tr>
<td>IEA</td>
<td>International Association for the Evaluation of Educational Achievement</td>
</tr>
<tr>
<td>Meitzav</td>
<td>Hebrew acronym for Measurement of School Growth and Efficiency — nationwide exams in schools in Israel</td>
</tr>
<tr>
<td>NII</td>
<td>National Insurance Institute</td>
</tr>
<tr>
<td>NIS</td>
<td>New Israeli Shekel</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development, 36 member countries including Israel</td>
</tr>
<tr>
<td>PIAAC</td>
<td>Programme for the International Assessment of Adult Competencies, Survey of Adult Skills</td>
</tr>
<tr>
<td>PIRLS</td>
<td>Progress in International Reading Literacy Study — worldwide exams of the IEA</td>
</tr>
<tr>
<td>PISA</td>
<td>Programme for International Student Assessment — worldwide exams of the OECD</td>
</tr>
<tr>
<td>PPP</td>
<td>Purchasing power parity</td>
</tr>
<tr>
<td>RAMA</td>
<td>Israel's National Authority for Measurement and Evaluation in Education</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, technology, engineering, and mathematics — grouping of academic disciplines</td>
</tr>
<tr>
<td>TIMSS</td>
<td>Trends in International Mathematics and Science Study — worldwide exams of the IEA</td>
</tr>
</tbody>
</table>
Macroeconomics and the Standard of Living

The Israeli economy has been quite strong since the beginning of this decade, with GDP and the standard of living increasing substantially and relative prices falling. However, there are very real concerns regarding the sustainability of these trends, even over the next few years. If, indeed, these concerns are justified, new growth engines will need to be uncovered to continue moving Israel forward.
Recent years have seen a substantial rise in the standard of living

The Israeli economy has yielded significant growth in household income and consumption in recent years. Net income grew the most for the middle income quintile, while the highest quintile had the lowest growth rate. It is noteworthy that the lowest quintile enjoyed the highest growth rate of labor income due to their increased labor force participation and an increase in the minimum wage, while the highest quintile enjoyed the lowest growth of labor income. All told, income from work contributed 86% to the total rise in income.

Consumption also grew most for the lowest quintile due to their high propensity to consume and low savings rates. Across the entire economy, consumption grew at a slower rate than income, meaning that savings grew. This period is also exemplified by a decrease in poverty rates and inequality, alongside a rising poverty line (see page 88).

The real cumulative change in household income and consumption, 2012-2017

Note: The real change is calculated using a differential price index that utilizes each income quintile’s consumption basket.
Source: Gilad Brand, Taub Center | Data: CBS, Household Expenditure Survey
One reason for the improved standard of living — falling prices

One cause for the higher standard of living in Israel since 2012 is the relative decrease in consumption prices (which remained high from an international perspective). The left panel shows that aggregate price levels in Israel have been fairly steady since 2014 (although they have risen slightly recently) while in the OECD they continued to rise. Prices declined in almost all categories (right panel), with the largest fall in communications (about 5% per year) and then food (over 2% per year). These developments are striking given the rise in wages and low unemployment rates in recent years. To some extent, this is likely a consequence of government measures to reduce the cost of living following the 2011 social protests. The only exception to the fall in prices was in housing services, which continued to become more expensive. We address price changes in housing over the next two figures.

Trends in consumption prices
Index year: Q1-2005 = 100, annual moving average

Note to right figure: The results show the average annual change in price levels that is not explained by the business cycle and the exchange rate.
Source: Benjamin Bental and Gilad Brand, Taub Center | Data: OECD.Stat
Housing has become increasingly difficult to purchase, but less so than generally reported

Housing prices in Israel have continued to rise even as other prices have decreased. An accepted method to show this is to calculate the number of average monthly incomes required to purchase the average home. However, using monthly average income does not take into account non-labor sources of income or the fact that the average household has more than one wage earner. An alternative measure that more accurately reflects a household’s ability to purchase a home utilizes, instead, the average disposable household income.

Until 2002, the two metrics had similar growth rates. Following, among other things, welfare benefit cutbacks in 2003, labor force participation rates increased, and the average monthly wage rose at a slower rate than household income. Using the standard method, housing prices in 2017 were about 20% higher than in 1998, while according to the alternative measure, the ability of households to purchase housing is similar to what it was two decades ago.

Ratio of housing prices to average wage and average disposable household income
Index year: 1998 = 100

Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series.
Source: Kyrill Shraberman, Taub Center
Data: CBS, Household Expenditure Survey, central database
In most OECD countries (the grey lines), households experienced a decline in their ability to purchase housing from the start of the millennium through the world financial crisis at the end of 2007. Since then, there was a slight relative decline in the median ratio between housing prices and disposable income in the OECD countries, although in 2014 it rose again, such that by 2017, the state of affairs nearly returned to that before the crisis. Overall, in most OECD countries, the ability of households to purchase housing has declined relative to 2000.

In Israel, the trend has generally been the opposite of the OECD median. Overall, the situation has improved relative to changes in other OECD countries; over a two decade period, housing prices relative to disposable household income have risen substantially in the OECD while remaining fairly unchanged in Israel. Nevertheless, the last decade has been characterized by a substantial worsening of the situation for Israelis while that of the median OECD resident has barely changed.

Source: Kyrill Shraberman, Taub Center | Data: OECD
Growth in productivity was low given its level at the turn of the century

In 2018, Israel’s GDP grew faster than on average in other OECD countries (3.3% vs. 2.9%). To compare changes in the standard of living, however, per capita growth should be considered, with Israel’s growth at only 1.3%, while in the OECD, per capita GDP grew by 2.2% on average.

The key to narrowing gaps between Israel and other Western countries is to continually improve labor productivity. The figure shows the statistical relation between the growth rate in productivity (GDP per work hour) and its initial value in 2000. Most countries whose productivity levels in 2000 were similar to that of Israel enjoyed a far higher growth rate than Israel. Given its beginning level, Israel’s expected annual growth rate in productivity should have been almost 2%. Had the economy grown at the expected rate, productivity in 2017 would have been about $40 instead of about $35, an increase of 14%. Coupled with the annual increase of about 1% in work hours that Israel has experienced over the last decade or so (see page 20), GDP in 2017 would have been about 25% higher.

Source: Benjamin Bental and Gilad Brand, Taub Center | Data: OECD.Stat
Much of the recent wage growth is belated compensation for earlier productivity growth

One question arising from previous graphs is how the standard of living has risen so substantially in recent years given the relatively slow increase in GDP per work hour. The answer to this question can be gleaned from this figure, which shows that the source of the sharp increase in salaries shown on page 14 was the result of narrowing the gap between productivity (the value of output per worker calculated using producer prices) and the real wage (calculated using consumer prices) that opened around 2008. More specifically, the recent wage increases are actually compensating for a long period characterized by slowly increasing productivity and stagnating wages. As this gap has nearly closed, this source for increases in the standard of living is likely nearing its end, indicating that finding other growth sources is essential.
The main source of growth in recent years has come from increasing labor force participation

The economy’s growth can be broken down into contributing components: human and physical capital, work hours, and total factor productivity measuring growth not stemming from changes in factors of production (i.e., the ability to achieve greater outputs from the same amount of inputs). The analysis shows that the source of per capita GDP growth varied greatly depending on the time period, with the most rapid growth at the end of the 1990s stemming from significant investment in physical capital, while the growth from 2006 to 2011 stemmed from improvements in production as seen in total factor productivity. Since 2012, growth (which slowed) came primarily from increased labor participation rates, while the contribution of total factor productivity was slightly negative.

Looking forward, it appears that without an improvement in productivity, demographic changes and improvements in labor participation rates alone will not allow for continued growth at the current rate.

Source: Benjamin Bental and Gilad Brand, Taub Center | Data: CBS, BOI website
Looking for future growth sources — investment levels are currently insufficient

One potential source of growth lies in raising investments in Israel’s economy. As shown previously, though, this source has all but dried up over the past 15 years. This page shows the relation between population growth and investments out of GDP from 2007 to 2016 in the OECD countries. The figure shows that investments in Israel are lower relative to other developed countries, in particular considering Israel’s rapid population increase that requires more investment to spur growth in per capita incomes. Possible explanations for low levels of investment are tied to the difficulty of doing business, geopolitical dangers, and limitations on foreign trade (partially related to Israel’s relative geographic isolation).

Investments and population growth rates, 2007-2016

Source: Gilad Brand, Taub Center | Data: World Bank
Government consumption is a major contender for the economy’s resources, competing in particular with investment. In this respect, the developments over recent decades have been positive.

The left panel figure shows that the percent of government expenditure out of GDP has declined substantially over the past decade and a half, but the decline stopped at the beginning of the current decade. Lowering the government’s portion in GDP over the past 20 years has been accompanied by important processes of lowering the budget deficit and lowering the ratio between public deficit and GDP. Two decades ago, the deficit stood at 90% of GDP, while today, the ratio is about 60% — the target set by the European Union countries in the Maastricht Treaty (and which most countries do not reach).

External debt servicing (debt to foreign lenders) also competes for the economy’s resources. Thus it is fitting to mention the negligible share of this debt that has caused a historic change in the economy’s international status and its ability to attract foreign capital resources at low interest rates. It seems that these achievements largely stem from the fiscal discipline that has characterized the government budget over the past few years. Expenditure rules that were set in place at the end of the last decade reined in government spending, and lowering the deficit ceiling has led to a deficit reduction from 3%-6% of GDP to 2%-3% in the past few years.

As of late, these heretofore positive processes are heading in a worrying direction. The government has committed to future expenditure, in particular in the areas of wages and security spending that will, no doubt, lead to a change in these trends. The deficit in 2018 was 3.8% and it appears that it will rise in the future. As a result of this change in trend, Israel’s international credit rating is liable to decline and if this occurs, financing costs are likely to rise. These processes would harm future growth.
Government debt and deficit as a percentage of GDP

[Graph showing government debt and deficit as a percentage of GDP from 1995 to 2017 with specific values: 49% in 1995, 39% in 2000, 38% in 2005, 29% in 2015, and 23% in 2017.]

Government expenditure as a percentage of GDP

[Graph showing government expenditure as a percentage of GDP from 1997 to 2017 with specific values: 91% in 1997, 68% in 2000, 59% in 2005, 51% in 2010, and 5% in 2017.]

Note: General government expenditure includes government spending with the addition of National Insurance Institute spending, national institutions, local authorities, and public non-profits.

Source for both figures: Benjamin Bental and Gilad Brand, Taub Center
Data for both figures: CBS, Statistical Abstract of Israel 2017
Low public expenditure stems from relatively low tax rates and high security costs

Looking more closely at the public sector, Israel stands out in an international comparison on two aspects: the share of public expenditure is relatively low (about 40% of GDP), and security expenditures are high (about 6.7% of GDP). Hence, civilian expenditure (infrastructure, education, health, and social protections including transfer allowances and benefits) stands at about 33% of GDP. The relatively low civilian expenditure is due to the relatively low tax rates, and raising civilian expenditure would involve raising taxes. There are large differences between countries in the social protection component. The differences reflect varying social attitudes as well as population composition differences. Israeli society is very young and the unemployment rate is low, factors that impact transfer allowances. In contrast, the differences between countries in other civilian expenditure are smaller. Israel is at the lower end of the distribution at 23% of GDP, where the entire range is between about 20% and 30% of GDP.

Source: Benjamin Bental and Gilad Brand, Taub Center | Data: OECD
Spotlight on Israel’s Unusual Fertility Patterns

The growth and productivity analyses are closely linked to Israel’s demographic structure. In this section, we take a close look at fertility patterns in Israel and uncover just how unusual they truly are. While it is well known that fertility in Israel is especially high relative to other developed countries, in this section, we will show some trends in Israel that, over time, look different from those in other parts of the world and make Israel’s fertility patterns truly unique.
Israel has the highest number by far of children per woman in the OECD

In 2015, the average number of children per woman (Total Fertility Rate, TFR) in Israel was 3.1. This is unusually high and well above the population “replacement level” of 2.1. This places Israel squarely at the top of the table for the OECD — almost one full child above the next highest fertility countries, Mexico and Turkey. In fact, Israel’s TFR in 2015 was 4.15 standard deviations above the OECD mean of 1.68 children.

Putting Israel’s TFR in historical perspective is helpful. Within Western European OECD countries, TFR was last as high as 3.1 in Italy in 1931, in Germany in 1914, in the UK in 1908, and in France in 1889. Within non-European OECD countries, TFR was last as high as 3.1 in Japan in 1952, in the US and Australia toward the end of the baby boom in the mid-1960s, and in South Korea in 1976.

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: OECD Database, Chart SF2.1

**Total fertility rates in the OECD, 2015**

<table>
<thead>
<tr>
<th>Country</th>
<th>TFR</th>
</tr>
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<tbody>
<tr>
<td>ISRAEL</td>
<td>3.1</td>
</tr>
<tr>
<td>Mexico</td>
<td>1.8</td>
</tr>
<tr>
<td>Turkey</td>
<td>1.8</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1.8</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.8</td>
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<tr>
<td>France</td>
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<tr>
<td>Sweden</td>
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<tr>
<td>Chile</td>
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</tr>
<tr>
<td>US</td>
<td>1.8</td>
</tr>
<tr>
<td>Australia</td>
<td>1.8</td>
</tr>
<tr>
<td>Iceland</td>
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<tr>
<td>UK</td>
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<td>Norway</td>
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<td>Denmark</td>
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<td>Latvia</td>
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<td>Netherlands</td>
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<td>Luxembourg</td>
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<td>Japan</td>
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<td>Hungary</td>
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<td>Italy</td>
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<td>Spain</td>
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<td>Greece</td>
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<td>Portugal</td>
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<td>Poland</td>
<td>1.8</td>
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<tr>
<td>South Korea</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: OECD Database, Chart SF2.1
The increase among non-religious Jews is driving the increase in Jewish fertility

For Israeli Jews there are clear signs of differences in fertility by level of religiosity: the fertility rate among Haredim (ultra-Orthodox Jews) has fluctuated around 7 children per woman since the 1980s, and around 2.5 children per woman among the secular and the traditional who identify as “not religious,” with other religious levels arrayed between these two extremes.

Even though Haredi fertility increased significantly throughout the 1980s, Haredi fertility between 2007 and 2013 was a little lower than in the mid-1990s. In contrast, there have been increases in fertility since the 1990s — in both relative and absolute terms — in the non-Haredi Jewish population. Put differently: although it is commonly thought that high fertility rates are only among Haredi women, even among Jewish women who self-identify as secular and traditional but not religious, the combined TFR has always exceeded 2.2, making it higher than in all other OECD countries. In fact, most of the increase in fertility rates for Jewish women in the last two decades has been driven by increases in the fertility of non-Haredi Jewish women.

<table>
<thead>
<tr>
<th>Year</th>
<th>Haredi</th>
<th>National religious</th>
<th>Traditional-religious</th>
<th>Traditional-not religious</th>
<th>Secular</th>
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<td>7</td>
<td>2.2</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<td>2.2</td>
<td>3</td>
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<td>2000</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2004</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

The juxtaposition of Israel’s TFR and GDP place it in rare company

There is a strong negative association between GDP per capita and TFR. The vast majority of countries fall close to the main fitted (dashed) line. In contrast, Israel falls on an alternative (dotted) line with seven other countries, and is the only one that is not a major oil-producer. The shaded areas allow direct comparisons between Israel and countries with similar levels of fertility (green shaded area) or wealth (grey shaded area). As can be seen, Israel is unusual in both groups: in countries with similar per capita GDP, their TFR is much lower than Israel’s, falling between South Korea (1.24) and New Zealand (2.02). In countries with similar fertility rates, their GDP per capita ranged from $1,684 (Haiti) to $13,741 (Algeria). Israel’s GDP per capita was about five times greater than the average of this group.

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: World Development Indicators, 2014
Israel is the only OECD, BRIC, or emerging country with a TFR greater than 2 in 1995 in which fertility has continued to rise

Fertility in Israel is also unusual due to its temporal trajectory. Israel’s TFR has never dropped below 2.8 children, and it increased by 0.2 children between 1995 and 2015, with a significant portion of that increase occurring in the Jewish secular population, as shown on page 27.

Israel is not the only country with an increase in fertility over those years, or even an increase of that magnitude. However, every other OECD, BRIC (Brazil, Russia, India, and China), and emerging economy with a comparable increase began from a much lower level of TFR, typically below 1.4. With the exception of Israel, every country in this group with a TFR greater than 2.0 in 1995 experienced a reduction in fertility by 2015. If TFR in Israel had followed that standard pattern, Israel’s fertility would now be 0.75 children less than it was in 1995, instead of 0.2 children more.

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: OECD
Among Israeli Jews, increased education does not lead to lower fertility rates

Women’s education levels have long been one of the most important determinants of fertility. Educated women tend to have fewer children, but to spend more per child than their less educated peers (termed the “quality-quantity” trade-off in the academic literature). This has a predictable consequence: rising levels of education — desirable for many reasons at both the individual and societal level — impose a fertility “cost” on societies.

The figures present the effects of education on the predicted number of children in Israel, with household income set to its mean. The patterns only partly match the standard relationship seen in other developed countries.

Among Arab Israelis we see the expected variation; at every age, those with the lowest educational levels have the most children, and, at most ages, those with a college degree have fewer children than secondary school graduates.

In contrast, among Jews, the effects of education align less with these patterns. Only among non-Haredi women do those without a high school education have more children than others, with the fertility trajectory being very similar for the other two educational categories. The fertility gradient among non-Haredi men is very similar across all educational categories.

Likewise, for Haredim, those with a college degree appear to have lower fertility in their late 20s, but over the next 10 years, cumulative fertility appears to converge to those of their peers with fewer years of schooling.
Predicted number of children by gender, sector, and education level, 2008-2012

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: CBS, Social Survey
The increase in fertility for Jewish women is occurring despite an increase in the age at first birth

In countries with moderate or high fertility, an increase in age at first birth is uniformly associated with a reduction in fertility rates. That standard relationship holds for the non-Jewish populations in Israel; between 1994 and 2016, age at first birth increased by about 3 years for Christians and Druze, and by 1 year for Muslims, and these increases fit the overall reduction in TFR in these populations (by 6%, 41%, and 30%, respectively).

In contrast, among Jews, the traditional relationship between age at first birth and fertility is not seen: age at first birth saw an increase of about 2.8 years during this period, while the TFR rose by about 0.4 children. This means that gains to fertility at older ages have outweighed reductions in fertility at younger ages.

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: CBS, Statistical Abstract of Israel
The latest changes and trends in educational attainments have, for the most part, been positive. Efforts to attain the two main goals of the last two ministers of education — increasing the portion of students taking higher level math and the portion receiving technological-vocational education (described in more detail in the next section) — have borne fruit. In addition, there have been improvements in the performance of Israeli students in national and international exams, although test scores in the latter still remain low in comparison with those in other developed countries. In this section, we will present some of the important recent changes in the education system, including an analysis of the return to higher education by skill levels as measured by the OECD’s PIAAC survey.
Demographics in education: Large increases in the student population, and shifts in education stream distribution

The student population of Israel has grown since 2000 by 43.6%, an average annual growth rate of 2% that is unusual relative to other developed and developing countries. Over the entire period, the fastest growth was in Bedouin and Haredi education.

As seen in the figure, the greatest growth in the share of Arab education took place between 1960 and 1980, while in the past 40 years, the rate of growth has largely diminished. In contrast, the share of students in Haredi education has increased substantially since the 1980s. These changes came at the expense of students in the State schools, and particularly of State-religious schools where the share of the student population has declined to nearly half of what it was in 1960. The trend in State and State-religious education has changed of late as can be seen in the next figure that relates to preschool enrollment and is indicative of future developments.

Source: Nachum Blass, Taub Center | Data: Ministry of Education
Preschool registration suggests a decline in the share of students in Arab Israeli schools and an increase in State schools

Due to natural growth and a rise in the share of children ages 3 to 5 enrolled in early education, the number of children in preschool grew by 81% between 2000 and 2018 (in contrast to an increase of 43% in the population).

The share of children in Arab education preschools declined in the past decade, while the share of those in Hebrew State education rose. In general, the distributions remained very similar to those of school children as seen in the previous figure (stability in Hebrew State schools and a small increase in Haredi schools) except in Arab education where preschool enrollment is much lower than school enrollment. This means that the decline in the Arab Israeli population’s birth rate is expected to be reflected in a decrease in the share of children in the Arab education system in coming years.

Source: Nachum Blass, Taub Center | Data: Ministry of Education
Closing gaps relative to the OECD in per student education expenditure

Despite the unusual growth in the number of school children, the rate of growth in expenditure per student has been higher in Israel than in the OECD since 2010. Nevertheless, the per student budget remains relatively low; in 2015, the per student expenditure for primary education in Israel in PPP dollars was $7,981 versus $8,631 in the OECD. The figures in secondary education were $7,987 in Israel and $10,010 in the OECD.

The rapid growth in the education budget since 2014 was a result of the signing of agreements with the teacher unions (Oz LeTmurah), implementation of compulsory education for children ages 3 to 4, a reduction in the number of students per class, differential budgeting in primary education, school programs during vacations for the youngest school children, and more. In light of these developments, it is likely that the average per student expenditure in primary education in Israel will reach the OECD average, while the expenditure gap in secondary education will narrow.

Rate of change in per student expenditure
Index year: 1995 = 100

Source: Nachum Blass, Taub Center | Data: OECD, Education at a Glance 2018
Most schooling allocations are universal, but there are some premiums for State-religious schools

The per class and per student budget in regular official primary education (schools with grades 1-6 only) increased significantly in recent years. While most budgets are allocated according to fixed formulas, budgeting is still highest in State-religious schools (due to allocations for religious practices) and lowest in Arab Israeli schools, even after controlling for various school characteristics. In our analysis, 20% of the per student budget and 35% of the per class budget cannot be explained by transparent formulas. Only 13.3% of the explained variance for per class budgeting and 7.5% for per student budgeting can be attributed to differences in the supervisory authority, while the vast majority of difference is attributable to objective factors that are applied equally to all education streams, such as the Nurture Index (school socioeconomic status), participation in the “long school day” program, and the size of the school.

Contribution of explanatory variables as a percent of total variance, 2017

- **Budget per class**: 35.0% (Supervisory authority/sector), 13.4% (School size), 10.8% (School Nurture Index), 8.7% (Long school day), 12.6% (Special Education), 31.6% (Teacher profile), 0.7% (Unexplained variance)
- **Budget per student**: 35.0% (Supervisory authority/sector), 18.8% (School size), 18.7% (School Nurture Index), 6.0% (Long school day), 18.8% (Special Education), 23.1% (Teacher profile), 0.7% (Unexplained variance)

Source: Nachum Blass and Haim Bleikh, Taub Center
Data: Ministry of Education
Improvement in student performance on Meitzav exams and a decrease in test score dispersion

In all subject areas, Meitzav scores have risen since 2008 and, in most subjects, the level of test score dispersion has fallen (that is, there is less variance between student scores). In both 5th and 8th grades, average scores have increased, with the greatest rise being in 8th grade science (17.4%). In addition, standard deviations have decreased, most significantly in 5th grade math, with the only exception being 8th grade science. Note, however, that the increase in the standard deviation in this subject was only 13% — less than the increase in the average score.

Changes in achievement on the Meitzav exams, 2008 and 2017

<table>
<thead>
<tr>
<th>Subject</th>
<th>2008</th>
<th>2017</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math, 5th grade</td>
<td>500</td>
<td>566</td>
<td>+13.2%</td>
</tr>
<tr>
<td>English, 5th grade</td>
<td>534</td>
<td>539</td>
<td>+7.8%</td>
</tr>
<tr>
<td>Math, 8th grade</td>
<td>523</td>
<td>539</td>
<td>+4.6%</td>
</tr>
<tr>
<td>English, 8th grade</td>
<td>523</td>
<td>539</td>
<td>+17.4%</td>
</tr>
<tr>
<td>Science, 8th grade</td>
<td>587</td>
<td>587</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note: In 2008, scores were fixed at 500, with a standard deviation of 100. Data before 2008 are not standardized and cannot be compared. Source: Nachum Blass, Taub Center | Data: RAMA, various reports
Higher achievements on international exams, but scores are still low

Student scores on international achievement tests should be examined from two perspectives. One is the relative achievement at a given point in time, and the second is achievements over time. The figures present Israeli students’ achievements relative to students in those countries that participated in the latest tests and in the earliest tests that the Israeli student population participated in (excluding Haredi students).

The figures show clearly that Israeli students almost always scored lower than the average of students in participating countries, with higher standard deviations, and at times very much higher, than other participating countries. Nevertheless, in almost all cases, Israeli students showed greater improvements than students in participating countries, narrowing the score and standard deviation gaps.

Test scores and standard deviation scores
Students in Israel and those countries participating in the first and last exam in the analysis year

<table>
<thead>
<tr>
<th>Test</th>
<th>2001</th>
<th>2015</th>
<th>International test score</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIRLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>509</td>
<td>530</td>
<td>+4.1%</td>
<td>9193</td>
</tr>
<tr>
<td>Participating countries</td>
<td>532</td>
<td>542</td>
<td>+1.9%</td>
<td>74</td>
</tr>
<tr>
<td>TIMSS-Math</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>466</td>
<td>511</td>
<td>+9.7%</td>
<td>96</td>
</tr>
<tr>
<td>Participating countries</td>
<td>496</td>
<td>506</td>
<td>+2.0%</td>
<td>102</td>
</tr>
<tr>
<td>PISA-Math</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>444</td>
<td>470</td>
<td>+5.9%</td>
<td>102</td>
</tr>
<tr>
<td>Participating countries</td>
<td>482</td>
<td>482</td>
<td>0%</td>
<td>130</td>
</tr>
</tbody>
</table>

Note: Israel is included in the group “Participating countries.”
Source: Nachum Blass, Taub Center | Data: RAMA
Sharp increase in bagrut certification since the turn of the century

The percentage of those completing the bagrut (matriculation) exams has increased substantially since the turn of the century in all education streams. The largest increase was in Druze schools; the portion with a bagrut qualification has more than doubled, and today they have the largest percentage of those matriculating. The Bedouin population also almost doubled its matriculation rates, however they remain the population with the lowest rate.

All told, matriculation rates have increased by 38%. As we will show in the next figure, this has recently also been translated into an increase in graduates with high-quality bagrut certificates.

Source: Nachum Blass, Taub Center
Data: Ministry of Education, Facts and Figures 2015
More students taking high-level mathematics and English bagrut exams

The Ministry of Education set a central goal of increasing the share of students matriculating from high school (bagrut qualification) with both mathematics and English studied at the highest (5-unit) level. After years of stability in the share of students taking 5 units of English on the bagrut and a decline in the number of those taking math at this level, the Ministry of Education is now on the right track toward achieving its goal.

Since 2013, the share of those taking the English bagrut exams at the highest level increased 20% more than the increase in the number of students. The number of students taking high-level math decreased considerably from 2006 to 2012, but since then, in part due to Ministry incentives and increased public awareness of the importance and value of higher math study, the share has sharply increased.

Change in student achievements
Index year: 2006 = 100

Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center
Data: Ministry of Education
Low return to academic education for low skilled individuals relative to the OECD

The distribution of the return to higher education (the percentage increase in income) was derived from individual scores on the Survey of Adult Skills (PIAAC), conducted in the OECD countries, which allows for an analysis of the level of human capital by employment sector. The survey examines quantitative and verbal skill levels in individuals ages 16 to 65. Test results are highly correlated with wages and productivity gaps across countries (at the industry level). In this comparison, it was found that in Israel the return for workers in the top half of the skill distribution (high skills) is almost three-times larger than workers in the lower half of the distribution. Comparing internationally, the results in Israel and in the OECD countries are similar for high skill workers, while for low skill workers, there is a large negative gap.

Note: The PIAAC survey was conducted in two waves between 2012 and 2015. Return is calculated using a quintile regression on a standard Mincerian equation. The figure presents the coefficient for the dummy variable for years of schooling. The dotted line represents the 95% confidence interval.
Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
Return to academic studies, selected OECD countries, 2012-2015

Upper half of the skills distribution

Lower half of the skills distribution

A Picture of the Nation 2019
Higher skilled workers tend to receive a greater premium for higher education

An analysis of the return to education shows that higher education in most study majors is far more rewarding for skilled individuals relative to their peers of lower skill levels. However, this is not the case in the field of education where the return is substantially higher for the lower skilled individuals. In paramedical fields, the return is also higher for the less skilled, but only marginally so. As in the previous figure, this does not mean that wages are higher; just that the percentage increase in income is greater.

This can be seen as an indication of the importance of increasing the skill sets of today’s school children, allowing them to get the most from higher education in the future.

Note: Natural science includes veterinary medicine and agriculture. Some academic studies had few or no observations at the lower skill level. The omitted category is no academic education. The PIAAC survey was conducted in two waves between 2012 and 2015. Return is calculated using a quintile regression on a standard Mincerian equation. The figure presents the coefficient for the dummy variable for study major. The omitted category is workers without an academic education. The dotted line represents the 95% confidence interval.

Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
Return to academic studies and study majors, 2012-2015

Top quintile of the skills distribution

Bottom quintile of the skills distribution
Increased higher education for Arab Israelis, but large gaps persist

For all population groups except Haredi men, a larger portion of 30-44-year-olds have post-secondary education than do 45-59-year-olds. In addition, for the younger cohort, there are more women than men with this level of education in all groups.

In all populations, women have advanced more than men in terms of attaining higher education. Among Arab Israelis, women have overtaken men; while in the older cohort, more men have degrees than women, this is reversed for the younger cohort. Put differently, while the percentage of degree holders among the 30-44-year-old Arab Israeli women exceeds that among the 45-59-year-old women by 13 percentage points, for men, the difference is only 1 percentage point. Among Haredim, a 17 percentage point gap has developed between the genders.

Source: Hadas Fuchs, Taub Center | Data: CBS, Labor Force Survey
As mentioned previously, increasing technological-vocational education has been a recent goal of the Ministry of Education, spurred by the ever-increasing pace of technological change and the predicted changes in the future labor market. Such training can improve high-end skills that feed into higher education in STEM subjects and supply sustainable occupations for those not destined to attend schools of higher education. As we show in this section, student achievements are impressive and the Ministry’s goal is being achieved, although not evenly across all population groups.
An increase in the share of high school seniors enrolled in technological-vocational education

Students in technological-vocational education (hereafter: technology education), which goes from 10th to 12th grade, have options to study in any of 25 different study majors that vary widely — from program engineering and robotics to hair styling and cosmetology. The lion’s share of technology education students (74%) attend comprehensive high schools that offer both technology and academic studies, while the other 26% of students study in dedicated technological-vocational schools.

The result has been a rise in the share of students in technology education both in the Hebrew and Arab education systems in the last decade. The share of technology students in the Arab education sector, though, remains larger than the Hebrew sector share. From 2015 to 2017, the average overall share has been stable at 40%.

Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center
Data: Ministry of Education
Increase in high and middle technology students

Study majors in technology education vary greatly. Taub Center researchers developed a new achievement-based classification (in place of the accepted classification system of the CBS), which shows that the most substantial growth has been in the share of students enrolled in the high technology track (characterized by high achievements), drawing students away from academic studies. The share of students in the low technology track, characterized by particularly low bagrut qualification rates, is low and has been stable at only 3%. That is, the popular perception that technology studies do not prepare students for higher education and the field of high tech does not match reality.

Distribution of 12th graders by education tracks

<table>
<thead>
<tr>
<th>Educational track</th>
<th>Sample courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>High technology</td>
<td>Computer systems; Biotechnology systems; Mechatronics</td>
</tr>
<tr>
<td>Medium technology</td>
<td>Systems control &amp; design; Human resource management; Telecommunications</td>
</tr>
<tr>
<td>Low technology</td>
<td>Culinary arts/Hospitality; Car mechanics; Cosmetology/Hair design</td>
</tr>
</tbody>
</table>

Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center | Data: Ministry of Education
Growth in high technology education is particularly significant for Druze and Bedouin populations

The share of students in technology education has increased in all streams, with wide differences across sectors and genders (shown on the next page).

The share of those in the high technology track has grown in all streams except among Haredim. Growth in the Arab education sector was high, especially in Druze and Bedouin education, and today, the share of these students is higher than in the Hebrew education sector. This is a significant change that can bring increased integration of the Arab Israeli population into the most prestigious tracks in the labor market.

The share of students in the medium technology track has grown substantially in the Haredi sector, contracted in the Hebrew State stream, and grown slightly in other streams. The share of students in the low technology track is very low in the Hebrew education sector and in decline in the Arab education sector as well.

### Composition of educational tracks, 12th graders

<table>
<thead>
<tr>
<th></th>
<th>Hebrew education</th>
<th>Arab education</th>
<th>Druze</th>
<th>Bedouin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>State</td>
<td>State-religious</td>
<td>Haredi</td>
<td>Arab</td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td>66.4% 10.5%</td>
<td>88.7% 6.5%</td>
<td>61.9% 12.2%</td>
</tr>
<tr>
<td>2017</td>
<td>61.2% 16.1%</td>
<td>58.8% 16.5%</td>
<td>66.8% 27.6%</td>
<td>42.8% 28.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center
Data: Ministry of Education
Larger increase in high technology education for women than for men in the Arab Israeli sectors

In the Hebrew education sector, the share of girls in high technology is considerably less than the share of boys, with a particularly pronounced gap in the Hebrew State-religious stream. In the Arab education sector, the picture is the opposite. Here, too, the most striking change is in the Druze and Bedouin streams, where the gap between girls and boys in the Bedouin stream is particularly large. The share of girls in the high technology track has increased from 6% to 21%, while among boys, the increase has been from 6% to only 12%.

The considerable rise among Arab Israeli girls has contributed to strengthening their educational status as well as their employment status. This change will likely have a large impact on future developments in Arab Israeli society. Hints of this are already seen in the sharp decline in fertility rates in the population rates as well as the rapid rise over the past two years (2017-2018) in the employment of Arab Israeli women, which is expected to continue.

Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center Data: Ministry of Education
Bagrut qualification rates tend to reflect socioeconomic status

Students’ socioeconomic background profiles match their academic achievements in the technology tracks: students in the high technology track come from the strongest backgrounds, while those in the lowest track come from the lowest socioeconomic groups. With this, the socioeconomic level of Arab students in the highest track is considerably lower than of their Hebrew education peers. Despite these background profile differences, bagrut qualification levels are similar across the high technology track — Arab and Druze students in this track have similar bagrut qualification rates as their Hebrew peers in 2017. Even in the Bedouin education stream, about 74% of students in the high technology track qualify for a bagrut certificate.

Bagrut qualification, 2006-2017

<table>
<thead>
<tr>
<th>Track</th>
<th>Hebrew, non-Haredi education</th>
<th>Arab education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>76%</td>
<td>43%</td>
</tr>
<tr>
<td>High technology</td>
<td>87%</td>
<td>37%</td>
</tr>
<tr>
<td>Medium technology</td>
<td>53%</td>
<td>16%</td>
</tr>
<tr>
<td>Low technology</td>
<td>16%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Average socioeconomic quintile, 2006-2017

<table>
<thead>
<tr>
<th>Quintile</th>
<th>Hebrew, non-Haredi education</th>
<th>Arab education</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>3.2</td>
<td>3.1</td>
</tr>
<tr>
<td>3.1</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>2.9</td>
<td>1.7</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Note: Socioeconomic quintile of the student’s place of residence and not of the school.
Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center | Data: Ministry of Education
Large increase in the percentage taking the highest level math bagrut exam

Overall, the share of students taking the bagrut exams in math at the 5-unit level fell until 2013 and since has recovered, although the trends have not been the same across all education sectors. Relative to the Hebrew sector, the share in the Arab sector was lower in 2006, dropped by more until 2012, and recovered more slowly thereafter. In 2017, 19% of the students in the Hebrew sector took the highest level of math in contrast to 8% in the Arab sector.

The largest increase in those taking the highest level of math was in the high technology track, with an increase of 60% over a dozen years. In 2017, the percent of students in 5 unit math in technology tracks (the majority in high technology) equaled that in the academic-science tracks — 47%. Only 6% of those taking the math bagrut at the highest level came from the academic tracks without science majors, with the rate among girls slightly higher than among boys, although this rate is still low and declining.

Source: Hadas Fuchs, Guy Yanay, and Nachum Blass, Taub Center
Data: Ministry of Education
Employment has been rising for almost all population groups at least since the start of the century. In this section, we discuss the sources of some of these labor market changes and will present some interesting findings that impact both the labor market and leisure, adding a special focus on commuting patterns and modes of transportation.
In 2018, the Israeli labor market continued to show strength. Employment and labor force participation rates continue to rise and unemployment stands at a near-record low of 3.5%. Relative to the OECD, employment rates of non-Haredi Jews, and especially non-Haredi Jewish women, are high.

The two groups with historically low employment rates have shown contrasting trends. Since 2003, employment among Arab Israeli women nearly doubled to the level of about 40%, including an increase of 8 percentage points since 2016. This rate nears the employment target for 2020 of 41% as set in 2010 by the then Ministry of Labor, Trade and Employment.

In contrast, after a rise of more than 15 percentage points until 2015, employment among Haredi men stabilized at around 49%, so the target of 63% by 2020 is not realistic. Indeed, integration of Haredi men into the Israeli labor market remains one of the greatest challenges facing the Israeli economy.

Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series. Data have been concatenated to their level after the series break. Data are without fixed samples.

Source: Hadas Fuchs and Avi Weiss, Taub Center | Data: CBS
Different sources underlying increased employment for Arab Israeli women and Jewish women

The increase in employment among Arab Israeli women over the past decades occurred together with improvements in their high school education levels and bagrut qualifications, as well as their enrollment in technology studies and in higher education. As shown in the figure, the rise in Arab Israeli women’s employment from 2003 to 2017 stemmed primarily from an improvement in their education levels (the composition effect, indicating the effect of movement between education levels), that contributed 72% of the increase in employment. An additional 18% resulted from a rise in the employment of Arab Israeli women without a bagrut qualification. It is likely that with the continuation of the trend of increasing education levels among Arab Israeli women, their employment in the coming years will continue to rise.

With regard to Jewish women, the increase stems from a different source: only 24% of the increase is due to increased education levels (the composition effect) and the rest is due to increased employment rates for women at each education level.

Source: Hadas Fuchs and Avi Weiss, Taub Center | Data: CBS, Labor Force Survey
Age composition of increased female employment different for non-Haredi Jews than for other sectors

The employment rate of women increased in every age group, although at different rates in each sector. Among non-Haredi Jewish women, the most substantial increase was in the 55-64-year-old age group. This occurred for two reasons: a “cohort effect” whereby women in later cohorts participate more in the labor market, including as they near retirement age, and an increase in the official retirement age for women from 60 to 62 which led to some women remaining in the work force longer.

In contrast, among Arab Israeli women, and even more so among Haredi women, overall employment has increased primarily due to a rise in the employment of younger women, with a substantial increase in the share of mothers of young children entering the labor market. In these population groups, older women have low employment rates despite the low rate of their partners’ employment, so they have not been affected by policy changes in the retirement age.

The breakdown of the changes in women’s employment, 2003-2017
Within age groups and the composition effect

Source: Hadas Fuchs and Avi Weiss, Taub Center | Data: CBS, Labor Force Survey
The reasons for remaining out of the work force are different for Jewish and Arab Israeli women

Among women who have not sought employment in the previous 4-week period and are not in the labor force but are willing to work, the reasons cited for not working differ greatly between Jews and Arab Israelis and across different geographic locales. Women in the country’s center are more likely to have readily available employment options, but the opportunities are also more likely to be deemed unsuitable. In addition, a higher percentage in the center remain out of the work force because of age, studies, or disabilities. While these trends hold true for both Jewish and Arab Israeli women, they are a much larger determinant for Jewish women. On the other hand, Arab Israeli women in all areas of the country are more likely to choose not to participate in the work force in order to care for family members or their households. Finally, both Arab Israeli and Jewish women are strongly affected by the lack of opportunities in the north of the country.

Note: Women who have not sought employment in the previous 4-week period and are not in the labor force but are willing to work. “No suitable employment” includes issues of wages, interests, hours, experience levels, skills, and language difficulties. The “Triangle” includes Arab Israeli localities in the Hadera subdistrict and localities in the Center.

Source: Haim Bleikh, Taub Center | Data: CBS, Social Survey
Employment in high tech is male dominated, as in other countries, and is almost all non-Haredi Jews

In the past twenty years, there has been an impressive increase in high tech employment (see the discussion on page 66), although only among a portion of the population. The share among non-Haredi Jewish men is relatively high, rising from about 8% to about 15%, but among Arab Israeli and Haredi men the share remains negligible. Women’s employment in high tech is also relatively low, a worldwide phenomenon. In 2017, only 32% of the employees in high tech in Israel were women, and that employment was almost exclusively among non-Haredi Jewish women. With this, the share among Haredi women has risen from less than 1% a decade ago to over 3% today.

Although a higher percentage of Arab Israeli high school girls major in the sciences than their Hebrew system peers, there is little sign of their increased employment in high tech. One of the reasons for this is the geographic distribution of high tech relative to the population distribution; the majority of high tech employment is located in the country’s center, while the Arab Israeli population is concentrated largely in the north (about 42%).

Share of high tech employment

Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series. Data have been concatenated to their level after the series break.
Source: Hadas Fuchs and Avi Weiss, Taub Center | Data: CBS
Decrease in the portion of Haredi women employed in education, exceptionally large percentage of male Haredi teachers

About 23% of Haredi men are teachers, the majority without the benefit of an academic education or any post-secondary education other than yeshiva learning, and between 30% and 40% are employed in the wider field of education. Single-gender Haredi schools contribute to the fact that teaching is not female dominated in this sector. In fact, the share of Haredi women employed in education has declined from about 60% since the beginning of the millennium to about 45%. This share is still about double the share of non-Haredi women in teaching, but is fast approaching the share of Arab Israel women employed in the field (38%). The decline indicates a gradual process of employment diversification, which can be seen in more young Haredi women enrolling in technology studies. It should be noted, though, that the share of Haredi women teachers is likely to remain relatively high due to the higher fertility rates in this population group and the resultant high demand for teachers.

Note: In 2012, the CBS survey methodology changed, resulting in a break in the data series. Data have been concatenated to their level after the series break.
Source: Hadas Fuchs and Avi Weiss, Taub Center | Data: CBS
As road congestion levels continue to rise, the subject of commuting has attracted increasing public attention. Over the past 30 years, the share of commuters has increased by 12 percentage points, while the population of the country has doubled, and the number of commuters has tripled.

The increase in commuting has been marked by an increased use of private cars, making it the main mode of transportation among workers. Despite efforts to match rising demand by increasing the length and the area of roads (the number of lanes), vehicle use has increased far faster than the supply of roads.

Public transportation is also undergoing changes; in the past few years, prices have fallen and there has been a notable rise in the use of trains for commuting to work. The impact these changes will have on individual travel characteristics is still unclear.

More commuters by car and fewer by public buses, while train travel is increasing

<table>
<thead>
<tr>
<th>Year</th>
<th>Private car</th>
<th>Bus/Shared taxi</th>
<th>Train</th>
<th>Organized transportation</th>
<th>Walking/Bicycle</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>31%</td>
<td>13%</td>
<td>48%</td>
<td>19%</td>
<td>14%</td>
<td>19%</td>
</tr>
<tr>
<td>1995</td>
<td>15%</td>
<td>25%</td>
<td>48%</td>
<td>19%</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>2008</td>
<td>15%</td>
<td>58%</td>
<td>58%</td>
<td>12%</td>
<td>25%</td>
<td>12%</td>
</tr>
<tr>
<td>2016</td>
<td>10%</td>
<td>60%</td>
<td>58%</td>
<td>10%</td>
<td>13%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Note: 1983, 1995, and 2008 data are from the Population Census and are for workers ages 15 and older; 2016 data are from the Social Survey and are for workers ages 20 and older.

Source: Haim Bleikh, Taub Center | Data: CBS, Population Census, Social Survey
Commuting can lead to a better match between workers and work places, allowing workers to live where they want at a price they can afford and work in a place that suits them. Commuting time depends on distance and speed, and is largely explained by the spatial configuration of suitable employment opportunities and residential distribution, as well as travel mode choice and congestion levels.

The data show that most commuting trips are of relatively short commuting time and over short distances; about 80% of workers travel up to 45 minutes and three-quarters travel no more than 20 kilometers to work. However, the predominance of travel by private cars (see previous page) places a burden on the infrastructure and imposes substantial social costs (including road congestion and pollution). The burden may become more significant as the population of Israel grows, particularly if it continues to converge toward the already crowded center of the country.

**Commuting distance and time, 2015-2016**

*Workers ages 25-64*

**Commuting distance**

<table>
<thead>
<tr>
<th>Distance</th>
<th>Within locality</th>
<th>Up to 10 km</th>
<th>10-20 km</th>
<th>20-40 km</th>
<th>40+ km</th>
<th>Not fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>46%</td>
<td>13%</td>
<td>15%</td>
<td>11%</td>
<td>6%</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Commuting time**

<table>
<thead>
<tr>
<th>Time</th>
<th>Up to 30 minutes</th>
<th>30-45 minutes</th>
<th>45-60 minutes</th>
<th>Over 60 minutes</th>
<th>Not fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>59%</td>
<td>17%</td>
<td>12%</td>
<td>9%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Haim Bleikh, Taub Center | Data: CBS, Social Survey
Spotlight on High Tech

The high tech sector is the jewel in Israel’s economic crown. It is also the sector that has drawn the most attention from policy makers targeting continued improvement in the local economy. Among other means, policy makers propose offering training to adults currently employed in non high tech industries. In this section, we consider the possibility that such training efforts could have limited success because the large majority of workers not currently employed in high tech lack the requisite skill level to work in this industry, and those with the required skill level tend to already be employed in high tech or in other lucrative occupations. Further expansion of employment in this sector, it seems, is more likely to be attained in the future through improved education, starting at an early age.
High tech employment in Israel is well above that in any other OECD country

The advanced technology sector contributes substantially to raising Israel’s average productivity levels. While only about 8% of the labor force is employed in high tech, which is substantially more than in any other country, high tech constitutes a disproportionate share of the value added to Israeli exports and contributes about one-quarter of income tax revenues. High tech workers earn about double the market average, which reflects worker productivity differences between high tech and other sectors. Despite this, employment rates have remained largely unchanged for more than a decade and vacant positions seem difficult to fill. For this reason, Israel has set a target to increase the share of high tech employment in the coming years and has invested resources and efforts in this direction. But, as will be shown, this is a very difficult target to meet, at least in the short term.

Share of workers employed in high tech, 2012-2015
24 OECD countries, ages 25-65

Note: The PIAAC survey was conducted in two waves between 2012 and 2015.
Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
Workers in high tech tend to be the most highly skilled, particularly in Israel

The current limitation on additional growth in the high tech sector is deduced from an analysis of PIAAC scores (see page 42 for a description). A look at the distribution of skills of those in high tech employment illustrates the tremendous reliance of the sector on the most highly skilled workers in the OECD and in Israel, in particular. About 60% of the workers in high tech in Israel come from the highest skill quintile, 22% from the fourth quintile, and only 11% from the middle quintile. This finding has implications for expanding the sector, at least in the short term, as we will see in the coming pages.

The composition of employees in high tech by skill quintile, 2012-2015
21 OECD countries, ages 25-65

Note: The PIAAC survey was conducted in two waves between 2012 and 2015. Skill level is measured in the quantitative and verbal parts of the PIAAC test. Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
Large skill gaps between workers in high tech and those in other industries

The results of the PIAAC survey indicate sharp differences between skill levels of workers in high tech and those in other sectors in Israel: the skill level of high tech workers is almost a standard deviation higher than of those in other sectors — a large difference relative to the average in other countries. More specifically, while the skill level of high tech workers in Israel is similar to their peers in other developed countries, in other industries, worker skill levels fall well below that of their international peers.

The survey data explain the difficulties employers face in filling positions in the high tech sector, even at the relatively high wage levels they offer. Workers in other sectors simply do not have the requisite skill level to move into high tech.

Note: The PIAAC survey was conducted in two waves between 2012 and 2015. Skill level is measured in the quantitative and verbal parts of the PIAAC test. Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
A large portion of the highest skilled workers in Israel are already employed in high tech

Given the high demand for high tech workers, additional high skill workers who are not currently in this sector could possibly be encouraged to move to high tech. The most highly skilled workers, though, are already employed in high tech at higher rates than in other OECD countries. Among those identified at the highest skill level in the PIAAC survey, more than one-quarter of the men are already employed in high tech. Among women, the share is lower though far higher than in other OECD countries. In addition, as shown in the next figure, those not in high tech tend to be employed in other sectors that require equally high skill levels and offer high wages.

Note: The PIAAC survey was conducted in two waves between 2012 and 2015. Skill level is measured in the quantitative and verbal parts of the PIAAC test.

Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
Almost all highly skilled non high tech workers are already working in high paying occupations

The business sector in Israel already rewards its high skill workers well, even those not in high tech, and these workers are already realizing their potential more fully than in other countries. A look at the distribution of workers in the highest skill quintile by occupation in Israel and in the OECD shows two sharp differences: Israel has a large number of highly skilled workers in the STEM fields, and the share of employees with high skills in occupations characterized by low wages (the navy blue area) is substantially lower than in other OECD countries. The remaining workers are employed in areas requiring high skill levels (according to the international classification) with potential for high wages. Thus, the number of high skill workers who could reasonably move to high tech STEM-related fields is relatively limited.

A substantial widening of the high tech sector (without imported foreign workers), therefore, requires long-term solutions like investing in advanced education so that more adults reach the labor market at the required skill levels. As can be seen in the next figure, the challenge is great.
Occupational distribution of workers in the highest skill quintile in the business sector, 2012-2015
Israel and selected OECD countries

Note: 13 OECD countries with the relatively highest incomes (Belgium, Denmark, France, Germany, Ireland, Netherlands, New Zealand, Norway, South Korea, Sweden, UK, and the US); low wage occupations are those not classified as managerial, academic, and technical engineers (categories 40-96 in the 2011 CBS classification). The PIAAC survey was conducted in two waves between 2012 and 2015. Skill level is measured in the quantitative and verbal parts of the PIAAC tests.
Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
The skill gap with OECD countries is particularly large for low skilled portions of the population

To compare worker skill levels in Israel to the OECD average, worker achievements on the PIAAC were divided into five groups ( quintiles). The average ranking of each quintile in Israel is compared to that in the OECD countries (and the difference is presented in standard deviation units).

The highest skill quintiles in Israel are relatively similar to the OECD, that is, the best in Israel are no worse than those in the OECD. In contrast, gaps in skill levels widen in the lower quintiles, such that the weaker workers in Israel are considerably weaker than their peers in other countries. This is a particularly worrying picture for what it shows about skill levels within the Arab Israeli population.

It appears that realizing the potential of workers at the highest skill level (for instance, by moving them to high tech) is not the principal problem of concern; raising the skill and earning level of the general population, and particularly the weakest population groups, is key for growth.

Note: The PIAAC survey was conducted in two waves between 2012 and 2015. Skill level is measured in the quantitative and verbal parts of the PIAAC test. Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
An additional barrier to high tech employment is English language proficiency

Another high tech employment-related skill is English language proficiency. The PIAAC skill survey conducted in Israel includes a special section for respondents to rank their knowledge of English. The results show that among respondents who report not being proficient in English, the likelihood of employment in the high tech sector is close to nil at every skill level. The importance of English proficiency for employment in high tech has significance also for the sector’s employment composition. The vast majority of workers in high tech today (more than 95%) are non-Haredi Jews. It would seem that the Haredi and Arab Israeli populations are the main potential for employment growth. However, the level of English proficiency among these populations is particularly low. Thus, improving English education among these populations is a necessary condition for their entrance into the high tech sector.

**English proficiency level, 2012-2015**

*Ages 25-45*

Note: The PIAAC survey was conducted in two waves between 2012 and 2015. Skill level is measured in the quantitative and verbal parts of the PIAAC test.
Source: Gilad Brand, Taub Center | Data: OECD, PIAAC
Health

Israeli health outcomes, measured by low infant mortality rates and high life expectancy, are excellent. However, there are some signs of concern that stem, in part, from its unorthodox governance structure and from the rising medical needs of a rapidly aging population alongside a lagging growth in resources. In the pages ahead, we uncover some of these challenges.
The public-private mix distorts incentives and makes the healthcare system less public and less egalitarian

As shown in the figure, the Israeli healthcare system is characterized by a flawed public-private mix. Between completely private funding and completely public funding stands supplementary healthcare insurance. Supplementary insurance, which is carried by about 80% of the population, has a public nature because it entails cross subsidies between insured individuals (the same price is paid by all insured individuals independent of health status). Although it funds treatments in institutions that do not work under the National Health Insurance Law, these same treatments are available within the national health insurance system and often by the same treating physician. As such, supplementary insurance funds a “private system” alongside out-of-pocket payments and commercial insurance. In this way, some services that could be performed in the public system are “shifted” into the private system, where the waiting time is reduced and the patient can choose the treating physician (who almost always comes from the public system).

There are a number of consequences stemming from this situation that conflict with the principles of universal health insurance. First, allowing physicians to refer their public care patients to private practice distorts incentives and creates an opening for unnecessary treatments. Second, the shortening of waiting times and the option of physician choice lead to inequalities between population groups and between the center and the periphery on the basis of the patient’s ability to pay, which negates one of the pillars of the National Health Insurance Law: equality in accessibility to care. Third, it results in inefficiencies in investments; infrastructure investments are made in the private sector while existing public infrastructures remain under-utilized. Fourth, the high salaries of physicians in the private sector create pressure on wages in the public sector leading to increased costs in the public healthcare system.
Public-private mix of the healthcare system

Funding

Private funding
Out-of-pocket payment for service; commercial insurance (+ co-pays)

Semi-public funding (due to cross subsidies)
Supplementary insurance

Public funding
Health tax; general taxes (+ co-pays)

Supply

Privately owned system

Private system reliance on public system for emergency infrastructure, training, and research

Patient and manpower movement

Demand for physician choice

Public system

Source: Dov Chernichovsky, Taub Center
The share of total (public and private) expenditure on healthcare as a portion of GDP has remained constant at about 7% for the past 20 years. This is in contrast to the OECD where the share has risen to 8.9% and to countries with similar health systems — countries with universal healthcare with health funds similar to Israel’s (Belgium, France, Germany, the Netherlands, and Switzerland) — where the share has risen to 11.0%

Since 1995, healthcare expenditure per capita has tripled in countries with similar healthcare systems, has grown 2.5-fold in the OECD, and has barely doubled in Israel. This is of concern because of the relatively rapidly aging population in Israel on the one hand, and the rising wages of physicians on the other hand (see page 80). These trends would seem to necessitate an increase in the share of GDP spent on healthcare, as well as in the public share in total spending, as has been the case in other countries.

Public expenditure on healthcare per capita
In current US dollars and as a percent of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Israel</th>
<th>OECD</th>
<th>Similar countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>$1,366 (6.9%)</td>
<td>$2,096 (8.7%)</td>
<td>$1,366 (6.9%)</td>
</tr>
<tr>
<td>2000</td>
<td>$2,834 (7.3%)</td>
<td>$4,025 (8.9%)</td>
<td>$2,834 (7.3%)</td>
</tr>
<tr>
<td>2005</td>
<td>$5,760 (11.0%)</td>
<td>$5,760 (11.0%)</td>
<td>$5,760 (11.0%)</td>
</tr>
<tr>
<td>2010</td>
<td>$5,760 (11.0%)</td>
<td>$5,760 (11.0%)</td>
<td>$5,760 (11.0%)</td>
</tr>
<tr>
<td>2017</td>
<td>$5,760 (11.0%)</td>
<td>$5,760 (11.0%)</td>
<td>$5,760 (11.0%)</td>
</tr>
</tbody>
</table>

Note: Similar countries are those with managed competition of health funds, plans, and the like (Belgium, France, Germany, Netherlands, and Switzerland).
Source: Dov Chernichovsky, Taub Center | Data: OECD.Stat
The increase in supplementary and private insurance has raised healthcare prices far more than the Consumer Price Index

From 2011 to 2018, the cost of healthcare increased by 9% while inflation was only 4%. The largest single factor contributing to this increase is the “healthcare services” item, which includes co-payments and services purchased through the health funds (supplementary insurance), as well as payments for private insurance and private healthcare. As discussed on the next page, the driving force behind this price increase has been the rise in physician wages. This increase is, of course, influenced by the fees physicians command in their private practices, which are often paid for by supplementary insurance.

Price changes in private healthcare services and the CPI
By expenditure category, January 2011 to October 2018

Source: Dov Chernichovsky, Taub Center | Data: CBS, CPI
Healthcare price rises led by increased public sector physician salaries

Nominal physician wages in the public sector rose by 42% between 2011 and 2017, while the average wage of salaried workers in the economy rose by only 15% over the same period. The increase in public wages was fueled by physician fees in the private system.

Most countries that provide universal health care coverage prevent physicians from working in both the public and the private systems — and, all the more so, from referring patients from the public to the private system, where physicians can encourage demand. In Israel, however, clinics operating in the public system can refer patients to services in the private system for treatments that are available in the public system, usually with payment through supplementary and commercial insurance. Moreover, physicians have an incentive to limit their work hours in the public system to some degree to this end. This creates wage pressure and price increases in the public system.

Trends in public sector physician wages relative to average market wage
Index year: 2011 = 100

Source: Dov Chernichovsky, Taub Center | Data: CBS
Government’s responsibilities as regulator, owner, and financer of hospitals lead to conflicts of interest

The State of Israel plays multiple roles in the Israeli hospital sector. First, the state indirectly bankrolls hospitals through its funding of health funds (kupot holim), which purchase entitled care from the hospitals. Second, the state sells hospital services to these funds since, as shown in the figure, the Israeli government owns and operates the largest share of hospital beds for most types of service, particularly for general hospitalization and psychiatric care. Finally, the government regulates hospital services to ensure the availability and sustainability of care. These different roles conflict, making the current system untenable.

Numerous committees appointed by the state have proposed a reform under which the state would divest its ownership of hospitals, while continuing in its natural role as a regulator, as well as the funder of entitled care through the health funds. The reform is still pending.

Hospital beds by type and ownership, 2018

![Hospital beds by type and ownership, 2018](chart)
The number of hospital beds in the Israeli system is particularly low

The number of general hospital beds in Israel is 3 per 1,000 residents, or about 3.2 beds when standardizing for the country’s younger age distribution. This number is low relative to the OECD average and to the average in countries with similar healthcare systems of 4.8 and 5.6 beds per 1,000 population respectively.

Despite the aging of the population (in Israel and other countries), which leads to a more complex patient mix, the number of general hospital beds per 1,000 population is dropping in all the OECD countries. This is primarily a result of technological advancements and a move toward community treatment in place of hospitalization.

In spite of these trends, and despite the fact that Israel currently has a relatively young population, the combination of far fewer hospital beds per 1,000 population and Israel’s rapidly aging population raises fears that the number of available hospital beds may not continue to match the needs of the population.

<table>
<thead>
<tr>
<th>Year</th>
<th>Israel</th>
<th>Similar countries</th>
<th>OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>3.0</td>
<td>6.4</td>
<td>5.4</td>
</tr>
<tr>
<td>2007</td>
<td>3.1</td>
<td>6.5</td>
<td>5.5</td>
</tr>
<tr>
<td>2009</td>
<td>3.2</td>
<td>6.6</td>
<td>5.6</td>
</tr>
<tr>
<td>2011</td>
<td>3.3</td>
<td>6.7</td>
<td>5.7</td>
</tr>
<tr>
<td>2013</td>
<td>3.4</td>
<td>6.8</td>
<td>5.8</td>
</tr>
<tr>
<td>2016</td>
<td>3.5</td>
<td>6.9</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Note: 26 OECD countries with available data. Similar countries are those with managed competition of health funds, plans, and the like (Belgium, France, Germany, Netherlands, and Switzerland).

Source: Dov Chernichovsky, Taub Center | Data: OECD.Stat
**Israel’s hospitals are near full capacity with relatively short average length of stay — a sign of efficiency or deficiency?**

Of the OECD countries, Israel has the highest bed occupancy rate, aside from Ireland; in 2016, the general hospitalization bed occupancy rate stood at 94%, while the OECD average was only 75%. In addition, the average length of hospital stay in Israel is only 5.2 days versus an OECD average of 6.7. While these figures suggest efficiency, they may also indicate a problem. Hospitals need to be ready for seasonal changes in demand as well as sudden acute emergencies. If the average length of hospital stay is high, then even with a high occupancy rate, there will likely be patients who can be discharged with little harm. However, high occupancy rates with short average hospitalizations may limit the system’s ability to respond without running the risk of discharging patients prematurely. The existing reality results in patients hospitalized in the hallways and in crowded emergency rooms, negatively impacting the quality of care.

Note: Data are updated to 2016; France, Italy, and the US are updated to 2015. Countries in orange have similar healthcare systems to Israel.

*Source: Dov Chernichovsky, Taub Center | Data: OECD.Stats*
The dispersion of general hospital beds in Israel shows the lack of parity across districts in the number of hospital beds per standardized population. In the northern and southern geographic periphery, the hospital bed rate per 1,000 population is the lowest, while Jerusalem has the highest rate per population.

As a means of comparison, the distances between localities and various types of general hospital facilities were examined. These were broken down into the distance to the nearest hospital, the nearest regional center (Rambam — from Hadera north; Soroka from Ashkelon south; national centers for other parts of the country), and the distance to a national center (Ichilov, Beilinson, Sheba, and Hadassah). The underlying reason for this division was that for routine treatment, patients are referred to the nearest hospital, for more complex cases, patients are referred to regional centers, and in special cases, they go to national centers.

In all categories, the greatest average distance was found in the northern district and after that in the southern district and Haifa. In these districts, average distances to the nearest hospital are substantially greater than in the central district and particularly than in Jerusalem and Tel Aviv, which enjoy the shortest distances to hospitals. Disparities between the center and the periphery in the number of hospital beds and accessibility to specialty departments are correlated with waiting times; in those districts with fewer beds relative to the population, waiting times are longer.
### Average distances (km) to hospitalization facilities by type and geographic district

<table>
<thead>
<tr>
<th>Geographic District</th>
<th>Average Distance to National Center</th>
<th>Average Distance to Regional Center</th>
<th>Average Distance to Nearest Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>132.86</td>
<td>45.12</td>
<td>19.25</td>
</tr>
<tr>
<td>South</td>
<td>92.17</td>
<td>41.04</td>
<td>15.88</td>
</tr>
<tr>
<td>Haifa</td>
<td>100.64</td>
<td>21.18</td>
<td>9.45</td>
</tr>
<tr>
<td>Center</td>
<td>36.28</td>
<td>17.06</td>
<td>6.36</td>
</tr>
<tr>
<td>Jerusalem</td>
<td>37.4</td>
<td>4.33</td>
<td>4.25</td>
</tr>
<tr>
<td>Tel Aviv</td>
<td>29.71</td>
<td>4.96</td>
<td>3.19</td>
</tr>
</tbody>
</table>

Source: Dov Chernichovsky, Taub Center | Data: Distances established by a GIS (geographic information system) based on maps
Over the past few years, poverty rates and income inequality have been declining, but at a far slower pace than prescribed in 2014 by the Elalouf Committee for the War Against Poverty. Government efforts have been mostly aimed at encouraging labor force participation and far less toward helping those who are not in the labor force. Thus, families dependent on income support find themselves further from the poverty line than in the past, which raises additional concerns regarding the financial stability of families in debt in the lowest income decile.
Increase in real wages and the poverty line, while income support levels remain constant

Over the past 30 years, the average real wage has risen, and along with it the poverty line. Income support levels (the social security net intended for poor families of working age with no income) rose along with the poverty line until the beginning of the millennium when the amount of the benefit was lowered and it was unlinked from the average wage in attempts to increase labor force participation.

Since then, the benefit size (including the child allowance) has not kept pace with the rise in the poverty line and the average wage and, in the past decade and a half, a gap has opened between them. For instance, income support and child allowances for a couple with one child fell from 70% of the poverty line in 2000 to only 40% in 2017. This gap indicates the limited effectiveness of these benefits in raising families out of poverty.

Source: John Gal, Michal Krumer-Nevo, Shavit Madhala, and Guy Yanay, Taub Center | Data: NIL; CBS
From the beginning of the 1980s until the beginning of the millennium, the share of families assisted by income support increased alongside the rise in the incidence of poverty (the percent of households below the poverty line). Since then, the share of families receiving benefits has been halved, despite a decline of only 10% in the incidence of poverty. The reasons are connected, apparently, to the level of accessibility and the generosity of benefits as well as the emphasis that the State places on programs encouraging labor force participation and on reducing reliance by families living in poverty on state support.

The portion of households receiving income support has fallen in recent years more than the percentage of poor households

Incidence of poverty and the share of income support recipients

Note: Poverty incidence metrics changed in 1997, resulting in a break in the data series.

Source: John Gal, Michal Krummer-Nevo, Shavit Madhala, and Guy Yanay, Taub Center | Data: NII; CBS
Getting out of poverty requires more work hours than in other OECD countries

The difficulties faced by those trying to rise above poverty are shown in an international comparison of weekly work hours required by a family in the lowest income decile (in cumulative household work hours) to rise above the poverty line. Israel’s exceptional place for a couple with two children reflects the huge inequalities in income in the country relative to other OECD countries. These gaps create large income disparities between those in the lowest income decile and the median income level. Israel’s position is less extreme, though, when the comparison is made for a single individual with two children.

Household weekly work hours required for a household in the lowest income decile to rise above the poverty line, 2016
Using the average wage in the lowest income decile, OECD countries

Source: John Gal and Shavit Madhala, Taub Center | Data: OECD
In the past few years, components of the “social investment” approach have found their way into social policy in Israel. This approach emphasizes the development of human capital, optimal integration of all citizens into society and the labor market, and the need to provide residents with effective mechanisms for reintegration into the labor force.

This approach can be found in numerous policy decisions: in education, and in particular early childhood programs; in programs to integrate Arab Israelis and Haredim into the labor market; and in the promotion of programs like “Families First,” targeting families living in poverty. Efforts to improve the incomes of low-wage workers by raising the minimum wage and widening accessibility to work grants (negative income tax) are also examples. The “Savings for Every Child” program, which aims to ease young adults’ entry into higher education and the labor market, dovetails with efforts to strengthen human capital and improve social mobility. Efforts have not been made to upgrade social security net components of social welfare — such as unemployment programs and income support benefits.

**Changes in expenditures on selected social investment areas, 2017 vs. 2014**

NIS million, 2017 prices

<table>
<thead>
<tr>
<th>Expenditure Area</th>
<th>2014</th>
<th>2017</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work grant</td>
<td>₪501</td>
<td>₪262</td>
<td>-₪239</td>
</tr>
<tr>
<td>Employment</td>
<td>₪4,200</td>
<td>₪74</td>
<td>-₪4,126</td>
</tr>
<tr>
<td>Day care centers</td>
<td>₪462</td>
<td>₪77</td>
<td>-₪385</td>
</tr>
<tr>
<td>Intervention programs</td>
<td></td>
<td>₪74</td>
<td></td>
</tr>
<tr>
<td>Unemployment benefits</td>
<td></td>
<td>₪57</td>
<td></td>
</tr>
<tr>
<td>Income support</td>
<td></td>
<td>₪462</td>
<td></td>
</tr>
</tbody>
</table>

Source: John Gal and Shavit Madhala, Taub Center | Data: Ministry of Finance; NII
To encourage employment, the government has increased expenditure on day care centers

In the framework of adopting the recommendations of the Trajtenberg Committee, which was established following the social protests of 2011, the government decided to increase the number of day care centers through public funding of new facilities. Implementation of this decision is seen in expenditure data of the division responsible for day care centers and after school programs in the Ministry of Labor, Social Affairs and Social Services. From 2011, the division’s budget grew by about 94%, and, in 2017, stood at about NIS 1.64 billion. Out of the budget, the amount of spending on new building and converting of existing buildings into day care centers has grown substantially, from about NIS 2 million in 2011 to about NIS 260 million in 2017.

The budget for day care centers and after school programs
2017 prices

<table>
<thead>
<tr>
<th>Year</th>
<th>NIS billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0.8</td>
</tr>
<tr>
<td>2011</td>
<td>0.9</td>
</tr>
<tr>
<td>2012</td>
<td>1.0</td>
</tr>
<tr>
<td>2013</td>
<td>1.1</td>
</tr>
<tr>
<td>2014</td>
<td>1.2</td>
</tr>
<tr>
<td>2015</td>
<td>1.3</td>
</tr>
<tr>
<td>2016</td>
<td>1.4</td>
</tr>
<tr>
<td>2017</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Source: John Gal and Shavit Madhala, Taub Center | Data: Ministry of Finance
Relatively low, but increasing expenditure on active labor market policies

Despite Ministry efforts to encourage employment, expenditure on active labor market policies in Israel (ALMP), i.e., programs to encourage optimal integration of population groups into the labor force (expanding vocational training, funding job centers, and running programs to integrate those with disabilities into employment) are among the lowest in the OECD countries. With this, investment in strengthening occupational skills has been on the public agenda for some time, both as an economic tool that will improve human capital, and as a social tool for narrowing gaps between population groups. After a continuous decline in the Employment and Training Guidance Division’s spending over the previous decade, expenditure has been rising since the end of the last decade, and, particularly, over the past few years.

**Expenditure on ALMP as a percent of GDP, 2016**

OECD countries

Note: ALMP includes vocational training.
Source: John Gal and Shavit Madhala, Taub Center | Data: OECD
Nonprofits and welfare organizations fill an ever-growing place in welfare service provision by providing contract services to the Ministry of Labor, Social Affairs and Social Services as well as supplementary services. In 2016, 43,000 nonprofits were registered in Israel, and about 15% of them were active in the realm of welfare.

Of the nonprofits examined, about one-fifth provided services for the general population, another fifth targeted children and youth, and the remaining organizations served specific populations like individuals with disabilities or the elderly. Some organizations focused on specific populations: 7% on the Arab Israeli population, and 23% on Haredim. Within Haredi society, one focus of nonprofits is on those engaged in full-time Torah studies, while among the Arab Israeli population, about one-third of the services provided are for the general population.

### Distribution of nonprofit welfare organizations by population group served and main target population, 2013-2016

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Families</th>
<th>Non-specific</th>
<th>Children/Youth</th>
<th>Working-age adults</th>
<th>Yeshiva students</th>
<th>People in crisis</th>
<th>Elderly</th>
<th>People with disabilities</th>
<th>All organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>6%</td>
<td>22%</td>
<td>18%</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>6%</td>
<td>521</td>
</tr>
<tr>
<td>Arab Israeli</td>
<td>4%</td>
<td>29%</td>
<td>25%</td>
<td>4%</td>
<td>11%</td>
<td>19%</td>
<td>4%</td>
<td>4%</td>
<td>56</td>
</tr>
<tr>
<td>Haredi</td>
<td>15%</td>
<td>22%</td>
<td>28%</td>
<td>6%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
<td>17%</td>
<td>171</td>
</tr>
<tr>
<td>All organizations</td>
<td>8%</td>
<td>22%</td>
<td>21%</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>748</td>
</tr>
</tbody>
</table>

Source: Shavit Madhala, Michal Almog-Bar, and John Gal, Taub Center; The Center for the Study of Civil Society and Philanthropy | Data: Financial and Written Reports filed by nonprofit organizations
Welfare nonprofit organizations are financed mainly through public sources and the sale of services

Total revenues of welfare organizations and nonprofits stand at about NIS 8.13 billion per year. About 23% of these revenues are from organizations targeting children and youth, 22% targeting the elderly, and 21% targeting the general population. The major source of revenues is from the sale of services, public funding, and donations, although the composition varies by organization. Among organizations serving the Arab Israeli population, a substantial share of their revenues (57%) is from public sources while among the Haredi organizations, donations provide the lion’s share of revenue (38%).

Only about 2% of the donations to all organizations and nonprofits goes to organizations in the Arab Israeli sector, while the share going to the Haredi population is about 30%. In addition, most of the established organizations’ revenues come from the sale of services and public financing, while among newer organizations, revenues, for the most part, come from donations.

Source: Shavit Madhala, Michal Almog-Bar, and John Gal, Taub Center; The Center for the Study of Civil Society and Philanthropy
Data: Financial and Written Reports filed by nonprofit organizations
Despite welfare efforts, households in the lowest income decile that are in debt are in danger of bankruptcy

Despite government efforts, weaker populations are still on the brink of financial collapse as seen in an analysis by income decile. Although the share of those in debt in the lowest decile stands at only about 18%, in contrast to 56% among households in the top deciles, the depth of their debt is greater: the median ratio between debt and annual gross income for households in debt in the lowest income decile stands at 2.8, while the average figure is closer to 8. The large gap between the median and the average points to a great many households in the lowest income decile whose debt far exceeds their annual income — a fact that raises concerns regarding their ability to repay their debts.

**Share of households in debt by income decile, 2016**

**Ratio of debt to annual income, 2016**

For households in debt, by household income decile

Source for both figures: Labib Shami, Taub Center | Data for both figures: CBS, Households in Israel, Long-Term Survey 2016
Debt among the lowest income Haredim is more likely and more substantial

The breakdown of debtors in the lowest income decile by population group shows clear disparities. About 23% of the Arab Israelis in this decile are in debt, and the median ratio between debt and annual income is about 2. For non-Haredi Jews, the numbers are 15% and 3, respectively, while among Haredim, the share in debt is 30% and the ratio of debt to income is 13.5.

These notable differences stem primarily from the source of loans. Among the Jewish population, the share with housing loans is relatively high — 52% among non-Haredi Jews and 72% among Haredim — while loans for consumption stand at 64% and 43%, respectively. In contrast, among Arab Israelis, 89% hold debt for consumption and only 15% for housing. One possible explanation for these differences is that, in the Arab Israeli sector, it is difficult to get a home mortgage — that is, credit is registered as being for consumption even if in reality it goes towards housing.

Debtors in the lowest income decile by population group, 2016

Source: Labib Shami, Taub Center
Data: CBS, Households in Israel, Long-Term Survey 2016
Notes
The Israeli pension system contains two main pillars — universal old-age pensions and private pensions that depend on the individual’s work history. The first is constructed in a manner that favors women, who can delay retirement and increase their benefit level, but because men typically earn higher wages and have longer careers, the latter tends to favor men.

In this section, we combine these pension sources to calculate the gap in pensions between the genders. One of the main takeaways is that a major source for the expected gap is the difference in mandatory retirement age (62 for women and 67 for men). Raising the retirement age for women would improve their pension positions substantially.
Work-related pensions are greater for men than for women

The Israeli pension system contains two main pillars: an old-age benefit paid by the National Insurance Institute, and private employment pensions — wage-based savings of the worker. The overall pension gender gap is the sum of the gaps in each of these pensions.

The figure shows the gaps in pension contributions between men and women. Factors that increase pension gender gaps are employment-based: lower employment rates for women, fewer work hours, and their lower average wage per hour.

For individuals insured by Menorah Mivtachim (Israel’s largest insurance and pension provider), in 2017, there was a gender gap in employment pension savings for all age groups. The most substantial gap is found among 45-54-year-olds: on average, men’s pensions in this age bracket are 28% higher than women’s pensions.

Source: Liora Bowers and Hadas Fuchs, Taub Center
Data: Menorah Mivtachim, New Pension Funds

Average pension savings by gender (NIS) and gender gap (%), 2017

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Women</th>
<th>Men</th>
<th>Gap Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-34</td>
<td></td>
<td></td>
<td></td>
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<td>35-39</td>
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<td></td>
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<tr>
<td>50-54</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Spotlight on Pension Gender Gaps
Another factor influencing pension gender gaps is pension accrual during periods of childbirth and childcare. In Israel, the employer and employee are required to contribute to a pension fund only during the paid maternity leave period. Extending leave for an unpaid period, results in pension payments being discontinued for that time. This limitation creates a gap for those on extended career breaks, and results in little pension protection for women during periods of childcare relative to other OECD countries.

An Israeli woman earning the average market wage with a 5-year career break at age 30 will receive approximately 90% of the pension received without a career break. In 2014, in only 3 out of the 34 OECD countries would a woman receive a smaller percentage of the pension without a break.

**The impact of career breaks on pension entitlements, 2014**
Gross pension entitlements for a woman earning the average wage who takes a 5-year career break at age 30 for the care of 2 children vs. continuous employment

Note: Based on pension rules in place in 2014.
Source: Liora Bowers and Hadas Fuchs, Taub Center
Data: OECD, *Pensions at a Glance 2015*
Government pensions are higher for women who retire at the same age as men

In contrast to employment pensions, public pensions favor women. A man and a woman who are both insured for at least 35 years and who retire at the official retirement age will receive exactly the same monthly benefit from the National Insurance Institute, regardless of the wages that they earned while working. Differences stem from the fact that women are eligible to receive benefits from age 62 and men only from age 67, although all workers can delay receipt until age 70, and if they do so they receive an additional 5% for each year past the official retirement age. As a result of the different retirement ages, a woman can receive up to an additional 40% pension while a man can receive at most an additional 15%. Thus, if they both retired in 2018 at age 70, the woman would receive a pension 22% higher than the man: NIS 3,224 per month versus NIS 2,648.

**NII monthly old-age allowance, 2018**

At eligibility age (62 / 67)  
Women: ₪2,303  
Men: ₪2,303

Deferred (70)  
Women: ₪3,224  
Men: ₪2,648

Note: Assumes retirement in the same year and 35 years of pension contributions.  
Source: Liora Bowers and Hadas Fuchs, Taub Center | Data: NII
In 2016, the retirement age for men and women differed in only 9 out of the 35 OECD countries; Israel is 1 of only 3 OECD countries intending to retain this difference through 2060. The retirement age for men (67) is the highest in the OECD countries (alongside Iceland and Norway), while the retirement age for women (62) is among the lowest.

Over time, the share of older working men and women in Israel has increased. This rate rose substantially around 2004, when the official retirement age was last increased. That is, although women are allowed to continue working and retire at the same age as men, they are influenced by the official retirement age.

The retirement age has a crucial effect on pensions, as the next figure shows.

**Retirement age in OECD countries, 2016**

Source: Liora Bowers and Hadas Fuchs, Taub Center
Data: OECD, Pensions at a Glance 2017
Combining pension sources, the pension gender gap falls substantially when women’s retirement age is equated to men’s

A simulation by Menorah Mivtachim shows that, for married women, retirement at age 67 as opposed to age 62 lowers the employment pension gender gap from 45% to 20% (not shown in the figure). When National Insurance Institute retirement benefits are added in, the gap is reduced to only 13%. Among single women the gap is slightly higher. This is due to gender differences in the “pension coefficient” (a multiplier used to calculate the monthly pension income an individual is to receive given their total contributions, which yields a smaller payout to women because of their longer life expectancy), differences that have a greater effect on a single person than on married people.

This simulation shows the advantages of a later retirement age for women, which serves to increase the number of years of pension savings as well as the benefit amount. Raising the official retirement age will improve the situation for the vast majority of working women. For individuals who are harmed by a later retirement age and the postponement of benefits and who are, nevertheless, unable to delay retirement (due to ill health, education issues or ageism, for instance), it is possible to find direct ways to assist them through alternate NII benefit programs.
The pension gender gap, 2016
Women’s pensions as a percentage of men’s pensions at retirement age (67), by women’s retirement age

Married women

<table>
<thead>
<tr>
<th>Age at retirement</th>
<th>Gap size</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>13%</td>
</tr>
<tr>
<td>64</td>
<td>29%</td>
</tr>
<tr>
<td>62</td>
<td>38%</td>
</tr>
</tbody>
</table>

Single women

<table>
<thead>
<tr>
<th>Age at retirement</th>
<th>Gap size</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>20%</td>
</tr>
<tr>
<td>64</td>
<td>35%</td>
</tr>
<tr>
<td>62</td>
<td>43%</td>
</tr>
</tbody>
</table>

Source: Liora Bowers and Hadas Fuchs, Taub Center
Data: Menorah Mivtachim, simulation
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