TAUB CENTER
FOR SOCIAL POLICY STUDIES IN ISRAEL

Israel's Exceptional Fertility

Alex Weinreb, Dov Chernichovsky, and Aviv Brill

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Abstract

It is widely-known that fertility levels in Israel are very high relative to other developed countries. This chapter discusses other exceptional aspects of Israel's fertility, most of which are much less well-known, even though they may have significant implications for public policy. Our focus is on: Who is having children, at what age, within marriage? How educated are they? Among the key results, we find: (1) Over the last 15 years, fertility in Israel has increased by 0.2 children, even as Haredi and Arab fertility has fallen, and even as the mean age at first birth has increased by at least 2 years in Israel's Jewish, Christian, and Druze populations. (2) Non-marital fertility rates remain among the lowest in the OECD, though they are rising, especially among women in their 30s and early 40s. (3) Rates of childlessness in Israel are low by international standards, especially for Jewish women — for women aged 45 and over, the rates are more than twice as high among Israeli Arabs. (4) The difference in overall fertility levels between Israel and other developed countries is disproportionately driven by higher Israeli fertility at later ages — 30s into early 40s — and higher fertility among more educated Israelis.

Combining these findings, we conclude that a higher proportion of children in Israel are born to older parents and college-educated parents than is the case in other OECD countries, and a smaller percentage live in single-parent households. We briefly discuss the implications of this for a range of educational and welfare policies.

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Introduction

It is widely-known that fertility levels in Israel exceed fertility levels in all other developed countries, and that this is the main factor driving Israel's unusually high rate of population growth. The implications of this high growth rate are frequently discussed in scholarly, lay, and public policy literature: the constant need to increase the supply of healthcare clinics, schools, housing, and other infrastructure, just to maintain current levels of per capita supply and access (Rosen, Waitzberg, and Merkur 2015; Gamzu, Kaidar, Afek, and Horev 2016; Tal 2016); the likely effects of population growth on Israel's physical environment and settlement patterns (Orenstein and Hamburg 2010; Tal 2016), on its political climate (Shamir and Arian 1982; DellaPergola 2001), and "national transfer accounts" in general (Chernichovsky and Shraberman forthcoming).[1]

The goal of this chapter is to describe aspects of Israel's fertility regime that are less well-known but also have significant implications for public policy across a number of key areas. The study begins with a description of levels of fertility from three perspectives: cross-sectional, temporal, and across subpopulations within Israel. It then focuses on four factors frequently associated with fertility differences: levels of non-marital fertility and childlessness, trends in age at first birth, and trends in women's education.

The principal message of this chapter is that Israel's fertility is not only exceptional because it is high. It is exceptional because strong pronatalist norms cut across all educational classes and levels of religiosity, and because fertility has been increasing alongside increasing age at first birth and education — at least in the Jewish population. From an international perspective, these are atypical patterns. They are at odds with standard accounts of the Second Demographic Transition (SDT), in which the continued downward shift of fertility to levels far below "replacement level" is primarily driven by changes in attitudes to marriage, sex, cohabitation, and the value of children themselves.[2]

1 "National transfer accounts" refers to a systematic accounting system used to assess how a population's age structure affects a range of macro-economic activity.

2 Replacement level fertility is the total fertility rate at which a population exactly replaces itself from one generation to the next, without migration. This rate is roughly 2.1 children per woman for most countries.

Israel's national fertility profile is also different from that of other developed countries in quite a different way. In those peer countries, over the 19th and 20th centuries, fertility converged to a relatively homogeneous national pattern that cut across other social identities (e.g., religion, religiosity, class, and ethnicity). Watkins (1991) describes this as a process of "demographic nationalism." Fertility converged to a national profile in the same way as language, education, and attitudes in general. State-building naturally entailed this type of behavioral homogeneity. On this dimension, too, Israel is different. There may be a shared pronatalism that cuts across all social boundaries, but, in the Jewish population at least, pronatalism expresses itself very differently across levels of religiosity. There are no signs that this variability is shrinking over time. To the contrary, Israel's fertility patterns remain, as DellaPergola (2009:148) noted, "uniquely resilient."

Understanding these elements of Israeli exceptionalism is important for policy makers in Israel since they directly influence both the life-course of Israeli women (and their partners) and, more especially, the profile of Israeli children. Regarding the latter, for example, relative to their peers in other OECD countries, Israeli children not only have more siblings, as will be shown, they are also more likely to live in two-parent households with older and more educated parents.

Data and methods

To establish how different Israel's fertility characteristics are, we follow standard practice of comparing Israel to other developed countries. In most cases, comparisons are restricted to the OECD, the 34-country "club" that includes almost all the world's most developed countries. The OECD is not only an appropriate reference group in terms of Israel's developmental characteristics and aspirations; by including non-European countries like Japan, South Korea, Turkey, Mexico, and Chile, the OECD captures more cultural heterogeneity than the European and North American countries with which Israel is sometimes compared (e.g., Bystrov 2012a). Additionally, there is a clear methodological advantage to restricting the comparison to the OECD: standardized data protocols across all member countries inspire confidence in the meaningfulness of the comparisons.

An initial series of comparisons — focusing on fertility levels, non-marital fertility, age at first birth, and childlessness — are made at the macro-level. The main measure of fertility in this initial series is what demographers call the Total Fertility Rate (TFR). This describes the number of children that a woman would give birth to if she were to pass through her childbearing years bearing children in accordance with the current schedule of age-

specific fertility rates. The TFR is the most widely used measure of fertility in demographic studies. Unlike the Crude Birth Rate — widely used outside the field of demography — the TFR takes into account differences in age-structure both within and across countries, which is the single most important determinant of all three main demographic parameters: fertility, mortality, and migration. Throughout this section, in addition to OECD data, we use data from Israel's Central Bureau of Statistics (CBS), or from reports published by CBS researchers.

The final two sections, focusing on childlessness and the relationship between fertility and education, use micro-level data from nationally representative surveys: the Israel *Social Survey* (ISS) and the European Values Survey (EVS). Since age-specific rates (necessary to estimate TFR) cannot easily be constructed from those data, comparisons in these sections focus on the number of children ever born by a given age. Those data are described in further detail below.

1. Fertility levels and trends

Our account of Israel's fertility exceptionalism begins with absolute differences in fertility levels, and the variation in those levels across time, and across Israeli subpopulations.

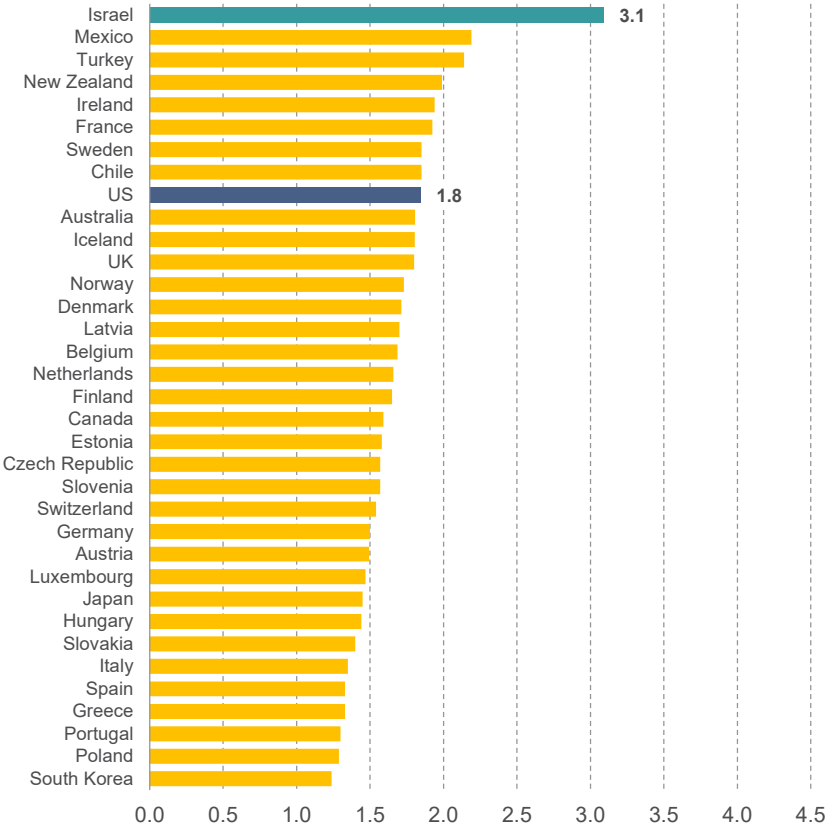
In the cross-section

As seen in Figure 1, Israel's TFR in 2015 was 3.1, which is unusually high, and well above the population "replacement level" of 2.1. This figure places Israel squarely at the top of the table for the OECD, and 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, Germany in 1914, the UK in 1908, and 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.

Israel's TFR is also much higher than that of BRICS countries and other emerging economies (see Figure 2).[3] For example, it is more than half a child higher than the TFR in India, Indonesia, Peru, and South Africa.

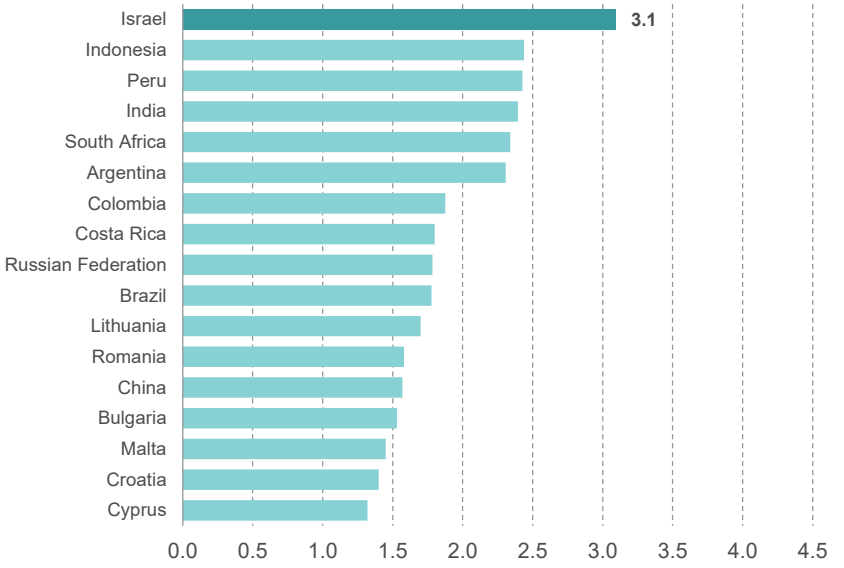
Figure 1. Total fertility rates, 2015
OECD countries



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

3 BRICS refers to five large and regionally influential countries that are not members of the OECD: Brazil, Russia, India, China, and South Africa.

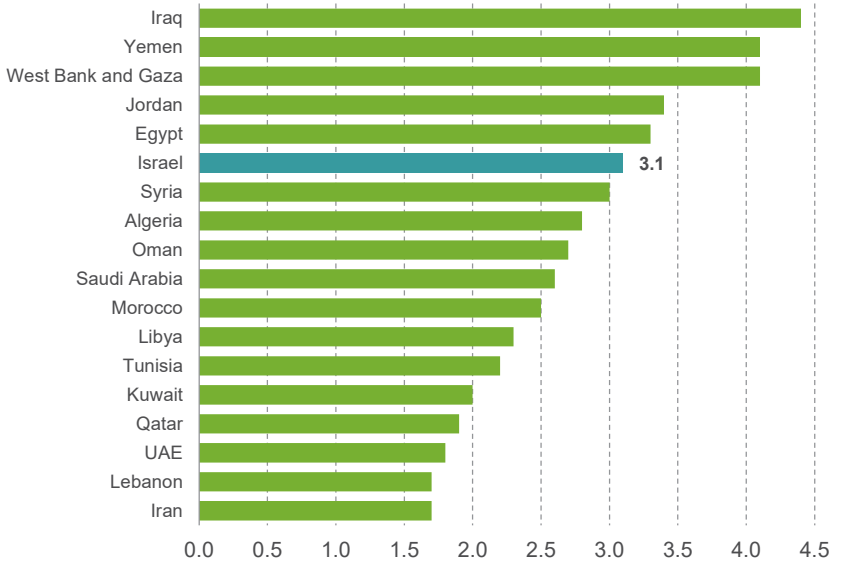
Figure 2. Total fertility rates, 2015
BRICS and other developed or emerging economies



Note: BRICS countries — Brazil, Russia, India, China, and South Africa.
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: OECD Database, Chart SF2.1

Ironically, Israel's fertility is closest to that of its direct neighbors, despite a magnitude of differences on a number of other characteristics. In fertility levels, as in geography, Israel is sandwiched between Egypt and Syria (see Figure 3). Jordan's fertility levels are also similar.

Figure 3. Total fertility rates, 2015
Middle East countries

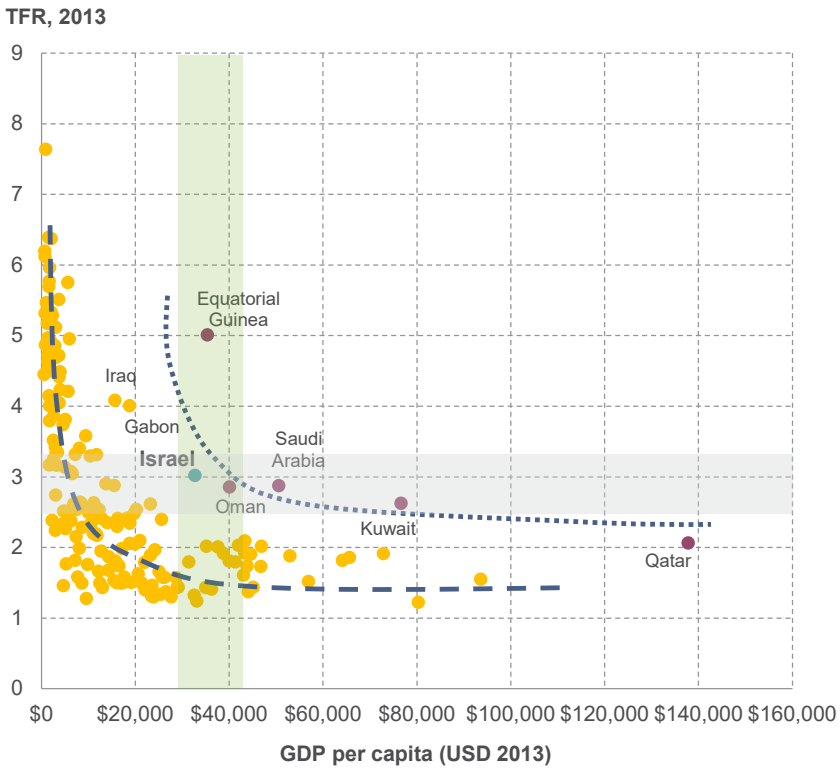


Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: US Census International Programs

A final perspective on how unusually high Israel's TFR is can be seen by looking at the relationship between GDP per capita and TFR. Over the last 100 years, there has been a strong negative association between these two characteristics, graphed in Figure 4 using 2013 data from 177 countries. It confirms that the vast majority of countries in the world fall close to the main fitted (dashed) line, especially at low and high levels of GDP per capita. Israel, in contrast, falls on an alternative (dotted) line with seven other countries. Of these eight countries, Israel is the only one that is not a major oil-producer.

The shaded areas in Figure 4 allow us to make direct comparisons between Israel and countries that have similar levels of fertility or wealth. The green shaded area, for example, highlights the countries with a similar per capita GDP: their TFR fell between South Korea (1.24) and New Zealand (2.02). The grey shaded area highlights countries with a similar TFR: 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.

Figure 4. The relationship between total fertility rate and GDP per capita, 2013



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: World Development Indicators 2014

Trends, 1970 to 2015

Fertility in Israel is also unusual because of its temporal trajectory. Over the last 150 years in developed countries, there has been a widespread and recognizable reduction in fertility. Known as the "Fertility Transition," this began as new norms of "family limitation" spread, facilitated by reductions in mortality, and increasing income and costs associated with childrearing. The result was that the TFR fell in most developed societies to the 2 to 3-child range by the 1930s. From the 1960s, these norms spread to most other areas of the world, generating equally sharp reductions in fertility. Meanwhile,

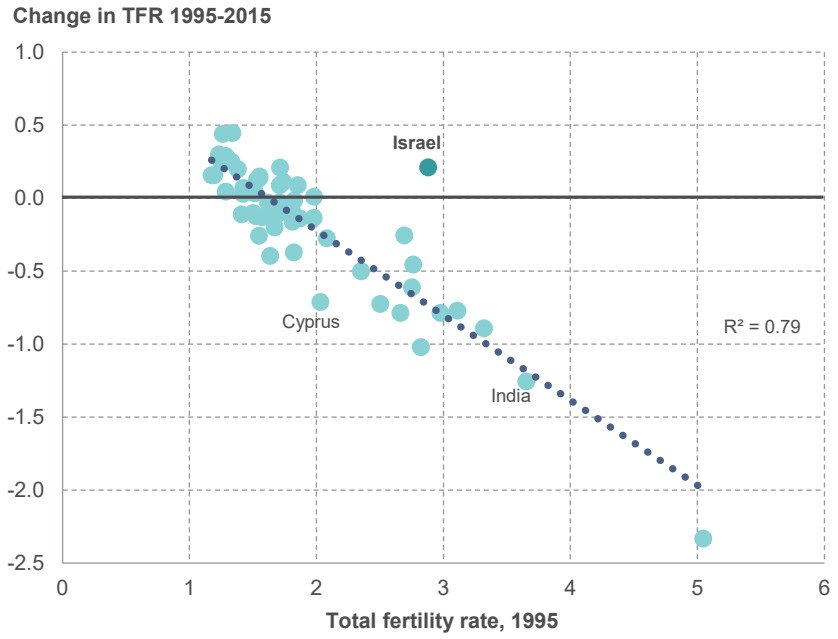
the creation of highly effective hormonal contraceptive methods and the emergence of new types of family arrangements, attitudes toward women's roles, and family-centered values in general, pulled fertility even lower. It is in this Second Demographic Transition (SDT), as it is now known, that TFR has fallen below 1.5 in many countries, especially in Europe and Asia.

Some scholars have identified small subpopulations within Israel — primarily secular Ashkenazim in the 1990s — that appeared to have some SDT characteristics (Friedlander and Feldman 1993; Bystrov 2012a). More recent analyses suggest, however, that those subpopulations only had SDT characteristics for a limited period, and that Israeli fertility bucks the SDT trend (Okun 2016).

This second view is the correct one. Not only has Israel's TFR never dropped below 2.8 children. It actually increased by 0.2 children between 1995 and 2015, with a significant portion of that increase occurring in the secular subpopulation — shown below — which, on paper at least, has the most distinct SDT characteristics in Israel.

It is important to note that Israel is not the only country to have experienced an increase in fertility over those years, or even an increase of that magnitude. However, every other OECD, BRICS, and emerging economy that experienced a comparable increase began from a much lower level of TFR, typically below 1.4. This is shown in Figure 5, which plots the change in TFR between 1995 and 2015 against the level of TFR in 1995. With the exception of Israel, every country with a TFR greater than 2.0 in 1995 experienced a reduction in fertility by 2015. If patterns of fertility change 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.

Figure 5. Change in total fertility rate 1995-2015 by 1995 total fertility rate



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

Religion and religiosity

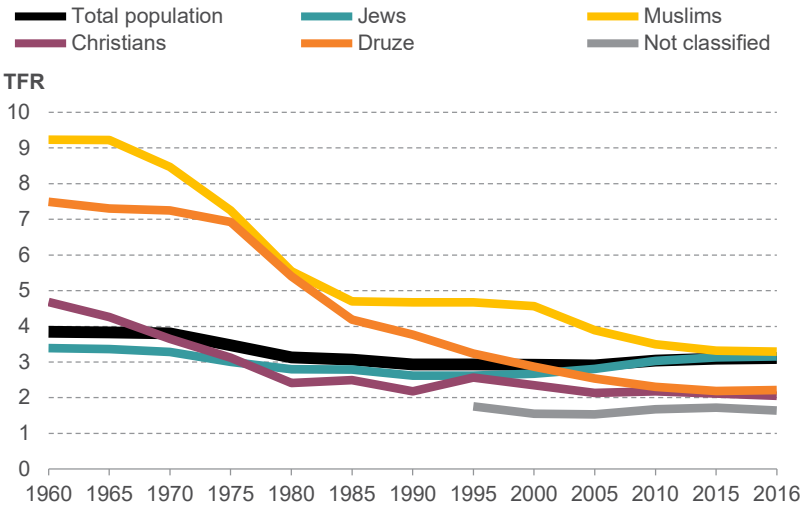
The stability in Israeli fertility across time hides considerable heterogeneity across different subpopulations, especially across different ethno-religious groups and levels of religiosity. Since the 1970s, religion and religiosity have been a major focus of scholarly research on fertility in Israel (Friedlander and Goldscheider 1979, 1984; Friedlander, Eisenbach, and Goldscheider 1979; Bystrov 2012a), and a major cause of anxiety among social commentators, who worry about the long-term impact of differential fertility on the Israeli society and economy.

By religion

The 1960 to 2016 trends in TFR shown in Figure 6 confirm that religion continues to be a major driver of fertility differences. The solid black line is TFR for Israel as a whole. It shows that TFR dropped from a high of 3.85

in 1960 to 2.92 in 2000, before rising again to 3.11 in 2016. Whereas the TFR of Israeli Jews tracks this average quite closely, slowly converging to that average before rising above by 2015, the TFR of Christians dropped below it in the 1970s to a current TFR of 2.05, Druze fertility fell from 7.3 to 2.3 children between 1970 and 2010, and Muslim fertility also dropped precipitously from an estimated TFR of 9.2 in 1965 to 3.3 fifty years later.

Figure 6. Total fertility rates by sector



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: CBS, *Statistical Abstract of Israel*

These large reductions track standard patterns in other Arab and Muslim-majority societies.[4] At the same time, they also point to the main source of Israel's unusual fertility profile. Since 2005, national fertility levels have risen — even as Muslim and Druze fertility have fallen and Christian fertility has remained stable — because of increases in the fertility of Israeli Jews. In other words, Israel's unusual fertility profile is a product of fertility in its Jewish population. Other Israeli subpopulations have followed the more standard global pattern of reducing fertility.

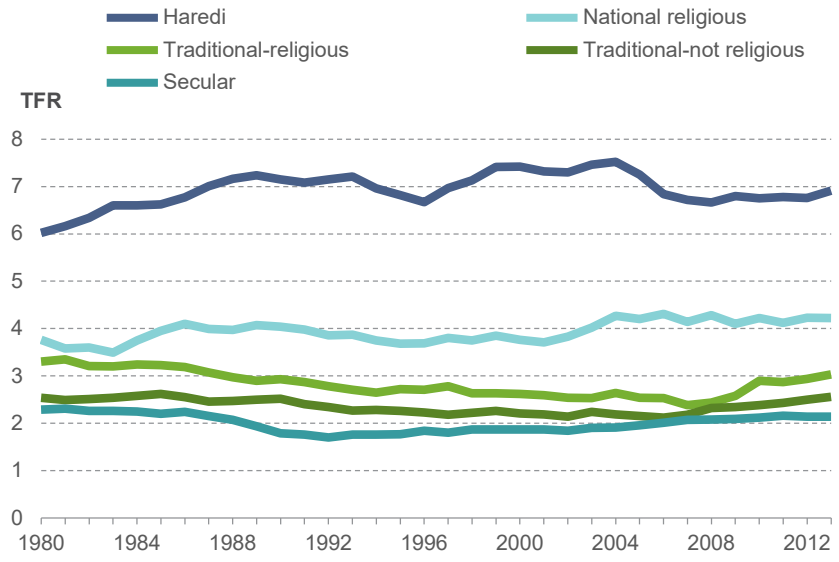
4 Muslim-majority countries, among them theocracies like Iran, poor religious societies like Bangladesh, emerging economies like Indonesia and Turkey, and Arab countries like Tunisia and Lebanon, have experienced some of the most rapid decreases in fertility ever observed.

By religiosity

It is widely recognized that fertility in Israel is highly correlated with religiosity (Friedlander and Goldscheider 1979; Bystrov 2012b; Okun 2016). Two important clarifications need to be made to that claim.

First, this is only true for Jews. Figure 7, drawing on Hleihel (2015), graphs TFR by religiosity between 1980 and 2013 for Israeli Jews. There are clear signs of differences in fertility by religiosity: TFR among Haredim 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. This is a 4.5 child difference, with other religious levels arrayed between these two extremes.

Figure 7. Total fertility rates by level of religiosity, Jewish population

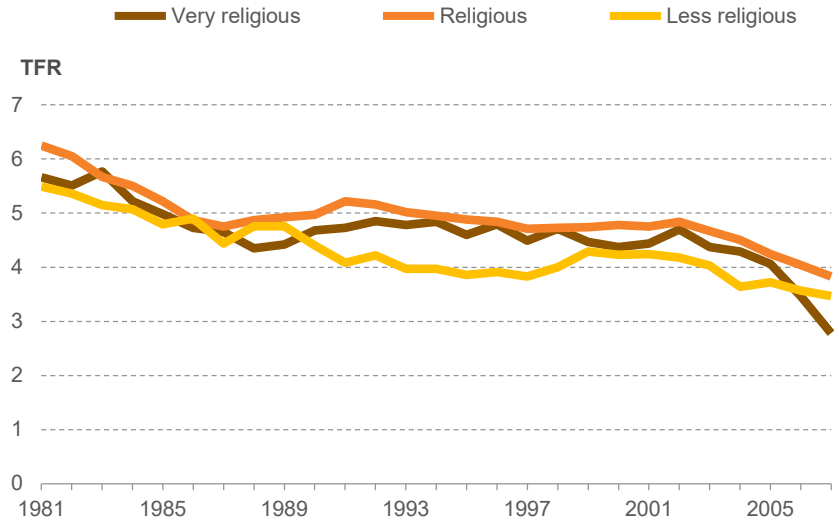


Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: Hleihel 2015

In contrast, the correlation between fertility and religiosity is much weaker among Israeli Muslims. This can be seen in Figure 8. Using data from Hleihel (2011), Figure 8 plots the TFR of the Israeli Muslim population from 1981 to 2007. We see a parallel reduction across the three levels of religiosity in the 1980s, a 1-child difference in TFR for most of the 1990s between the

least and most religious, but then a convergence and reduction for the final decade of observation. In other words, only in the middle years of this 27-year sequence did the fertility of Israeli Muslims show the same type of variation by religiosity seen among Israeli Jews, and even in those middle years, there was only a 1-child difference between the most and least religious, and no difference whatsoever between the very and moderately religious.

Figure 8. Total fertility rates by level of religiosity, Muslim population



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: Hleihel 2011

The second important clarification is related to sources of change in Israel's fertility over the last 20 years. Even though Haredi fertility increased significantly across the 1980s, Haredi fertility in the 2007 to 2013 period was a little lower than in the mid-1990s. In contrast, there have been increases in fertility — in both relative and absolute terms — in the non-Haredi Jewish population. In other words, the 0.2 increase in fertility shown in Figures 4 and 5 is largely a product of increases in the fertility of non-Haredi Jewish women. Put differently: even among Jewish women who self-identify as secular and traditional but not religious, the combined TFR always exceeds 2.2, making it higher than the TFR in all other OECD countries (which also include religious subpopulations, many of which have higher fertility).

2. Factors associated with fertility

In this section, we compare Israel to other OECD countries on some core Second Demographic Transition (SDT) dimensions. Concepts associated with the SDT are typically used to frame analyses of behavior in contemporary developed societies. Based on an initial series of papers by Dirk van de Kaa and Ron Lesthaeghe (van de Kaa 1987, 2001; Lesthaeghe and Surkyn 1988; Lesthaeghe 2014), the key idea underlying SDT is that fertility reductions in developed societies since the 1960s have been driven by long-term types of culture change that influence marital patterns — more postponing marriage, not marrying at all, or choosing some other living arrangement — and fertility behavior — decoupling sex from reproduction (and reproduction from marriage), postponing childbearing, choosing not to have children at all. The overall result has been a decrease in the number of births per woman. Yet certain shifts can also facilitate somewhat higher fertility within SDT settings. We address one of these first.

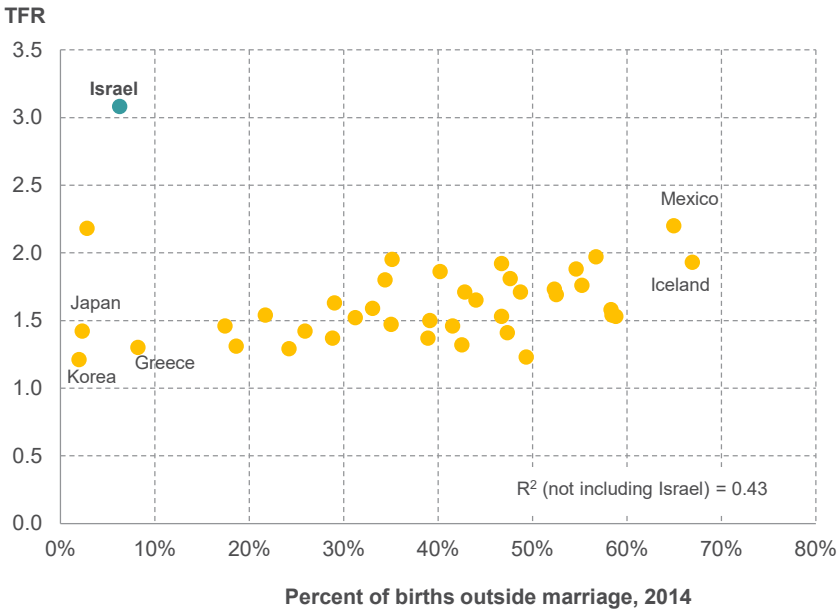
Non-marital fertility

Across OECD and other developed countries, as shown in Figure 9, there is a positive correlation between TFR and the percentage of children born outside marriage. Normatively proscribed and labeled "illegitimate" (in the pre-SDT era), these now represent a significant portion of births in many countries, especially northern European countries and Mexico. Given the long-recognized concentration of child poverty in single-parent families, this fertility pattern has also had a significant impact on the trajectory of welfare policy. For this reason alone, it is important to understand how different Israel is in this regard, and how different it is likely to remain in the future.

It is clear from Figure 9 that high levels of non-marital fertility do not explain Israel's high fertility. To the contrary, relative to OECD countries, Israel is a complete outlier. It has high fertility despite having one of the lowest rates of non-marital fertility (and more generally, a low rate of non-marital cohabitation).[5] Across all OECD countries, only Japan, South Korea, and Turkey score lower, but with much lower fertility levels.

5 In 2016, 95 percent of self-identified couples in Israel were married (*Family Day – Families and Households in Israel*, February 13, 2018). This is true at older ages, too. For example, among the 14 countries that, by 2007, had collected nationally representative data on the elderly as part of the Survey of Health, Ageing and Retirement in Europe (SHARE) network (Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Italy, Netherlands, Poland, Spain, Sweden, Switzerland), Israel had the highest percentage of people married at every age above 50 (Kohli, Künemund, and Vogel 2008).

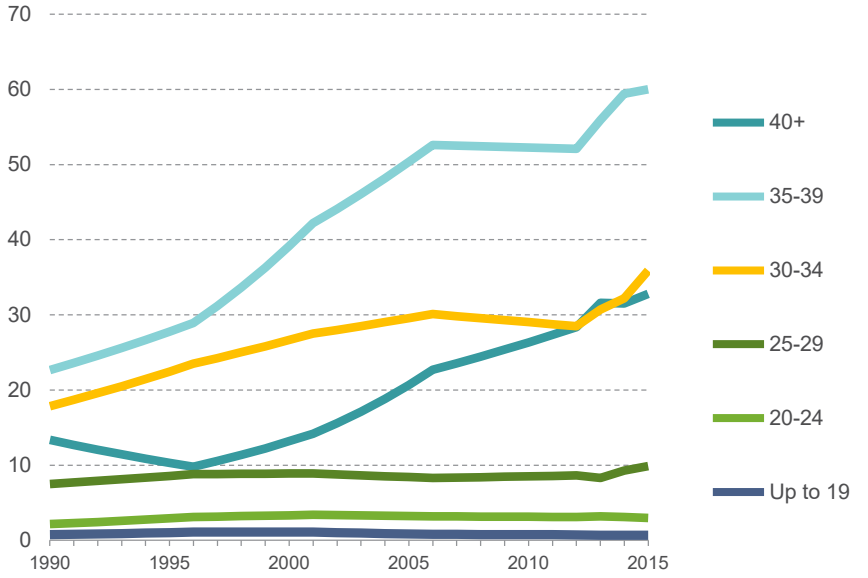
Figure 9. The relationship between the total fertility rates and the share of births outside of marriage, 2014



Note: 2014 or the nearest date with available data.
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: OECD Database, Charts SF2.1 and SF2.4

On the other hand, non-marital fertility in Israel is increasing, at least above age 30. This is shown in Figure 10, which graphs the number of births per 1,000 never-married women between 1990 and 2015. We see that the expected low rates of non-marital fertility are completely stable across this 25-year period among women in their teens and 20s — they average 1.0 births per 1,000 never-married teens, 3.1 per 1,000 never-married 20-24-year-olds, and 8.6 among 25-29-year-olds. In contrast, there are strong upward trajectories in the probability of giving birth for all older unmarried women, with the sharpest rise among women in their late 30s: from 24 births per 1,000 unmarried women in 1990 to 60 in 2015. There is a parallel trajectory among women in their early 40s — from 12.7 in 1990 to 32.8 in 2015. There was also a more moderate increase among never-married women in their early 30s.

Figure 10. Number of births per 1,000 never-married women
By age group of mother



Note: Interpolated from 5-year averages, 1990-2011; single-year estimates, 2012-2015.
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: Population and Immigration Authority, Population Census

These changes have a meaningful impact on fertility in Israel, especially at the oldest ages. As of 2015, about 1 in 6 children born to a mother aged 40 or older in Israel was born to an unmarried mother (as opposed to about 1 in 11 children born to women aged 35-39, and about 1 in 20 children born to women aged 30-34). Moreover, since non-marital fertility is strongly proscribed and highly unusual among Arab Israelis and Haredim, we can infer that these unmarried mothers are disproportionately part of Israel's non-religious Jewish population.

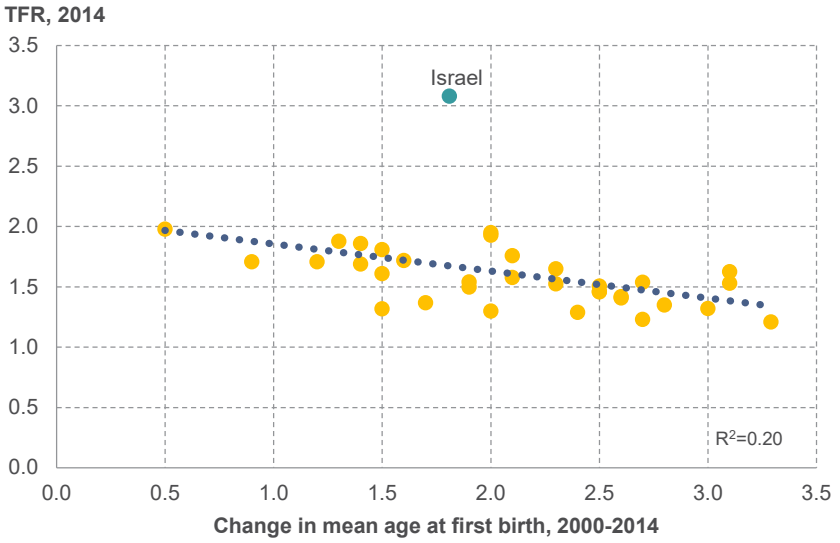
Finally, and more generally, this growth in the composition of births to unmarried mothers, at least above age 30, is consistent with standard SDT expectations. But what marks Israel as different is that marital fertility and non-marital fertility have risen together. This combination is unusual in developed countries.

Age at first birth

Before the era of effective modern contraception, fluctuations in age at first birth were one of the main factors driving overall fertility levels (Hirschman 1994). This was the reason that Malthus, a late 18th century demographic theorist, argued that "civilized" societies should encourage women to delay marriage (Malthus 1798). Since there was minimal fertility outside of marriage, raising age at marriage would reduce fertility rates by shrinking the reproductive window within which a woman was exposed to the risk of pregnancy, that is, the period from marriage to menopause.

Age at first birth has continued to increase in the OECD — driven largely by improved access to effective contraception and rising levels of women's education and employment. Figure 11 confirms that these increases in age at first birth are negatively related to current fertility levels. TFR averages 1.4 in the 10 OECD countries that experienced at least a 2.5 year increase in age at first birth across the 2000 to 2014 period, and 1.7 in the 9 countries where the increase was 0.5 to 1.5 years.

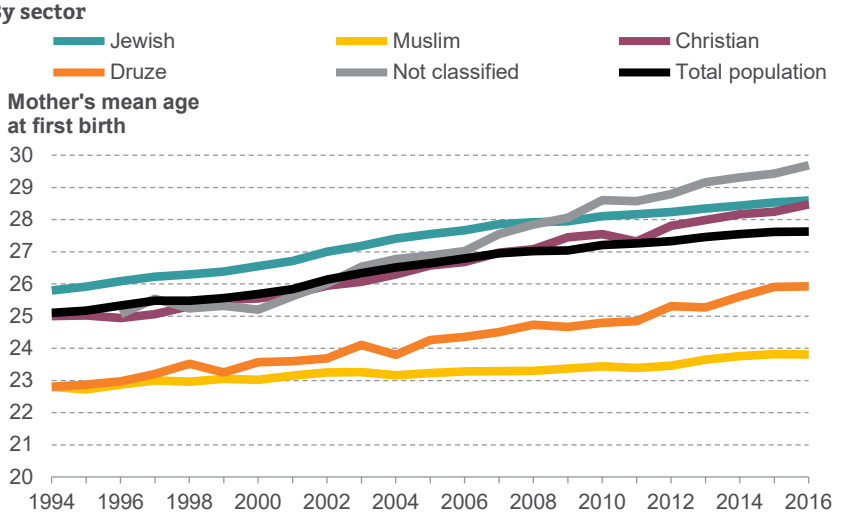
Figure 11. Relationship between the change in age at first birth and the total fertility rate



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: OECD Database, Chart SF2.3

Israel's high fertility, of course, moves it away from this line entirely. Age at first birth in Israel in 2014 was 27.5, which places Israel at the 25th percentile — a little low — but still more than a full year higher than in the US. This hides considerable heterogeneity across subpopulations, shown for Israel in Figure 12, which graphs trends in age at first birth from 1994 to 2016 by subpopulation. Age at first birth in 2016 was 28.6 among Jews, 28.5 among Christians — both of these much closer to the OECD median — 25.0 among Druze, and 23.8 among Israeli Muslims. In itself, these differences show that average age at first birth for each sub-group in Israel is not a good predictor of their aggregate fertility levels. As of 2016, for example, Jewish fertility levels were only marginally lower than Muslim's, but there was a 4.8 year difference in age at first birth, implying a quite different age pattern for fertility among Israeli Jews than Arab Israelis.

Figure 12. Mother's mean age at first birth



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: CBS, *Statistical Abstract of Israel*

More surprising is the quite different relationship across Israel's population groups between changes in age at first birth and fertility. Between 1994 and 2016, age at first birth increased by about 3 years for Christians and Druze, and by 1 year for Muslims. These increases fit the overall reduction in TFR in these populations, alongside a shift in the timing of fertility to

older ages. Among Jews, however, age at first birth increased by about 2.8 years, even as Jewish women's TFR — not Haredi, as established above — rose by about 0.2 children. This means that gains to fertility at older ages have outweighed reductions in fertility at younger ages.

The trend among Israeli Jews is a reversal of the traditional relationship between age at first birth and fertility. It is in line with recent arguments that countries with a high level of gender equality can yield a fertility dividend in which increases in fertility at older ages (e.g., over age 30) outweigh reductions at lower ages (Myrskylä, Kohler, and Billari 2011). Other signs of this internationally include the generally positive relationship between rates of women's labor force participation and TFR across low-fertility developed countries (Ahn and Mira 2002; Brehm and Engelhardt 2015; Rindfuss, Choe, and Brauner-Otto 2016). The very high labor force participation of Jewish women in Israel — one of the highest in the OECD (Fuchs 2016) — is consistent with that more recent phenomenon, though it should be noted that other countries with this pattern have a much higher proportion of non-marital births than is the case in Israel.

Childlessness[6]

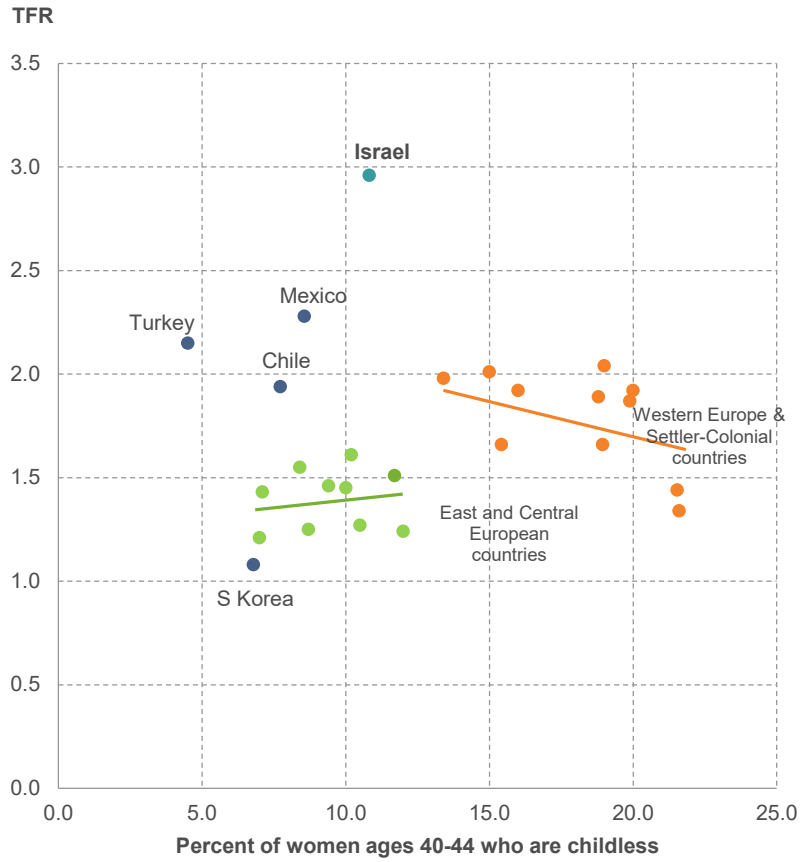
Across countries with high contraceptive prevalence, there is no clear relationship between prevalence of childlessness and TFR. This can be seen in Figure 13. If childlessness at age 40-44 is a good measure of childlessness per se, Figure 13 shows that countries in Eastern Europe and East Asia tend to have both lower levels of childlessness and lower TFR than countries in Western Europe and the US, Canada, and Australia. In other words, a higher percentage of women in Eastern Europe have a child, but among those who have a child, far fewer give birth to a second child than is the case among their Western European counterparts.

From an international perspective, Israeli women have historically had very low rates of childlessness. In fact, only about 3 percent of Israeli women born in the 1930 to 1934 birth cohort who married remained childless. This is on par with childlessness rates among Hutterite women, who have the highest documented fertility rates on record (Rowland 2007).[7]

6 There is some debate about whether to refer to women without children as "childless" or "childfree" (Tanturri and Mencarini 2008; Blackstone 2014). Since the latter makes an implicit assumption about choosing to not have children — which does not accurately describe women actively trying to conceive — this study sticks with the more traditional term, though it includes women who have chosen to remain childfree.

7 The Hutterites are a small Anabaptist Protestant denomination that emerged in the 16th century. They reside in small communal settlements — mostly in the US and Canada — and are known in demography for their historically high fertility rates.

Figure 13. The relationship between the percent of childless



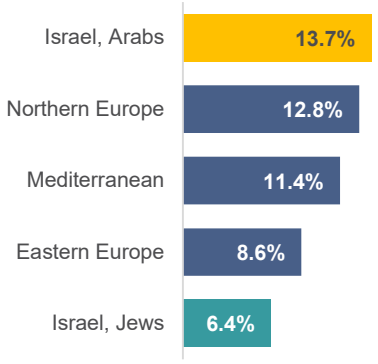
women and the total fertility rate

Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: OECD Database, Chart SF2.5

Figure 13 suggests that things have since changed a little. The level of childlessness in Israel at age 40-44 — one of the main international indices of childlessness — is roughly 11 percent. That is much more in line with the relatively low percentages found in Eastern and Central Europe than with patterns in Western Europe. There is also much more frequent discussion in Israel about childlessness, from an emerging activist and scholarly

literature (e.g., Donath 2015) to A.B. Yehoshua's 2014 novelistic portrayal of an intentionally childless woman (*Nitzevet*). Yet we have already shown that there is rising fertility at ages 40-44 for single mothers (Figure 10) — who perhaps would have remained childless in a less pronatalist society — and other researchers have also pointed to the late fertility patterns in Israel (Okun 2016).

Figure 14. Share of childless women ages 45-59, 2007-2012
By sector (Israel) and location



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: European Values Study (EVS) 2008-2009; CBS, *Social Survey* 2007, 2008, 2010, 2012

Figure 14 addresses this critique of the ages 40-44 measure by estimating the percentage of women who are childless at ages 45-59. Very few women give birth in this age range. The estimates are derived from two series of nationally representative surveys: the 2008-2009 waves of the European Values Survey (EVS), collected in 47 European countries — this is the most recent wave available — and the 2007, 2008, 2010, and 2012 waves of the Israel *Social Survey* — selected to match the available years of the EVS.

Figure 14 shows that childlessness in Israel for women in this older 45-59 age group at the time of the survey — roughly 1947 to 1967 birth cohorts — was about 6.4 percent for Israeli Jews and 13.7 percent for Israeli Arabs. Israeli Jews and Arabs are therefore at opposite ends of the European regional spectrum. This suggests that even if pronatalist norms are strong in Israel, at least among less religious Jewish women in these cohorts, they were more often combined with liberal attitudes to non-marital fertility, meaning that having a child outside of marriage outweighed the unacceptability of non-marital fertility. As Bystrov (2012a:285-286) remarks: "The importance of having at least one child . . . is stronger than the belief in marriage, as a rising percentage of Jewish women at late childbearing ages give birth."

Education

Women

Women's education has long been one of the most important determinants of fertility. Educated women were the first to lower their fertility, both before and after the emergence of effective contraception (Caldwell 1980). Driven by desires to reduce the risk of undesirable health consequences associated with childbearing, begin childbearing later in order to facilitate education, invest more in a smaller number of children (the "quality-quantity" trade-off (Becker and Tomes 1976)), develop a career outside the home, self-identify as "modern," and improve their own quality of life (more non-child related consumption, more leisure time, etc.), educated women have largely continued to have lower fertility than their less educated peers.

This standard relationship between education and fertility 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. That is, even where the fertility rate within each educational class remains the same across time, a society with rising educational levels will tend to experience a reduction in fertility, since a larger share of women (and men) will move into a lower fertility educational category.

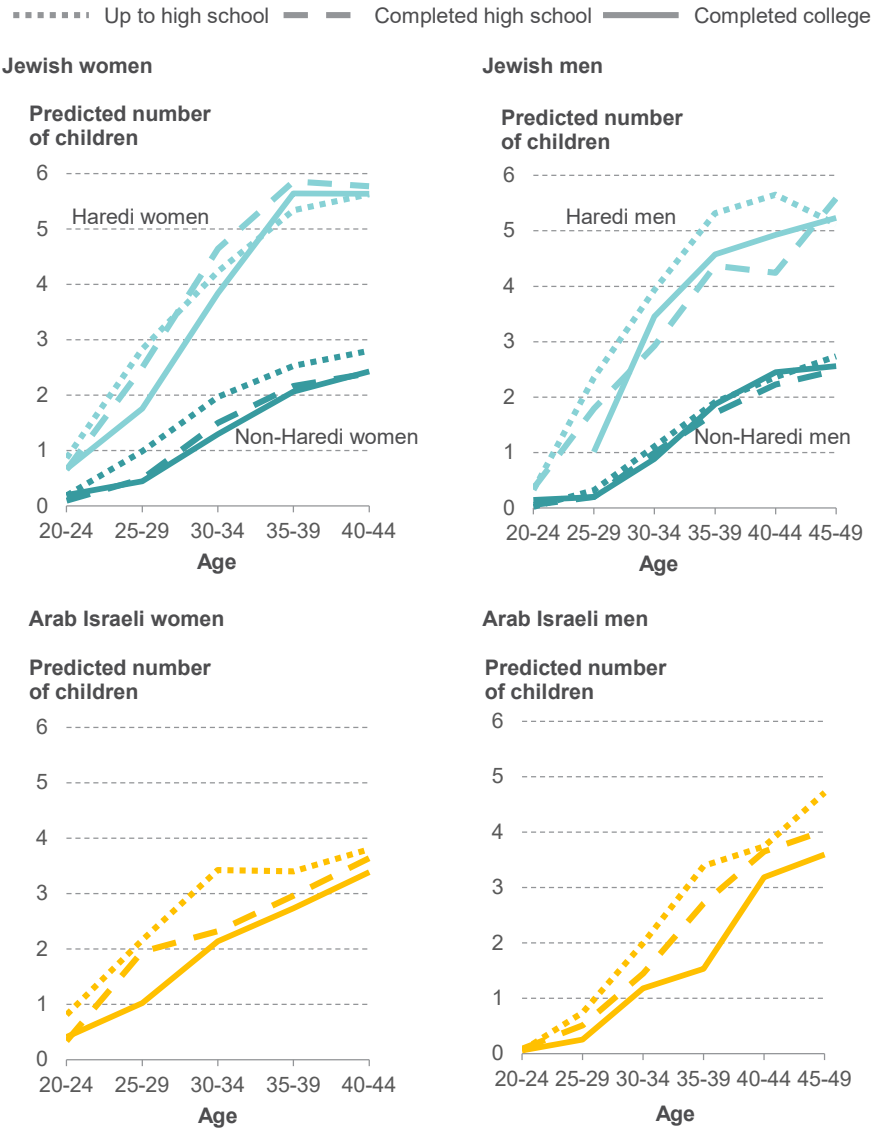
To consider what this longstanding relationship between education and fertility looks like in Israel relative to other developed countries, we use the same combined data file from the EVS and the Israeli *Social Survey*. A set of regression models using these data focuses on the relationship between education and number of children ever born, while controlling for monthly household income.[8] Regression results are presented in the Appendix.

Figure 15 presents the marginal effects of education on the predicted number of children by five-year age-group in Israel, for women up to ages 40-44 and men up to ages 45-49, from different sectors, with household income set to its mean.[9]

8 Note that these are not set up as causal models. Rather, they describe cumulative fertility by different ages in the simplest terms. However, they explain a high proportion of the total variation: 55 percent in models used to draw Figure 15.

9 Analyses are restricted to women ages 20-44 and men ages 20-54. Sample sizes are: 6,206 Jewish women, of whom 650 are Haredi; 1,510 Arab Israeli women; 8,146 Jewish men, of whom 812 are Haredi; and 1,927 Arab Israeli men.

Figure 15. Predicted number of children by age, gender, and religiosity, 2008-2012



Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center | Data: CBS, *Social Survey*

The patterns observed in Figure 15 only partly match the standard relationship. Among both Arab Israeli women and men, we see the expected variation by education level. At every age, those with the lowest education levels have the most children. And, at most ages, those with a college degree have fewer children than secondary school graduates, amounting to a 1-child difference among those aged 25-29, and about 0.5 children difference above age 35.[10]

Among Jews, the education-fertility patterns align less with the standard relationship. Only among non-Haredi women do the least educated have more children than those who completed secondary school or have a degree — with the fertility trajectory being very similar for the latter two groups. In contrast, the fertility gradient among non-Haredi men is very similar across all educational categories. Likewise, among both Haredi women and men, 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 less educated peers.

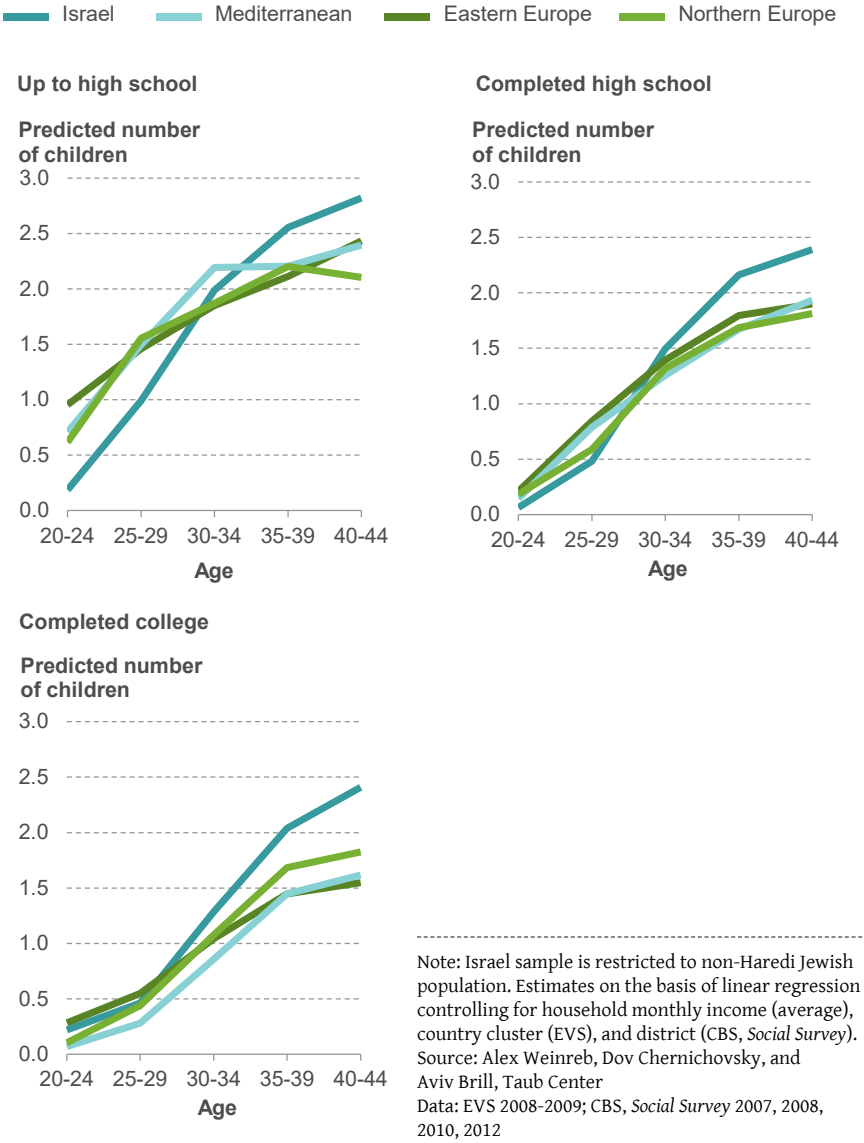
To see how this compares to patterns in Europe, the same set of models were specified using EVS data, and combined with data on non-Haredi and non-Arab Israelis. Figure 16 presents these data in three panels, each specific to women in a single educational category. Likewise, given the variability in patterns of fertility and childlessness across European countries demonstrated above (e.g., Figures 1 and 13), each of the panels divides the European countries into three regions: Eastern Europe, the countries of the Mediterranean, and Northern Europe.

Two important findings can be seen in Figure 16. First, cumulative fertility in Israel is not higher at every age within every educational level. Among the least educated women, in particular, Israelis (not including Haredim and Arab Israelis) actually have lower fertility in their 20s than their European counterparts: higher Israeli fertility at this education level only emerges in women's late 30s. Fertility also appears to start a little later among Israeli secondary school graduates than their European peers, but then quickly accelerates to higher levels. In fact, only among those with a college degree do we not see lower Israeli fertility during women's 20s.

10 If the standard relationship between education and fertility seen in both Arab Israeli society and neighboring Arab states continues to hold, then the rapid increase in Arab Israeli women's integration into both higher education and the labor force (Fuchs and Weiss 2018) will increase the difference in TFR between the most and least educated Arab Israeli women over the next decade.

Figure 16. Predicted number of children by education level, age, and residential region among women

Israel (2008-2012) and Europe (2009)



Note: Israel sample is restricted to non-Haredi Jewish population. Estimates on the basis of linear regression controlling for household monthly income (average), country cluster (EVS), and district (CBS, *Social Survey*).
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: EVS 2008-2009; CBS, *Social Survey* 2007, 2008, 2010, 2012

A second important finding is related to the fertility gradient across education levels. By age 40-44, as per the standard pattern in developed countries, cumulative fertility levels in Europe are considerably higher among the least educated than among the most educated. Women of this age who did not complete secondary school have 0.4 children more than women who completed secondary school, and 0.6 children more than women with a college degree. Among non-Haredi Jewish Israelis of the same age, in contrast, the gradient is much shallower, and the difference smaller in both relative and absolute terms. The least educated women in this population report 2.8 children, while those with complete secondary school and those with a first degree have only 0.3 fewer children. This equivalence between fertility of high school and university graduates itself marks Israeli fertility as quite different from its counterparts in other developed countries.

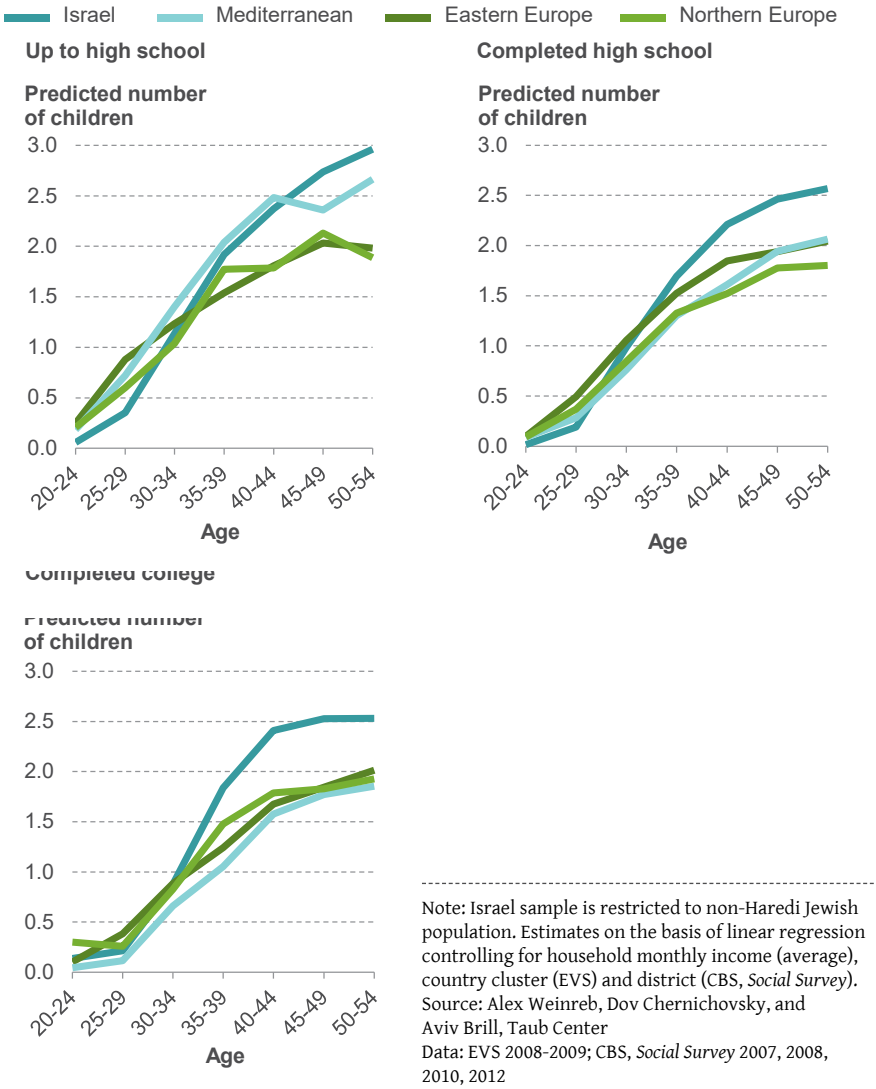
Combining these two findings — the relatively late age at first birth in Israel, and the relatively small differences in fertility across educational categories — also tells us something important about the types of families into which children are born. Specifically, the large differences in fertility between Israeli women and those in other developed countries are smallest among the least educated, and largest among the most educated. This means that most of the difference in fertility between Israel and European countries originates in relatively educated families — a high and increasing percentage of families in Israel — having more children. Israel also has proportionately more high-parity children born to older parents, that is, children who have at least a couple of older siblings.

Men

We get a different perspective on the same phenomenon by looking at the relationship between men's education and the number of children they have. Even though demographers rarely consider male fertility, men's characteristics certainly influence their children's outcomes (Greene and Biddlecom 2000; Flouri 2005). Figure 17 replicates the model used to create Figure 16 on men, but up to ages 50-54. The way that fertility differences between Israeli and European men increase across educational levels is even more distinct than in the trends among women. Among the least educated, cumulative fertility of Israeli men looks similar to that of their European counterparts. For the large majority with either complete secondary school or a first degree, fertility of Israeli men begins to exceed that of their European counterparts by ages 35-39. These different trajectories mean that even when the sample is limited to non-Haredim and non-Arab Israelis, high school and college educated men in their early 40s in Israel have, respectively, 0.6 and 0.8 children more than their European peers.

Figure 17. Predicted number of children by education level, age, and residential region among men

Israel (2008-2012) and Europe (2009)



Note: Israel sample is restricted to non-Haredi Jewish population. Estimates on the basis of linear regression controlling for household monthly income (average), country cluster (EVS) and district (CBS, *Social Survey*).
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center
Data: EVS 2008-2009; CBS, *Social Survey* 2007, 2008, 2010, 2012

Conclusion

Fertility in Israel is not only an outlier because it is much higher than in any other developed country. It also has several other unusual characteristics:

1. Israel is the only developed country where, over the last 20 years, fertility has increased (by 0.2 children) from an already high level.

2. That increase in the overall level of fertility in Israel is largely driven by rising fertility rates among the majority non-religious and traditional Jewish population. The rising share of the population that is Haredi also contributes, but that is at least partly offset by the 0.7 child reduction in Haredi TFR between 2004 and 2013.

3. Among Israeli Muslims, Christians, and Druze, there have been sharp reductions in fertility since the mid-1990s, paralleling reductions in neighboring Arab countries. These reductions have been associated with increases in age at first birth, which is consistent with global patterns. In contrast, the rise in Israeli Jews' TFR has occurred despite a 2.5-year increase in age at first birth.

4. Other than Israel and Turkey, all OECD countries with a TFR above 1.8 have at least 35 percent of children born outside marriage. In Israel, it is less than 10 percent.

5. The percent of women who are childless into their 40s is significantly lower in Israel than in Western Europe and North America, but it is higher than in OECD countries in other regions (Latin America, Central and Eastern Europe).

6. The difference in fertility between Israel and other developed countries is disproportionately driven by (a) higher fertility at later ages — 30s into early 40s — and (b) higher fertility among more educated groups.

Some aspects of Israel's unusual fertility profile are not surprising given some of Israel's other characteristics. For example, compulsory military service delays marriage and fertility for most Jewish Israelis, which is consistent with the relatively low levels of non-marital fertility and the high age at first birth (in the Jewish population sampled here). Easy access to contraception — including during military service — is another factor.

The recent increase in fertility is more surprising. So, too, is the fact that fertility among Israeli Jews is most noticeably different from that of Europeans — who represent the majority of OECD member countries — among more educated women and men. Overall, this suggests that fertility in Israel over the last couple of decades has not been as sensitive to the types of structural factors that are associated with low fertility in other developed countries: fertility has crept up even as healthcare and education costs have increased, as the ratio of living expenses to wages has risen above the OECD average, and in spite of the fact that relative to the cost of living, pronatalist subsidies like child support are less generous in Israel than in many European countries (though higher fertility means that total months of leave across a mother's life course, aggregated across all births, is closer to the OECD average[11]).

All this provides some support for researchers who have argued that financial and material factors have less of an effect on fertility in Israel than cultural factors. In her review of the reasons for secular Israelis' high fertility, Okun (2016) summarizes them as a "constellation of interrelated factors which together characterize the socio-economic and cultural environment of [Israeli] fertility behavior." She goes on to list these factors:

> "a combination of state and family support for childbearing; a dual emphasis on the social and political importance of women's employment as well as of fertility; policies that support working mothers within a conservative welfare regime; a family system in which parents provide significant financial and caregiving aid to their adult children; relatively egalitarian gender-role attitudes and household behaviour; the continuing importance of familist ideology and of marriage as a social institution; the role of Jewish nationalism and collective behaviour in a religious society characterized by ethno-national conflict; and a nationalist discourse which defines women as the biological reproducers of the nation" (Okun 2016: 252).

11 The OECD defines the "total paid leave available to mothers" as the number of weeks a mother receives paid maternity leave multiplied by the percentage benefit relative to her prior salary (see OECD PF2.1 at http://www.oecd.org/els/family/database.htm). In Israel, women receive 15 weeks at full pay, which is 73rd percentile in the OECD. However, that is a per child measure. To calculate the total paid leave available to mothers across all children, we multiply the per child measure by current fertility rates. On that measure, Israeli women receive this benefit an average of 43 weeks throughout their lives. This places them in the 44th percentile in terms of total maternity benefits received (calculations available from author). For a more detailed look at maternity leave in Israel, see Bowers and Fuchs (2016).

Following Okun, we do not think that any single factor in this list can single-handedly explain why non-religious Israeli Jews have more children. Rather, it is these factors' total combined effect. For now, at least, they appear to have collectively inoculated non-religious groups within Israeli society against the most powerful effects of the SDT forces. "Demand" for children remains high in these groups, and actual fertility reflects that demand.

How long will high Israeli fertility continue? That is not clear. On the one hand, Israeli fertility has defied forecasts of impending reduction for many years. On the other hand, the housing crunch and rising costs of living may make it more difficult for family members to extend the same types of assistance in the future that they do now. If that happens, those rising costs will eventually weaken the relationship between Israel's strong family ideology and its high fertility, pushing people's actual fertility below their stated "ideal number." That difference, too, is a normal pattern in OECD countries that is not currently reflected in Israel (DellaPergola 2009).

Policy implications

It is important to think of how these unusual fertility characteristics could affect social policy in Israel, beyond the well-known consequences of high growth for continued investment in housing, healthcare, education, infrastructure in general, and national accounts more broadly. Pointing to these characteristics is especially important given how specific policy norms and practices diffuse from one country to another (Meyer, Boli, Thomas, and Ramirez 1997; Swidler and Watkins 2017). Israel's exceptional fertility characteristics mean that policy makers' focus should be somewhat different.

First, the fact that a higher proportion of children in Israel are born to older parents and college-educated parents than is the case in European countries has implications for targeting particular types of educational, social, and health policy. Older parents tend to be wealthier and more financially stable (income is higher in one's 30s than one's 20s), which influences their own children's outcomes across a wide range of domains, from health to schooling and to the accumulation of human capital in general (Akee, Copeland, Keeler, Angold, and Costello 2010). Parent's levels of education also has indirect effects on outcomes for other children in their neighborhoods, over and above the effects of children's own parents. Specifically, even if a child's own parents are not college-educated, living in an area where friends' and neighbors' parents are college-educated allows for positive spillover effects, as ideas and norms associated with higher education diffuse from more- to less-educated families.

The combination of these direct and indirect educational effects has important implications for social and education policy in Israel. For example, it may allow policy makers to disproportionately target areas with low levels of parental education, especially when parental educational levels in the area are homogeneously low — that is, almost no parents have more than secondary school education. In contrast, interventions in areas with high parental education can be more limited to individual families: the children of the college-educated already have access to familial stores of human and cultural capital.

Similar arguments can be made about public health. Israel has very low infant and child mortality in general, even among the relatively poorly-educated, but those rates are higher in the Arab Israeli sector. One of the reasons for this Jewish-Arab difference is the relatively low educational status of parents, in combination with segregated residential patterns: there are few mixed Jewish and Arab neighborhoods, and few mixed schools. This combination reduces the spillover of positive child health norms from more- to less-educated families. As education in the Arab Israeli sector continues to rise, this barrier to increased child health should weaken, bringing with it continued reductions in infant and child mortality. Policy makers could perhaps magnify this effect by having more educated Arab Israeli women act as health-peers for their less-educated counterparts. This could, for example, be another way to avoid some of the undesirable health consequences of high levels of consanguineous marriage and other types of community homogamy in Arab Israeli marriage patterns (Zlotgora et al. 2003).

The principle underlying both of these cases is that having a higher proportion of educated parents places less of a burden on the education or public health system to be the primary driver of behavior change, or the only pathways to upward social mobility and improved health in Israeli society. This is especially true in educationally mixed neighborhoods.

A second policy implication addresses the implications of Israel's low rates of non-marital fertility, especially among Muslims and religious Israelis. According to data from the Current Population Survey (2007-2012), one-quarter of all households in the US include a single mother, and another 6 percent a single father (Mather, Fu, and Hansen 2013), in comparison to 5 percent of all households in Israel (CBS 2017), which house 8 percent of all Israeli children (CBS 2018).

These low rates in Israel have at least two implications. First, because in international comparison, poverty rates are higher among single-parent families than two-parent families (Maldonado and Nieuwenhuis 2015), Israel arguably has lower poverty rates than it would have if the share of single-

parent families was closer to the OECD norm. Yet, the fact that poverty rates in Israel are among the highest in the OECD — in spite of the low rates of single parenthood — points to a lurking danger: as the share of single parents increases over the next few years, as it has over the last several years, poverty rates will also increase — unless we can weaken the relationship between single parenthood and poverty.

Second, putting aside the first concern, welfare policy designed to reduce poverty does not have to be as focused on single-parent families as is the case in most other OECD countries. The relative scarcity of single parents in Israel means that they are dispersed in areas full of two-parent families, rather than being concentrated in the poorest neighborhoods or cities, as in the case in the US. There, current public housing benefits and practices (e.g., applicants encouraged to look for rentals advertised on the U.S. Department of Housing and Urban Development (HUD) listings) means that in some US cities — examples include Detroit and Flint (Michigan), Camden and East Orange (New Jersey), and Rochester (New York) — more than 70 percent of city households include a single parent. These concentrations of single-parent families do not exist in Israel, and that fact partly stems from Israeli fertility patterns.

A third policy implication of Israel's exceptional fertility regime is related to the low percentage of Israeli women who do not have any children (though that percentage is rising). This percentage is higher among Israeli Muslims, since a higher proportion of women do not get married — and very few of these women, if any, have children as single mothers. Are these women more likely to be incorporated in the labor market? Do they contribute to their natal household income? More generally, are working women in the Arab Israeli sector disproportionately childless? Answers to these questions can help determine how rising rates of labor force participation among Arab Israeli women influence household poverty levels. They may also tell us more about how Arab Israeli women navigate the work-family balance, since this may be different from their Jewish counterparts.

The overarching message that emerges from these examples is that social and economic policy in Israel needs to be sensitive to a general set of characteristics associated with fertility in Israel, not only the overall level of fertility. Who is having children, at what age, within marriage or another type of long-term partnership? How educated are they? Who is not having children? Answers to each of these questions should affect the content of policy. And, in all of these, Israeli fertility, relative to other OECD countries, is exceptional. Policy needs to be formulated accordingly.

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Appendix

Appendix Table 1. Education and completed fertility in Israel

By gender and sector (models used to generate Figure 15)

	Jewish/Other sector		Arab Israeli sector	
	Women	Men	Women	Men
Income (10 categories)	0.0489*** (6.49)	0.0816*** (11.48)	-0.0263 (-1.15)	-0.0815*** (-4.73)
Level of education				
Did not complete high school	*Reference group*			
Completed high school	-0.188* (-1.97)	-0.122 (-1.52)	-0.502** (-2.74)	-0.00657 (-0.04)
Completed first degree (college)	-0.133 (-0.57)	-0.0258 (-0.09)	-0.387 (-1.24)	0.0811 (0.21)
Age				
20-24	*Reference group*			
25-29	0.786*** (6.60)	0.288** (3.17)	1.330*** (6.44)	0.644*** (4.50)
30-34	1.736*** (14.54)	1.061*** (11.45)	2.587*** (13.40)	1.883*** (13.43)
35-39	2.302*** (20.66)	1.826*** (19.45)	2.574*** (13.59)	3.287*** (22.99)
40-44	2.577*** (22.96)	2.283*** (25.06)	2.983*** (15.61)	3.620*** (24.85)
45-49		2.632*** (28.37)		4.616*** (29.60)
Education * Age interactions				
Completed high school * 25-29	-0.319* (-2.29)	-0.0395 (-0.34)	0.322 (1.15)	-0.146 (-0.62)
Completed high school * 30-34	-0.297* (-2.09)	-0.0588 (-0.48)	-0.582* (-2.12)	-0.474* (-1.99)
Completed high school * 35-39	-0.267‡ (-1.96)	-0.118 (-0.96)	0.164 (0.59)	-0.660** (-2.61)
Completed high school * 40-44	-0.309* (-2.24)	-0.133 (-1.07)	0.462 (1.48)	0.0513 (0.20)

Appendix Table 1 (continued). Education and completed fertility in Israel

By gender and sector (models used to generate Figure 15)

	Jewish/Other sector		Arab Israeli sector	
	Women	Men	Women	Men
Completed high school * 45-49		-0.244‡ (-1.90)		-0.511‡ (-1.77)
Completed college * 25-29	-0.464‡ (-1.81)	-0.231 (-0.76)	-0.726‡ (-1.86)	-0.413 (-0.88)
Completed college * 30-34	-0.619* (-2.44)	-0.348 (-1.16)	-0.887* (-2.22)	-0.717 (-1.59)
Completed college * 35-39	-0.505* (-2.01)	-0.161 (-0.54)	-0.275 (-0.65)	-1.702*** (-3.70)
Completed college * 40-44	-0.413 (-1.63)	-0.121 (-0.40)	0.324 (0.67)	-0.372 (-0.80)
Completed college * 45-49		-0.331 (-1.10)		-0.996* (-2.16)
Haredi-specific estimates				
Haredi	0.710*** (4.26)	0.399*** (3.62)		
Haredi * Completed high school	0.0562 (0.26)	0.116 (0.32)		
Haredi * Completed college	0.255 (0.50)	0.363 (0.81)		
Haredi * 25-29	1.185*** (4.56)	1.751*** (10.74)		
Haredi * 30-34	1.618*** (6.02)	2.494*** (13.96)		
Haredi * 35-39	2.136*** (7.32)	3.091*** (16.20)		
Haredi * 40-44	2.150*** (6.50)	2.942*** (14.33)		
Haredi * 45-49		2.105*** (10.10)		
Haredi * Completed high school * 25-29	0.133 (0.41)	-0.264 (-0.58)		
Haredi * Completed high school * 30-34	0.769* (2.21)	-0.904* (-1.98)		

Appendix Table 1 (continued). Education and completed fertility in Israel

By gender and sector (models used to generate Figure 15)

	Jewish/Other sector		Arab Israeli sector	
	Women	Men	Women	Men
Haredi * Completed high school * 35-39	0.861* (2.33)	-0.983* (-2.13)		
Haredi * Completed high school * 40-44	0.376 (0.90)	-1.002‡ (-1.95)		
Haredi * Completed high school * 45-49		0.509 (1.03)		
Haredi * Completed college * 25-29	-0.665 (-1.12)	-1.402‡ (-1.88)		
Haredi * Completed college * 30-34	0.205 (0.34)	-0.363 (-0.63)		
Haredi * Completed college * 35-39	0.507 (0.80)	-1.211* (-2.08)		
Haredi * Completed college * 40-44	-0.131 (-0.19)	-1.166* (-2.05)		
Haredi * Completed college * 45-49		0 (.)		
Constant	0.0146 (0.17)	-0.340*** (-4.97)	0.946*** (5.65)	0.452*** (3.53)
Observations	5211	6272	1412	1693
Adjusted R^2	0.518	0.550	0.385	0.576

Note: *t* statistics in parentheses.
‡ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center

Appendix Table 2. Age pattern of completed fertility in Israel and European regions

By level of education (models used to generate Figure 16)

	(1) Less than high school	(2) Completed high school	(3) Completed college
Income	-0.0577 (-0.76)	0.0477‡ (1.91)	0.118** (2.83)
Region			
Israel	*Reference group*		
Eastern Europe	0.770*** (6.23)	0.148*** (3.97)	0.0637 (0.68)
Mediterranean countries	0.523*** (6.71)	0.0802* (2.18)	-0.150*** (-4.08)
Northern Europe	0.431*** (3.84)	0.117** (2.92)	-0.115*** (-4.37)
Age			
20-24	*Reference group*		
25-29	0.807*** (65.15)	0.417*** (5132.49)	0.244*** (29.74)
30-34	1.804*** (57.84)	1.433*** (492.39)	1.066*** (50.64)
35-39	2.369*** (72.55)	2.098*** (483.86)	1.822*** (74.96)
40-44	2.636*** (92.43)	2.328*** (530.15)	2.191*** (96.07)
Region * Age interactions			
Eastern Europe * 25-29	-0.303* (-2.67)	0.214*** (3.65)	0.0230 (0.28)
Eastern Europe * 30-34	-0.908*** (-6.28)	-0.249*** (-3.87)	-0.305* (-2.50)
Eastern Europe * 35-39	-1.211*** (-6.54)	-0.512*** (-7.01)	-0.658*** (-7.24)
Eastern Europe * 40-44	-1.157*** (-6.33)	-0.639*** (-7.76)	-0.925*** (-7.03)
Mediterranean * 25-29	-0.0211 (-0.25)	0.229** (3.37)	-0.0319 (-0.66)

Appendix Table 2 (continued). Age pattern of completed fertility in Israel and European regions

By level of education (models used to generate Figure 16)

	(1) Less than high school	(2) Completed high school	(3) Completed college
Mediterranean * 30-34	-0.318** (-2.69)	-0.321* (-2.25)	-0.277* (-2.64)
Mediterranean * 35-39	-0.871*** (-4.46)	-0.570*** (-4.09)	-0.442* (-2.58)
Mediterranean * 40-44	-0.950*** (-5.31)	-0.537*** (-3.95)	-0.642*** (-5.30)
Northern Europe * 25-29	0.133 (1.09)	-0.00822 (-0.18)	0.0902 (1.45)
Northern Europe * 30-34	-0.550** (-2.90)	-0.295** (-3.16)	-0.0910 (-0.90)
Northern Europe * 35-39	-0.782*** (-4.01)	-0.594*** (-6.84)	-0.243*** (-3.55)
Northern Europe * 40-44	-1.149*** (-7.10)	-0.696*** (-9.26)	-0.468*** (-5.85)
Constant	0.285** (2.80)	-0.0332 (-0.65)	-0.0610 (-0.73)
Observations	3444	9446	6030
Adjusted R^2	0.229	0.388	0.325

Note: *t* statistics in parentheses.
‡ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
Source: Alex Weinreb, Dov Chernichovsky, and Aviv Brill, Taub Center