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Assumptions on fertility

Religiosity and its impact on fertility projections in Israel

Note by Central Bureau of Statistics, Israel[1]

Summary

Israel has one of the highest total fertility rates (TFR) in the developed world. The Jewish population constitutes 75% of Israel's population. For the past twenty years the fertility levels of the Jewish women in Israel had been rising. This paper will show, through scenarios, that the level of religiosity has a meaningful effect on fertility levels, and that this in turn affects the composition of the Jewish population. Consequently, fertility levels are expected to continue to rise in the near future.

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I.   Introduction

1.   Israel has one of the highest total fertility rates (TFR) in the developed world. In recent decades, most developed countries recorded below-replacement fertility levels, while Israel's fertility levels were much higher.[2] In 2014, Israel's TFR was 3.08, the Jewish population, which constitutes 75% of Israel's population, had a TFR level of 3.11. For the past twenty years the fertility levels of the Jewish women in Israel had been rising. According to the demographic transition model, this trend is supposed to be temporary and at some point expected to decline to replacement level. This situation, in which fertility levels are unexpected, increases the difficulty to set fertility assumptions for population projections. The purpose of this paper is to present a way of setting fertility assumptions that takes into account the population's composition.[3]

2.   The Israel Central Bureau of Statistics (ICBS) performs national population projections every five years. This paper will review the fertility assumptions that were set for the last three population projections conducted on the years 2000, 2005 and 2010, and will analyze the differences that were received between the assumptions and the actual fertility measured. The unsuccessful attempts at setting a range that will contain the actual fertility have brought the ICBS to explore new methods for setting fertility assumptions for the Jewish population.

3.   The Jewish population is very heterogeneous. This led the ICBS to check whether the source of the rising fertility levels is a behavioral shift of the whole population, or is it a shift in the population's composition towards the groups with higher fertility. The most influential factor on fertility among Jewish women is the level of religiosity.[4]

4.   The Jewish society in Israel is made up of several groups who differ from one another by their level of religiosity. These groups are also characterized by different fertility levels. The most religious groups have high fertility levels, which over time can influence the composition of the Jewish population and cause its TFR to rise. This paper will review the structure of the Jewish population in Israel and will show, through scenarios, that fertility levels for the Jewish population are expected to continue to rise in the near future if fertility levels of the Jewish groups will stay the same, and even if it starts descending.

II.   Structure of the Jewish population in Israel

5.   The Jewish population has grown and developed mainly as a result of extensive immigration during the twentieth century. These immigrants and their descendants had a vast influence in creating a diverse society marked by different cultures, languages, religiosity levels, etc. The Jewish population has a special affinity towards religion and can be categorized into four main groups – Haredim (Ultra-Orthodox), religious, traditional and secular/not religious. These religiosity categories are closely associated

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[2] OECD web site - https://data.oecd.org/pop/fertility-rates.htm

[3] B. Okun, "Fertility and marriage behavior in Israel: Diversity, change, and stability," *Demographic Research* vol. 28 (2013): 467.

Statistical Abstract of Israel no. 66, Jerusalem: Central Bureau of Statistics, Israel (2015): table 3.14.

[4] P. McDonald, "Low fertility: unifying the theory and the demography," *Meeting of the population association of America*, Atlanta, 9-11 May 2002: 5.

D. Friedlander, "Fertility in Israel: is the transition to replacement level in sight?," *Population Bulletin of the United Nations: Completing the fertility transition* vol. 48 (2002): 409.

with fulfillment of religious commandments (e.g. observance of the Sabbath), affiliation with certain Jewish religious political parties, specific types of religious education for children, and particular religious communities.[5]

6.   Haredi (singular of Haredim) is the self-designation of a Jewish religious sub-culture, which is sometimes referred to, but not by the members themselves, as "Ultra-Orthodox". It is far from monolithic, consisting of several groups and streams which are united in their rejection of modern culture and Western life-styles.[6] The Haredim group originated from a contra-acculturation movement, which developed during the period of Enlightenment in 18th century Europe. They shun all contact with outside culture and essentially form separate societies living in segregated neighbourhoods and towns, and even separated school systems (9% of Jews defined themselves as Haredim in the 2015 Israel Social Survey, more on the ISS in the next section[7]). The religious (or national religious) group also originated during Enlightenment in the acculturation groups that promoted contact with the outside world while maintaining Jewish culture and practices (11% of Jews defined themselves as religious in the 2015 ISS). The traditional group does not define itself as strictly religious nor secular. Generally, traditional Jews do fulfill some religious commandments and maintain Jewish customs. However, their traditional behavior is not necessarily motivated only by religious commitment, but may also be associated with identification and affiliation with the Jewish people or with their Jewish ethnic group, community and family (36% of Jews defined themselves as traditional in the 2015 ISS). The secular/not religious group is the largest group, and even they practice at least occasional observance of religious commandments, attend synagogue for major holidays, and rate religious ceremonies as very important in their lives (43% of Jews defined themselves as secular/not religious in the 2015 ISS). For the purpose of the fertility assumptions we unified the traditional and secular/not religious groups, so there are three groups – Haredim, Religious and Not-Religious.[8]

7.   Contrary to sex and age, level of religiosity is a trait that one defines for himself. Thus, the state can only estimate the level of religiosity through surveys and other administrative data. In the past there were several attempts to produce population estimates by level of religiosity, mainly for the Haredim population. In their paper, "Long-Range Population Projections for Israel: 2009-2059", Paltiel et al. reviewed the different methods and chose to use the Israel Social Survey (ISS). The ISS is an annual survey conducted since 2002 on individuals aged 20 and over. The yearly sample size is about 7,500 persons. The survey gathers information regarding the living conditions and welfare of the population in Israel, including the perceptions and opinions of the public. One of these perceptions is the level of one's religiosity. This paper also used the ISS to produce population estimates for the three relevant groups – Haredim, Religious and Not-Religious. Figures 1-3 illustrate the age structure of these groups as of 2014.

[5] Okun, "Fertility and marriage behavior in Israel", 461-463.
    Friedlander, "Fertility in Israel", 403-404.
[6] A. Paltiel, "Estimation of the size and vital rates of the Haredi (ultra-orthodox) population in Israel for the purpose of long-range population projections, *ECE-Eurostat Work Session on Demographic Projections*, Rome, 29-31 October 2013.
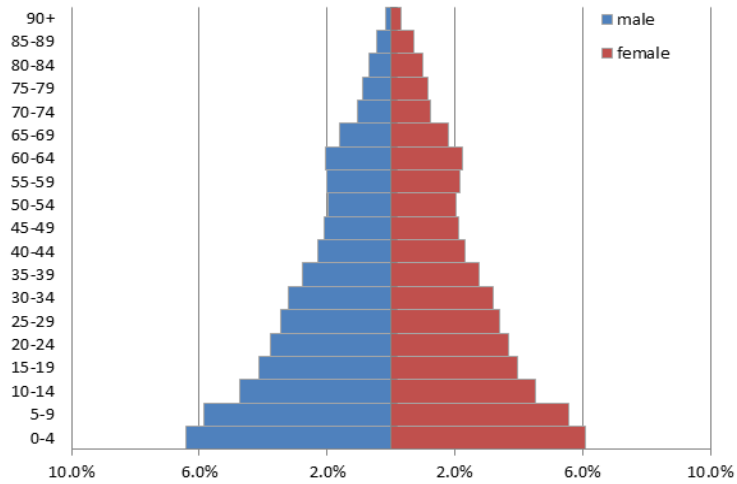[7] Israel Social Survey 2015 - http://www.cbs.gov.il/www/skarim/social_surv/what_survey_e.pdf
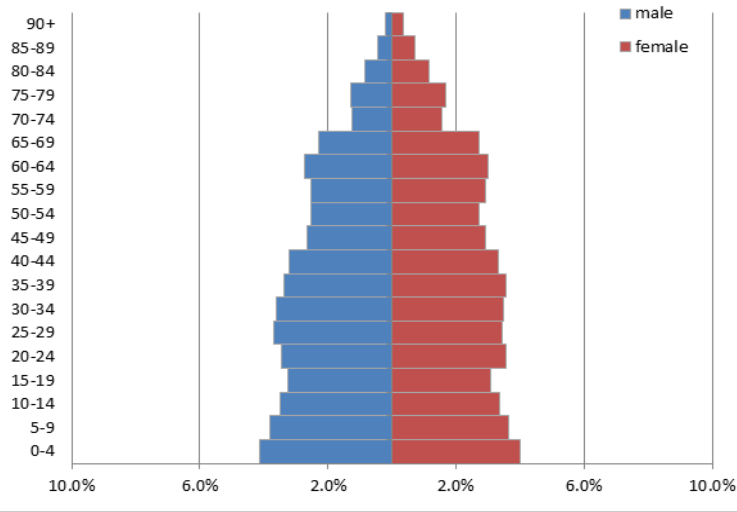[8] Okun, "Fertility and marriage behavior in Israel", 462.

Figure 1. age pyramid of Haredim, percent - 2014
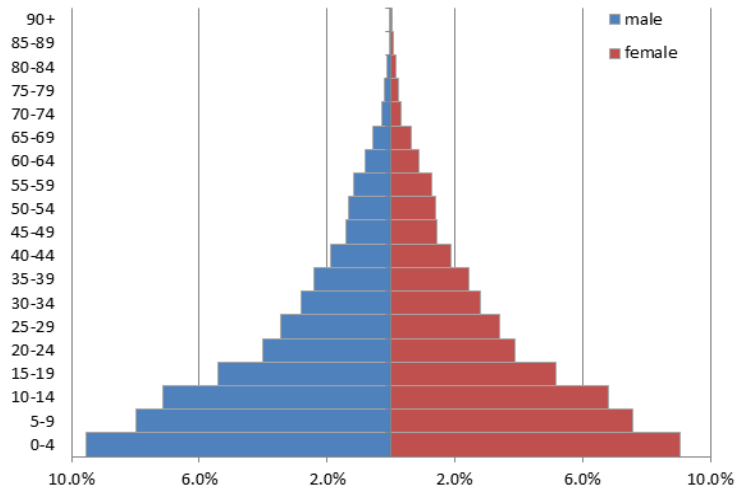

Figure 2. age pyramid of Religious, percent - 2014

Figure 3. age pyramid of Not-Religious, percent - 2014

III. Fertility assumptions in the past

8.   As previously mentioned, the ICBS performs population projections every five years. The projections are categorized by religion (Jews, Muslims, Christians and Druze) for a period of 25 years and are calculated using the Cohort-Component method.[9]

9.   Figure 4 illustrates the fertility assumptions set for the last three population projections that were produced in the years 2000, 2005 and 2010. The fertility assumptions in those years referred to the Jewish population as a whole (in 2010 there were fertility assumptions for the Haredim group). It is evident that past trends and the demographic transition model has affected the manner in which fertility assumptions were set, namely the assumption that fertility levels will decline. Following this change in the Jewish fertility levels, the ICBS set out to check if there is a behavioral shift in the population that can account for this change, or is it a shift in the population's composition towards the groups with higher fertility.

Figure 4. Historical Jewish TFR and past assumptions - 1966-2035

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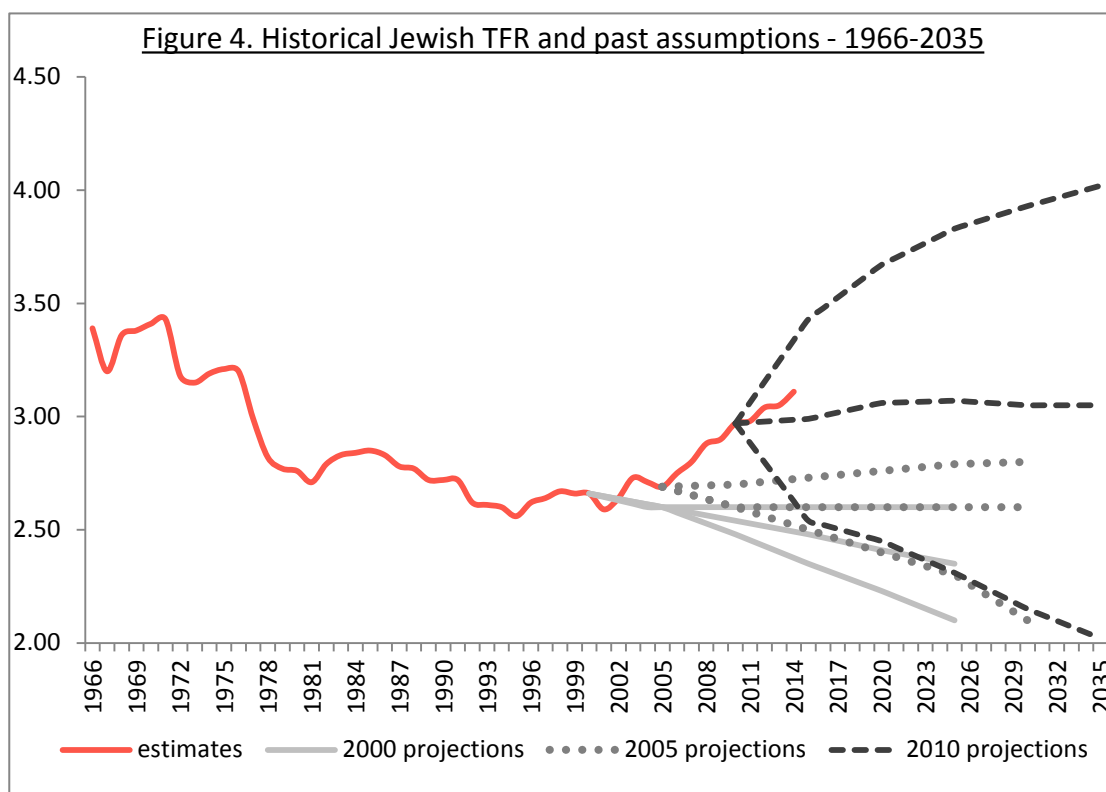
9 C.B. O'Neill et al., "A Guide to Global Population Projections" *Demographic Research* vol. 4 (2001): 200-288.

IV.   Historical fertility by level of religiosity

10.   In order to set fertility assumptions for population groups by level of religiosity, it is necessary to have historical fertility data for these groups. In his paper, Hleihel used data from the ISS to link women that were surveyed with their children through births recorded in the civil registry. This produced a series of historical fertility rates by level of religiosity since 1979 (the year where full administrative linkage was obtained between parents and their children). The paper was since updated to 2014 data.[10] Figure 5 shows fertility levels for the Jewish population by level of religiosity. It is evident that fertility levels categorized by these groups is more stable and can give better answers to fertility trends for the total Jewish population. In the next section we will see how future possible changes in the fertility of these groups can affect the fertility of the total Jewish population.

Figure 5. TFR by level of religiosity - Jewish women - 1979-2014
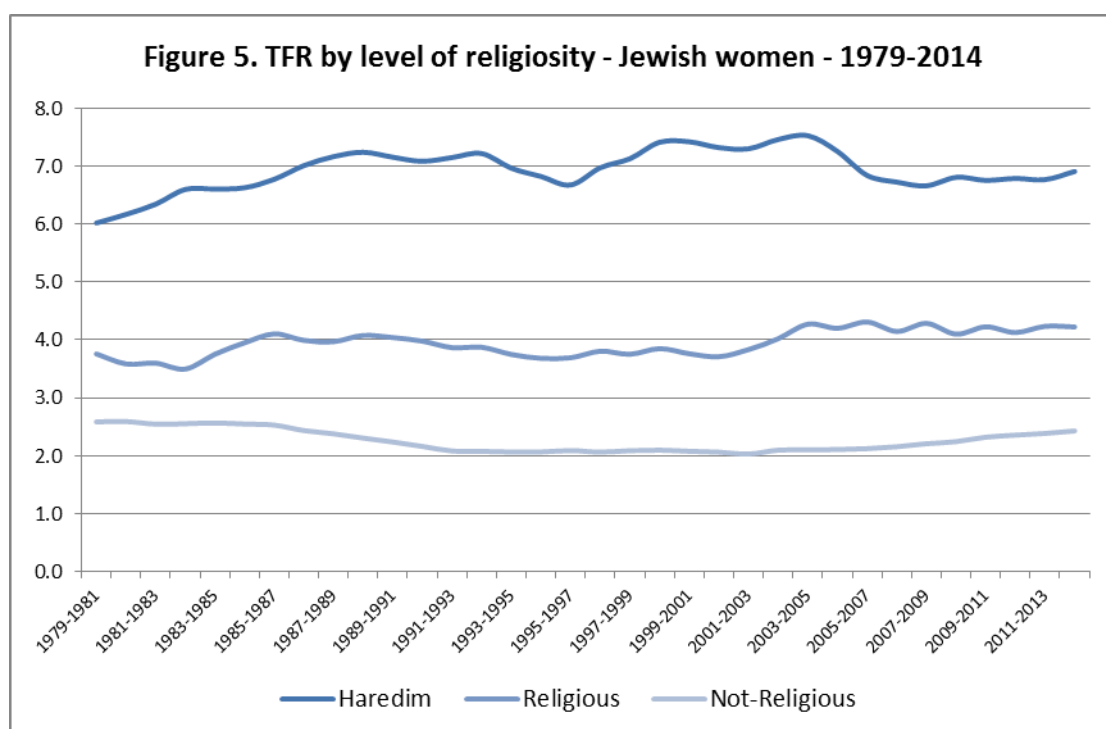
V.   Fertility projections by level of religiosity – scenarios

11.   Currently, the Haredim and the Religious population groups make up about 25% of the total Jewish population. As figure 5 showed, these groups are characterized by high fertility levels. The following scenarios will show that if the fertility levels remain at the current stage, it could cause significant changes in the composition of the Jewish population, where the Haredim and Religious groups

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[10]   A. Hlihel, "Fertility of Jewish and Moslem Women in Israel, by their Level of Religiosity, during 1979 – 2009," Working Paper No. 60, Central Bureau of Statistics, June 2011. (Hebrew)

could amount to 40% of the population within 25 years. This change, of course, will influence the TFR of the total Jewish population.

12.   Table 1 presents three scenarios for possible changes in fertility levels of the Jewish population groups by level of religiosity. In order to produce these scenarios, a projection frame was created, for each group, based on population estimates from the 2015 ISS. Jewish Mortality assumptions were taken from the previous national projections and were applied to all groups. The immigration component was set to zero. The projections were calculated for 25 years in five-year intervals and for five-year age groups. The scenarios differ from one another only by their fertility assumptions for each group. The age-specific fertility rates, for each group, were set as the percentage of the last five years.

13.   The first scenario retains the current fertility levels for the duration of the projection. The result of this scenario brings the total Jewish TFR up to a level of 3.82 in 25 years. The second scenario assumes a moderate decline in fertility levels of the population groups, but in spite of this decline the total Jewish TFR remains stable at a level of 3.12 after 25 years. The third scenario assumes a sharp decline in the fertility levels of the Haredim and Religious groups. Only here we can see an actual decline in the total Jewish TFR to a level of 2.49 at the end of the projection period, but still not close to replacement level.

Table 1. Possible scenarios for future Jewish TFR

Scenario 1 - fixed						
	2014	2019	2024	2029	2034	2039
Haredim	6.9	6.9	6.9	6.9	6.9	6.9
Religious	4.2	4.2	4.2	4.2	4.2	4.2
Not-Religious	2.4	2.4	2.4	2.4	2.4	2.4
Jewish - total	*3.11*	*3.29*	*3.45*	*3.58*	*3.69*	*3.82*

Scenario 2 - moderate decline						
	2014	2019	2024	2029	2034	2039
Haredim	6.9	6.7	6.5	6.3	6.1	5.9
Religious	4.2	4	3.8	3.6	3.4	3.2
Not-Religious	2.4	2.3	2.2	2.1	2	1.9
Jewish - total	*3.11*	*3.16*	*3.18*	*3.18*	*3.15*	*3.12*

Scenario 3 - sharp decline						
	2014	2019	2024	2029	2034	2039
Haredim	6.9	6.5	6.1	5.7	5.3	5
Religious	4.2	3.9	3.6	3.3	3	2.5
Not-Religious	2.4	2.2	2	1.8	1.6	1.4
Jewish - total	*3.11*	*3.05*	*2.95*	*2.81*	*2.65*	*2.49*

14.   Another way to view the possible shift the Jewish society might undergo is through the changes in population structure by age and level of religiosity. Figures 6-7 compare today's population structure of the Jewish population to that at the end of the projection period, if fertility levels remain fixed (as in scenario 1). More than 60% of those aged 0-4 are expected to be Haredim or Religious, as opposed to 40% today. Over time these changes are expected to have a dramatic effect on the Israel society.

Figure 6. Jewish population by age and level of religiosity - 2014

Figure 7. Jewish population by age and level of religiosity - 2039
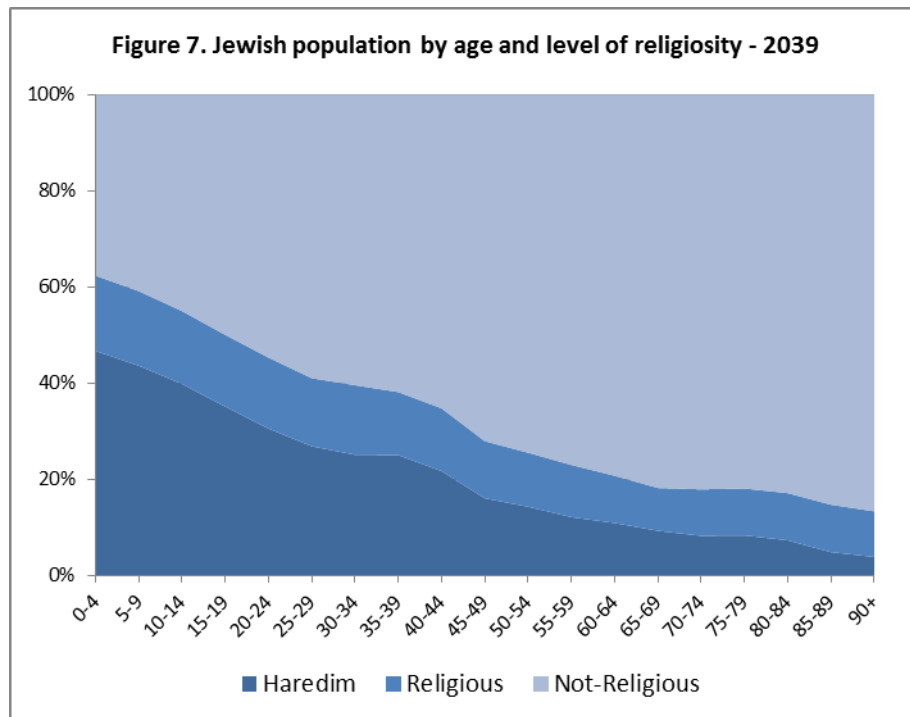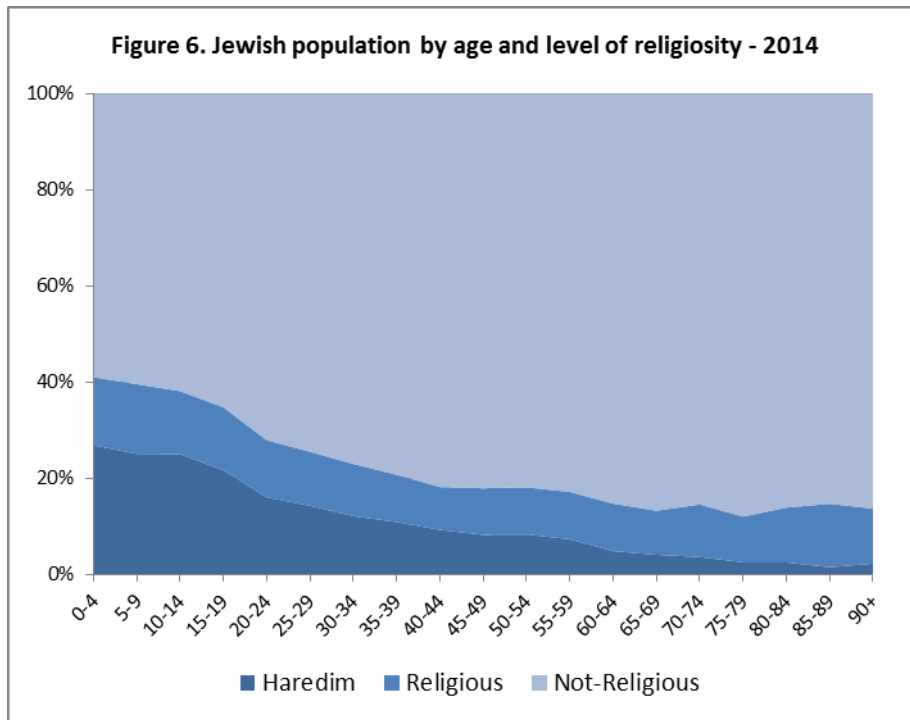
VI.   Conclusion

15.   The total fertility rate of Jewish women in Israel is relatively high, 3.11 as of 2014. Jewish fertility has been rising for two decades, a fact that increases the difficulty of setting fertility assumptions for population projections. This paper suggested one possible way of addressing this issue, through dividing the population into groups by level of religiosity. Level of religiosity is the most influential factor on fertility in Israel and isolating groups with higher fertility might help in assessing fertility for the entire Jewish population. Naturally, religiosity isn't the only factor that affects fertility levels, other factors such as the Israeli culture, government policy, immigration waves etc. also have considerable influence.

16.   The Haredim and Religious groups are taking an increasing part of the Jewish population, partly due to their high fertility levels. This paper showed that even in the event of a moderate decline in the fertility levels of these groups, the fertility of the total Jewish population is still expected to rise. Hopefully, this analysis can help setting more substantiated assumptions for producing population projections.

References

D. Friedlander, "Fertility in Israel: is the transition to replacement level in sight?," *Population Bulletin of the United Nations: Completing the fertility transition* vol. 48 (2002): 403-410.

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P. McDonald, "Low fertility: unifying the theory and the demography," *Meeting of the population association of America*, Atlanta, 9-11 May 2002: 1-23.

B. Okun, "Fertility and marriage behavior in Israel: Diversity, change, and stability," *Demographic Research* vol. 28 (2013): 457-504.

C.B. O'Neill et al., "A Guide to Global Population Projections," *Demographic Research* vol. 4 (2001): 200-288.

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