

FERTILITY AND OTHER DEMOGRAPHIC VARIABLES IN MULTICULTURAL JERUSALEM, 1995-2020

Sergio DellaPergola*

The Avraham Harman Institute of Contemporary Jewry
The Hebrew University of Jerusalem

“There can be no promotion after Jerusalem”

Sir Ronald Storrs

“Everything is foreseen, yet freedom of choice is given”

[Rabbi Akiva] Mishnah, Nezikin, Avoth, 3, 15

Abstract

This paper presents selected findings from a new set of population projections for the city of Jerusalem over the period 1995-2020. The paper describes trends observed in the growth rates of eight main religious, ethnic, and socioeconomic sub-populations, each with its own patterns of fertility, geographical mobility, and age composition. Selected results of population projections are presented, covering a range of different hypotheses. Attention is given to the balance of the Jewish versus the Arab and other population, and within the Jewish population, of the more religiously observant sub-population versus the rest. Some implications of the current and expected demographic trends for urban and national policies are outlined in the conclusions.

I. Introduction

Jerusalem is one of the world's great and most intensive religious and cultural capitals. Its population comprises a unique combination of ethnicity—Jews, Arabs and others; religion—Jewish, Muslim, and Christian of several denominations; cultural orientation—from militantly religious to militantly antireligious; countries of birth and origins—featuring a great variety of subethnic identities; and socioeconomic status (SES)—covering the full range from affluent to poor. These various traits often overlap among the same individuals, creating a human mosaic of sharply differentiated subpopulations. While each territorial section of the city may host representatives of various communities, the prevailing tendency is for similar people to aggregate in quite homogeneous residential neighborhoods. In such a multicultural context, demographic behaviors tend to be significantly correlated with ethnoreligious identities and socioeconomic stratification. Indeed, the demographic development of Jerusalem presents quite extreme variation in the growth rate of its component subpopulations. Such gaps reflect differences in the main demographic determinants of population growth: mortality, fertility, and local, national, and international geographical mobility.

Jerusalem's social and cultural diversity occurs in and is the product of a regional context imbued with long-standing and still unsolved political and religious tensions (Hershkovitz et al., 1998; Choshen, Shahar, 1998). Jerusalem's municipal borders changed repeatedly in modern history (Lapidoth, Hirsch, 1994), reflecting the historical, military, political and administrative events of Mandatory Palestine between 1918 and 1948, the State of Israel since independence in 1948, the Hashemite Kingdom of Jordan between 1948 and 1967, and the Palestinian Authority since the 1994 Oslo agreements. During the last years of the British Mandate (1944-1948) there emerged a demographic-functional division between the Jewish and Arab parts of the city (Schmelz, 1973). The 1948 war and the 1949 armistice agreements led to the severing of Jerusalem's western sector, under Israeli rule, from the rest of the former Jerusalem district including most of the outer, rural and urbanized parts, under (Trans-) Jordanian rule.

Between 1948 and 1964, Israeli (West) Jerusalem was three times expanded to provide for the city's growing population. Following the Arab-Israeli war of June 1967, the main built-up areas of Jerusalem were reunited under Israeli rule. Soon after, the Israeli government incorporated a territorial belt North, East and South of the main built-up area, leaving out substantial portions of both the British Mandate District of 1944 and the Jerusalem City boundaries as established by the UN in 1947. The enlarged post-1967 borders were further expanded westward in 1985 and more significantly in 1993, determining a total municipal surface of 123 square km.

These political and territorial changes, reapportionment, and divisions, and the sharp migration flows that sometimes accompanied them, complicate the comparison of Jerusalem's population size and movements over time. However, it is possible to quite faithfully reconstruct Jerusalem's population development within a constant territorial framework substantially similar to the contemporary municipal borders (Schmelz, 1987a, 1987b, 1994). Within such fixed terms of reference (see Table 1), Jerusalem's population grew from 186,500 in 1946 to 267,800 in 1967, and to 622,100 at the end of 1997 (Israel CBS, 1998b; Choshen, Shahar, 1998). The percentage of Jews out of total inhabitants grew from 53.4 percent in 1946 to a peak of 73.5 percent at the end of 1967, and later gradually declined to 69 percent in 1997.

II. Ethno-Religio-Cultural Population Projections: Goals and Method

Harmonious and orderly governance and planning is a very complex and sensitive task in Jerusalem as widely differing needs, interests and expectations—both from inside and outside the city—need to be carefully weighed in order to maintain a reasonable equilibrium between

Table 1. Jerusalem Population, 1946-1997
(1993 borders)

Year	Total	Jews	Arabs and others	% Jewish
1946 (December 31)	186,500	99,600	86,900	53.4
1961 (May 22)	243,900	165,100	78,800	67.7
1967 (September)	267,800	196,800	71,000	73.5
1972 ^a (May 20)	313,900	230,300	83,600	73.4
1983 ^a (June 4)	428,700	306,300	122,400	71.4
1995 (Dec. 31 - original)	591,400	417,000	174,400	70.5
1995 (April 11) ^a	617,000			
1995 (Dec. 31 - revised)	602,700	420,900	181,800	69.8
1997 (Dec. 31)	622,100	429,100	193,000	69.0

a. Israel population census.

Sources: Schmelz (1994); Israel CBS (1998b); Choshen, Shahar (1998).

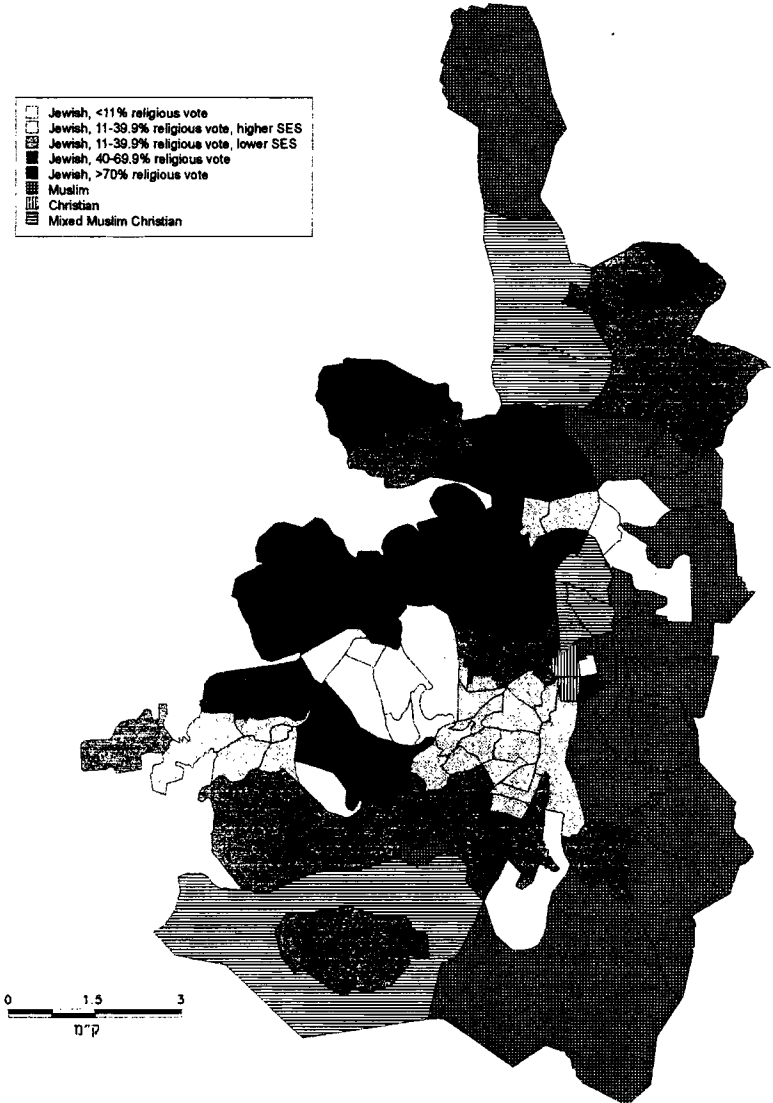
competing constituencies. This study presents selected findings from a new set of population projections for the city of Jerusalem over the period 1995-2020 (DellaPergola, Rebhun, 1999). The project was initiated at the request of the Jerusalem Municipality's Division for Strategic Planning and Research in the framework of a new multidisciplinary Strategic Masterplan aimed at developing a broad conceptual and executive framework for urban policies in future decades. The committing body suggested the basic working assumptions of a Jerusalem at peace, within present Municipal boundaries, and united under Israeli sovereignty. Besides providing this general scenario, there was no interference with the technical or substantive contents of the present research that was conducted by an independent team of researchers and consultants directed by the author. Our analysis focuses on eight subpopulations reflecting various combinations of religiocultural and socioeconomic factors, and proposes several hypotheses regarding Jerusalem's demographic future. Attention is paid to expected changes in the balance of Jews versus Arabs and others, and the balance of the Haredi (highly traditionalist) and other subpopulations within total Jews. Some implications of the current and expected demographic trends for policy decisions are briefly outlined in the conclusions.

Base population

The baseline for our study was Jerusalem's population at end-1995. Since when our study was executed results of the Israeli census of November 1995 were not yet available, we relied on estimates based on yearly updates of the 1983 Israeli population census. Accordingly, Jerusalem's total population at the end of 1995 was 591,400, of which 417,000 Jewish (70.5 percent), 158,600 Muslim (26.8 percent), and 15,800 Christian (2.7 percent). Following publication of the 1995 census (after the completion of our study), the total end-1995 figure was officially revised to 602,700, of which 420,900 (69.8 percent) Jewish. Our analysis was conducted at the micro-geographic rather than at the individual level based on an estimated population of 422,000 (71.4 percent) in predominantly Jewish areas and of 169,000 (38.6 percent) in predominantly Arab and other areas. While the population figures reported in our study slightly over-represent the Jewish component, these differences do not seriously affect the main results and conclusions. It should be noted, though, that our findings relate to the inhabitants of neighborhoods with certain characteristics (e.g., Jewish), and not to the individual holders of those same characteristics (e.g., Jews).

Our population projections attempt to capture the demographic diversity of urban residential neighborhoods characterized by different ethnic, religious, cultural and socioeconomic patterns, up to the year

Figure 1. Jerusalem, by Types of Area, 1995



2020. Detailed analysis of population characteristics led to the identification of 8 main types of areas or subpopulations, 5 Jewish and 3 Arab and other. As shown in Figure 1, these projection areas variously combining ethnicity, Jewish religious vote, and SES are not always geographically contiguous, but they do provide the basis for significantly different sociocultural and demographic trends.

Population estimates for small urban areas face accuracy problems concerning size and age composition, especially for those areas which comprise high proportions of students and other temporary residents (Lunn et al., 1998)—a typical case in various parts of Jerusalem. Moreover, it is not always possible to elaborate full and different sets of all of the assumptions needed in a population projection at the detailed neighborhood level. Jerusalem, like all major cities in Israel, has a hierarchic system of geographical-statistical divisions for which essential demographic data are available. After comparing several sets of data for 8 Quarters, 35 Sub-quarters and over 130 Statistical Areas, we identified 52 different geographical areas plus two groupings of people whose place of residence was insufficiently known. These 54 urban partitions had internally homogeneous characteristics according to three main criteria: (a) the predominantly Jewish or Arab and other identification of residents; (b) the degree of religiosity of Jewish areas; and (c) the average SES of Jewish areas with intermediate levels of religiosity.

The distinction between Jewish and Arab/other residential neighborhoods was very clear in 1995, with a predominance of 95-100 percent of either type in each instance. Accordingly, 41 urban areas were classified as Jewish, with a total population of 422,000, and 13 as Arab and other, with a population of 169,000. We determined the degree of religiosity of Jewish areas according to the frequency of votes for religious parties in the Knesset (Israeli parliament) elections of 1996. This ranged from areas where nearly 90 percent of the vote was cast for religious parties (Agudat Israel, the Askenazic Haredi party; Shas, the Sephardic religious party; and Mafdal, the National Religious Party), to areas with barely 10 percent of the vote showing the same preferences. The average vote for religious parties in Jerusalem's Jewish areas was just above 40 percent in 1996. Of the 41 Jewish areas, a percentage of votes for religious parties of 70 percent or higher was recorded in 9, with a combined population of 124,000; this percentage ranged between 40 percent and 69.9 percent in 8 areas, with a population of 45,000; percentages between 11 percent and 39.9 percent were recorded in 20 areas, with a population of 226,000; and 4 areas had percentages below 11 percent, with a population of 27,000.

The large group of Jewish areas with intermediate voting for religious parties was further split into areas of higher and lower SES, based on indicators such as average size of dwellings, frequency of help

received from municipal social services, and voting preferences for non-religious political parties (another reasonable proxy for social status in the Israeli context). This subdivision of the 20 relevant areas resulted in 13 of lower SES, with a combined population of 171,000; and 7 of higher SES, with a population of 55,000.

Of the 13 Arab and other areas, 7 were predominantly Muslim, with a population of 128,000; 2 predominantly Christian, with a population of 7,000; and 4 mixed (though with a Muslim majority in each instance), with a population of 34,000. More than half of the Christians lived in mixed areas other than in the predominantly Christian areas located in Jerusalem's Old City.

Projection method and assumptions

Population estimates by area, sex and 5-year age groups were projected using the method of component-cohort-specific rates of change. Various combinations of assumptions concerning mortality, fertility, and geographical mobility were implemented. The initial assumption in the current set of projections is continuation of subpopulation-age-specific patterns as observed by the mid-1990s. Mortality levels were expected to decline, with an improvement in life expectancy at birth of approximately one year of life for every five calendar years. Alternative scenarios considered population development in the absence of migration, or rather the prevalence of zero migration balances, and a moderate reduction in fertility levels (18 percent by the period 2015-2020) (see below). In the resulting projections, assumptions concerning higher or lower migration and fertility levels were simultaneously implemented across the 8 subpopulations considered. A large number of further scenarios can be created by differently re-combining the various assumptions for each subpopulation.

Population projections may run into a possible discrepancy between projected figures and the actual physical capability of the city or any of its component areas. Such a discrepancy may be very significant, rendering the results obtained actually "impossible". In this respect, our projections aim at illustrating the potential direction of current demographic trends, regardless of physical constraints. The data projected do not constitute an actual planning scenario (e.g., Municipality of Jerusalem, 1992; Sidi et al., 1997) but rather a yardstick against which urban planning may develop. One of the objectives of planning may indeed be an attempt to modify the projected results of current demographic trends.

III. The Role Of Fertility In Jerusalem's Population

Determinants of fertility levels: a framework

Overall fertility levels and inter-group differentials are central to population growth and composition in Jerusalem. For example, around 1995 the Total Fertility Rate (TFR) in some of the city's most traditional neighborhoods was estimated at 8.1 children in Geulah, 8.3 in the Meah She'arim area, and 8.5 in the newer area of North Ramot. At the opposite end of lower fertility, TFR reached 1.9 in Beit Hakerem, 1.8 in Ramat Sharet, and 1.0 in French Hill. Although still seeking for a definitive explanation, levels of fertility in Israel and their relation to cultural and socioeconomic determinants have attracted scholarly attention (Bachi, 1976; Schmelz, 1989; Peritz, Baras, 1992; Friedlander, Feldmann, 1993; Anson, Meir, 1996). More generally, the chain of causal relations leading to the observed frequency of births is sufficiently known (van de Kaa, 1996; Pritchett, 1994). Given this background, it may be useful to briefly review some community related determinants of fertility in order to evaluate the recent trends in Jerusalem and the possibility of change in the future.

Explanatory variables of fertility can be organized in a five-tier sequence. First, proximate determinants (Boongarts, 1978)—the immediately preceding bio-demographic causal factors of fertility—are instrumental in affecting the chance of initiating a new pregnancy, and the chance of completing one with a live birth. Second, interventions to enhance or depress the effects of the proximate determinants actually operate as the dependent outcome of individual family growth strategies which synthesize household-level or micro-socioeconomic determinants (Spengler 1966)—the value-oriented desirability of children in general and of a child of specific parity in particular, the cost-related feasibility of childbearing and child rearing, and the availability to the household of relevant means, resources and tools.

The dilemmas and negotiations inherent in the potential conflicts between identity and sentiment, on the one hand, and economic rationality, on the other hand, are better evaluated and understood when individual household decisions are viewed in their community context—the third explanatory layer. Perceptions broadly shared with one's close environment tend to crucially influence individual family growth strategies and behaviors. The role of community influences is especially important in a sociocultural environment diverse such as Jerusalem's, and in this respect five groups of factors call for special attention:

Traditional culture and organization. This refers to religious and social norms concerning fertility and its proximate variables, as well as community frameworks and institutions established for implementing those norms. Traditional Judaism has an explicit pro-natal stance, and

so do, each in their own distinctive way, Islam and Christianity. In traditional Judaism, the principle goes together with definite prescriptions affecting each of fertility's proximate variables (DellaPergola, 1988). However, Jewish support for reproduction is defined in terms of certain minimal acceptable thresholds rather than of a maximum yield. Principles of purity, marital harmony and boundary maintenance may take precedence over the specific goal of family growth. In traditional Jewish societies the costly investment in the children's prolonged education takes high priority, but community investments in that same goal may reduce its cost to individual families. Community mechanisms of communication, social control and sanction may explain why the more religious individuals conform more strictly to the declared high fertility precepts of each religious group.

Minority/majority status. This refers in the first place to past situations of actual legal discrimination. More relevant to the contemporary experience are community-based subjective perceptions of dependence/dominance relative to the majority of society or other minorities within it. Such perceptions may affect the psychological propensity within a group to expand or restrain (Goldscheider, 1971; Rallu et al., 1997). Minorities may feel pressured to reduce their rate of natural growth in order to concentrate on the quality of children and overcome the disadvantage of possible discrimination. Minorities may also consciously use greater than average natural increase as a mechanism to increase their share of the total population. This may be the case for communities that feel their lifestyle is endangered, such as the Haredim in Jerusalem, or whose advocacy for political goals requires the support of numbers, such as the Palestinians in East Jerusalem (Steinberg, 1989).

Social class stratification. Occupational status and specialization imply significant differences in perceived interests and access to resources. Social class stratification tends to be related to strategies of family growth reflecting different perceptions of the role of children as potential providers or dependents (Lesthaeghe, Wilson, 1986). Social mobility of individuals within a subpopulation, or of the whole group relative to the rest of society may determine changes in demographic strategies and behaviors, other things being equal.

Information available. Knowledge may be acquired through formal education or through other channels. Regarding fertility related topics, particularly fertility control, awareness of available opportunities and understanding of their mode of operation may substantially affect actual behaviors and their outcome. In this respect, it would be a serious mistake to confuse religious traditionalism with lack of information. Traditionalism in contemporary societies no longer equates with repudiating of modernity—as possibly in the past—but rather with

choosing from modernity those elements compatible with or even supportive of traditional goals (Hammel, 1990).

Biological constraints. Inherited diseases, often in the past tied to strict community homogamy, and other health-related factors may affect fertility though probably losing importance in contemporary more open and heterogamic societies (Bonné-Tamir, Adam 1992).

National or collective policy interventions that may affect either or all of the proximate, household-level, and community-context determinants of fertility provide a fourth explanatory layer. While Israel's social policies do reflect some general concern with family formation and growth, the actual impact may in reality be moderate and mostly felt by specific subpopulations.

Direct state provisions. These are usually available to the whole population and include transfer payments to individual households in the form of family allowances for children below 18. The Israeli Social Security system offers comparatively benign provisions concerning the status of working women in the case of maternity leave. Relatively easy availability of child care and educational facilities is an added factor facilitating (or rather not preventing) family growth in Israel. On the other hand, the high cost of housing is the main constraint felt by families wishing to increase their number of children (Ziegler 1995).

Indirect state provisions. Especially significant at the community level, these include selective exemptions from compulsory military service. Such exemptions apply in Israel to Muslim and Christian Arabs (though not to the Druze community), as well as to the majority of the Haredi Jewish population. Military exemption facilitates the attainment of a lower age at marriage and consequently a longer exposure to the chance of childbearing. Moreover, transfer payments at the community level, in particular public financing of community-specific educational networks or housing projects may significantly reduce the given community's cost of children.

Non-governmental provisions. Similar institutional mechanisms may derive from the intervention of groups and agencies from Diasporas abroad, whether Jewish or Palestinian, or from other private sources of cultural and political support. The main effect on fertility of relevant services and subsidies provided is, again, a reduction of the cost of children.

A last explanatory layer concerns the continual flow of civilization expressed by political, socioeconomic, cultural and technological global change and sometimes referred to under the general definition of historical and societal modernization. Broad changes in societal context and mentalities may lead to significant transformations regarding the contents and boundaries of individual and community identities, economic patterns and standards of living, and demographic perceptions and performances (Inglehart, 1997; Lesthaeghe, Moors, 1995).

Interesting here are the more recent advances of technology. Whereas at an earlier stage scientific research greatly enhanced the ability to control and reduce fertility, more recent developments have focused on overcoming impairments to fecundity.

Given the complex and multi-level package of explanatory determinants, its overall effects are expectedly mixed. In a context like multicultural Jerusalem's, it is therefore reasonable to expect fertility changes to occur at a slow pace (a) because of the high resilience of the sociocultural components related to higher fertility, (b) because of possibly contradictory and compensatory trends among different subpopulations, and (c) because of compensatory trends within each subpopulation.

Fertility measures, levels and differentials

In the absence of detailed data from the 1995 census, we estimated fertility for the various Jerusalem subpopulations through an indirect method. First, for each geographical division we computed adjusted child-woman ratios (CWR)—a rough measure of fertility based on population age composition (number of children aged 0-4 divided by number of women aged 15-49). Next, we computed standard CWRs from model life-tables for populations with life expectancies equal to those estimated for the actual populations (Coale et al., 1983). According to model life-table assumptions in a stationary population at a growth rate of 0, a Net Reproduction Rate (NRR) equal to 1 corresponds to a TFR of 2.1. Comparing actual CWRs to model life-table CWRs provides a measure of the difference between actual fertility and the fertility expected under the hypothetical conditions of a model stationary population controlling for mortality (Bachi 1967). The results obtained—a multiplier or a de-multiplier of the standard 2.1 TFR—are evidently no more than an approximation, though a consistent one across subpopulations.

The TFR for the total of Jerusalem's Jewish areas in 1995 was estimated at 3.78, versus a national average of 2.53 for Jews in Israel; the TFR for Jerusalem's Arab and other parts was estimated at 4.90, versus a national Israeli average of 4.09 for Arabs and others, of which Muslims 4.69, and Christians 2.44 (Israel CBS, 1998b). The TFR estimated for the various Jerusalem subpopulations reached highest values of 6.37 in the more religiously oriented Jewish areas, and 5.29 in the Muslim areas, and lowest values of 1.44 in the least religiously oriented Jewish areas, and 2.79 in the Christian areas. These findings imply widely different rhythms of growth among the respective subpopulations.

IV. Jerusalem Migration Balance

Inter-city. Since the early 1980s, and more intensely since the early 1990s, Jerusalem displays a negative migration balance with other Israeli localities. During the mid-1990s, around 9-10,000 persons moved to Jerusalem annually from other places in Israel and about 15-16,000 left the city for other places resulting in a net loss of -5-6,000, nearly all from the Jewish areas. Over 80 percent of this internal migration deficit relocated within the Jerusalem District and the neighboring Judea and Samaria District (the jurisdiction for the Israeli inhabitants of the West Bank). Mobility patterns from the central city to suburban areas where housing tends to be less expensive are typical of most large metropolitan areas and are not especially related to the particular sociocultural, economic or political configuration of Jerusalem. Nonetheless, inter-city mobility significantly affects Jerusalem's population size and composition.

Of the negative inter-city migration balance of over 5,500 in 1995, about 30 percent came from the more religious Jewish areas that comprised 29 percent of Jerusalem's population. The share of the latter areas in the negative population balance reached 73 percent among movers aged 20-24, 38 percent among those aged 15-19, and 41 percent among children aged 0-4. Consequently, a considerable part of the reproductive potential of the more religious Jewish subpopulation was transferred elsewhere, though not at great geographic distance. Another 24 percent of net migrants came from the economically more established Jewish parts of the city comprising 17 percent of the Jewish population. Inter-city migration constituted a factor of aging for the Jewish population, as on the average emigrants net of immigrants were significantly younger than the resident population. As to the Arab and other parts of Jerusalem, the available data pointed to little or no movements out, while other evidence indicated continuing immigration, especially into the city's Muslim areas (Israel CBS, 1999). Jerusalem's Christian Arabs have long been losing weight (Bachi 1976).

Intra-city. Data for 1995 relating to about 31,000 intra-city residential changes show a main tendency to move from one location to another within the same type of neighborhood, according to our eight-fold typology. This pattern comprised 58 percent of all movers, 61 percent of those coming from the very religious Jewish areas of Jerusalem, 72 percent of those from areas with intermediate religious voting and lower SES, and 77 percent of those from Muslim areas. Intra-city moves determined net population gains in Jewish areas with intermediate religious voting and a lower SES. In 1995, these areas had a net gain of over 2,000 migrants, about one quarter of whom came from highly religious areas. All other types of neighborhood, Jewish as well as Arab and other, had negative intra-city migration balances. Intra-city

movement resulted in a tiny net transfer of 200 from the Arab to the Jewish areas.

It is not self-evident that these residential changes imply the expansion of the more religious population into less traditional neighborhoods. If this were true, the character of residential areas might shift from one cultural type to another, eventually determining a new citywide balance. People moving out of the more religious neighborhoods, however, may eventually adapt their lifestyle to that of their new places of residence. While the former process is apparently more visible, the latter has been more significant in historical perspective (Levy et al., 1993).

International. Throughout the 1980s Jerusalem absorbed approximately 2,500 new immigrants each year. This increased in 1990 and 1991 to about 14,000 a year (Hershkovitz et al., 1998), and subsequently settled at a yearly average of nearly 5,000 or 7 percent of the countrywide total immigrants—a lower figure than Jerusalem's share out of the total Israeli population. In recent years, Jewish households from the Former Soviet Union and comparatively more traditional Jews from North America and other western countries comprised the majority of new immigrants to Jerusalem. Many of these new immigrants settled in areas characterized by intermediate religious voting and lower SES.

V. Population Prospective, 1995-2020

Size and share of subpopulations

Table 2 summarizes the total population projected for the year 2020 according to the alternative hypotheses. Recalling that in 1995 Jerusalem's population was estimated at 591,400, of which 422,400 in Jewish areas (71.4 percent) and 169,000 in Arab and other parts (28.6 percent), according to the projections by 2020 the city total inhabitants might grow to a figure between 845,000 and 1,088,000. Of these, 487,000 to 707,000 would live in the Jewish parts of the city (57 percent to 65 percent), and 358,000 to 384,000 in the Arab and other parts (35 percent to 43 percent).

Jerusalem's various subpopulations are assumed to develop at different paces following the currently observed trends and the further assumptions for each model. The least decline in the share of Jews out of Jerusalem's total population would occur in the case of lack of migrations, with natural increase continuing at steady fertility levels (Model 1). Greatest decline would occur if there were no international migration, a continuing negative Jewish intra-city migration balance, and no change in fertility (Model 2). With regard to the share of the more religious parts of Jerusalem's Jewish population, it would be highest in the case of lack of migration with steady fertility levels (Model 1), and lowest in the case of a continuation of present trends in

Table 2. Summary of Jerusalem Population Projections, 1995-2020

Projection model	Type of area		Population in Jewish religious areas ^a as % of total in Jewish areas
	Total	Jewish Arab and other	
Base population 1995	591,400	422,400	29.4
Population in 2020:			
1. Natural increase only, steady fertility	1,088,000	707,000	42.3
2. With internal migration, steady fertility	896,000	512,000	35.7
3. With internal migration, declining fertility	845,000	487,000	35.3
4. With international migration, steady fertility	1,002,000	618,000	32.8
5. With international migration, declining fertility	947,000	589,000	32.3
Summary of effects (difference):			
Internal migration (Models 2 - 1)	-192,000	-195,000	+3,000
Internal migration (Models 4 - 2)	+106,000	+106,000	0
Fertility decline (Models 5 - 4)	-55,000	-29,000	-26,000

a. Religious voting >70%.

internal and international migrations accompanied by fertility decline (Model 5).

The bottom part of Table 2 summarizes the impact of each of the different components of population change according to the various assumptions in the five projections. Since these projections extrapolate over time the known effects of current trends, the balance of inter-city migration would expectedly continue to be negative and significantly subtract inhabitants from Jerusalem. A net migration loss of 195,000 people is projected over the period 1995-2020 from Jerusalem's Jewish areas. On the other hand, international migration might contribute an additional 106,000 inhabitants in the Jewish areas. The impact of a decline in fertility (assumed to be moderate) might cause a reduction of 55,000 people, split nearly equally between the Jewish and the Arab and other parts of the city.

Model 5, incorporating more assumptions, appears as a more likely scenario than others. According to that particular scenario, the changing weight of Jerusalem's different subpopulations may significantly alter the overall profile of the city. As already noted, population is expected to grow faster in Jerusalem's Arab and other areas than in the Jewish areas. High fertility among Jerusalem's Muslim population and the negative inter-city migration balance among Jews are the main determinants of these expected changes. Of the total population increase of 356,000 people up to 2020, over 53 percent are bound to occur in the Arab and other city parts (see Table 3).

Within the Jewish population, the major increase in absolute terms is projected in neighborhoods with intermediate religious voting and lower SES. Their share is also expected to increase from 40-41 percent to 47 percent of the total population of Jewish areas. Increase in the population of the more religious areas of the city is expected too but to a lesser extent since, as noted, a significant part of the high natural increase of this subpopulation is drawn out of Jerusalem by inter-city migration. The share of these areas might increase from 29 percent in 1995 to 32 percent in 2020. Decline is expected in the share of Jewish population in the strongly though not extremely religious parts of the city—with a voting for religious parties of 40-70 percent. It is important to note the prospective decline, both in absolute and relative terms, of the more economically established subpopulations associated with intermediate or low voting for religious parties. If present demographic trends continue, the latter two categories combined are expected to lose 14,000 people while their joint share of the Jewish population would diminish from 19 percent in 1995 to 11 percent in 2020.

Table 3. Jerusalem Population Projections by Type of Area, 1995-2020
(Model 5: Declining Fertility, Continuing Internal and International Migration)

Type of area	Areas	TFR	1995		2020		Difference	
			Population	%	Population	%	Number	%
Total	54	4.10	591,000	100.0	947,000	100.0	+356,000	100.0
Jewish	41	3.78	422,000	71.4	589,000	62.2	+167,000	46.9
Arab and other	13	4.90	169,000	28.6	358,000	37.8	+189,000	53.1
Jewish, total	41	3.78	422,000	100.0	589,000	100.0	+167,000	100.0
>70% religious vote	9	6.37	124,000	29.4	190,000	32.3	+66,000	39.5
40-69.9% rel.	8	4.44	45,000	10.7	53,000	9.0	+8,000	4.8
11-39.9% rel. v., low SES	13	2.51	171,000	40.5	278,000	47.2	+107,000	64.1
11-39.9% rel. v., high SES	7	2.51	55,000	13.0	45,000	7.6	-10,000	-6.0
<11% religious vote	4	1.44	27,000	6.4	23,000	3.9	-4,000	-2.4
Arab and other, total	13	4.90	169,000	100.0	358,000	100.0	+189,000	100.0
Muslim	7	5.29	128,000	75.8	286,000	79.9	+158,000	83.6
Christian	2	2.79	7,000	4.1	9,000	2.5	+2,000	1.0
Mixed	4	3.90	34,000	20.1	63,000	17.6	+29,000	15.4

Table 4. Jerusalem Population Projections by Age Groups and Types of Area, 1995-2020
(Model 5: Declining Fertility, Continuing Internal and International Migration)

Age	Total population distribution		Population in Jewish areas as % of total in age-group		Population in religious ^a areas as % of age-group total in Jewish areas		Total population growth 1995-2020
	1995	2020	1995	2020	1995	2020	
Total no.	591,000	947,000					356,000
Total %	100.0	100.0	71.4	62.2	29.4	32.3	100.0
0-4	13.3	11.3	63.8	53.8	44.0	46.9	8.1
5-9	11.6	10.5	68.3	55.7	42.4	45.3	8.7
10-14	10.2	9.6	67.2	55.8	37.7	42.5	8.7
15-19	8.9	9.1	65.3	56.4	32.9	40.3	9.3
20-24	8.2	8.3	66.7	56.1	23.3	32.1	8.6
25-44	25.9	25.7	73.2	64.0	24.3	29.1	25.4
45-64	13.9	16.3	79.4	69.2	18.9	22.3	20.4
65-74	4.7	5.5	84.9	78.6	19.2	19.8	6.8
75+	3.3	3.6	87.6	83.4	21.7	17.9	4.0

a. Religious voting >70%.

In Jerusalem's Arab and other parts, the Muslim predominance is bound to increase even more than at present relative to the Christian and religiously mixed areas.

Age composition

Jerusalem's population composition by age is comparatively young. In 1995, about 35 percent of the total population were aged 0-14, versus 8 percent aged 65 and over. A moderate process of aging is expected to occur by 2020, when (according to Model 5) the proportion at ages 0-14 would decline to 31 percent and that of the elderly would increase to 9 percent. Table 4 illustrates the expected evolution in the age composition of Jerusalem's total population, and outlines the changing share in Jewish areas out of the total in each age group, as well as the share of Jews in highly religious areas out of the total population in Jewish areas.

The proportion in Jewish areas tends to decrease steadily with the passage from older to younger age groups. In 1995 it represented 88 percent at age 75 and over, and gradually decreased to 64 percent of the 0-4 age group. These structural differences reflect unequal mortality in the past, different fertility rates among Jews, Arabs and others, as well as inter-city migration especially for young adults and their children. The age composition of new immigrants from abroad is older on average than that of the receiving population though it is significantly younger than that of Jewish communities in the countries of origin (DellaPergola, 1999). In 2020, stronger variation appears in the percentages living in Jewish areas out of the total population in each age group. This share might approach 83 percent of the elderly above 75, but would shrink to 56 percent of the 5-24 age group, and 54 percent of children under 5.

With regard to the percentage of population in the more intensely religious areas out of the total Jewish population, in 1995 it constituted 44 percent of the 0-4 age group, and it gradually decreased with age to 22 percent of the Jewish population aged 75 and over. Moderate changes are projected to 2020, with some further increase in the weight of the more religious sections out of total Jewish children and younger adults. The proportion of the more religious section of the total Jewish population would be 45-47 percent below age 10, 40-42 percent at ages 10-19, around 30 percent at ages 20-44, and would decline further to a minimum of 18 percent above age 75.

The amount of population growth expected in Jerusalem by 2020 and its age distribution is shown in the column furthest to the right in Table 4. It would consist of 356,000 people, including 91,000 children aged below 15, 64,000 aged 15-24, 90,000 aged 25-44, 72,000 aged 45-64, and 39,000 aged 65 and over. Percent-wise, the additional population expected in Jerusalem will be distributed quite differently

than the population of 1995. Relative to the 1995 baseline, by the year 2020 the city's total population might grow by 60 percent. However, sharp variation in the pace of growth characterizes different age groups within each subpopulation. The overall increase is expected to be greatest at ages 45-64 and 65-74 (88 percent) and smallest at age 0-4 (36 percent), with noteworthy inter-group variation. In the highly religious Jewish areas, significant population increases are expected over the whole labor force age-span. Among the Jewish areas with lower religious voting and better SES, actual population decreases are expected at most ages, excluding the elderly, with prospective declines of over 40 percent among children and youth in Jewish areas with very low religious voting. The most extreme rates of increase are projected in Jerusalem's Muslim areas whose population is expected to more than double above age 5, with peaks of over 200 percent growth at ages 45-64 and 65-74. These data on the prospective transformations of Jerusalem's population by age carry strong implications for the types, amount and location of investments needed in the fields of education, employment, housing, health services, and care for the elderly.

VI. Discussion And Conclusions

From the demographic data and scenarios outlined in this paper, it is quite clear that the total population of Jerusalem is bound to increase substantially in future decades. At the same time, the many imponderables—political, economic, social—concerning the future of Jerusalem render the demographic scenarios presented here as only part of a broader range of possible developments (Morley, Schachar 1986). Notably, the question of the definitive international status of Jerusalem has been deferred to the final stage of negotiations between the Government of Israel and the Palestinian Authority.

Population trends are tightly correlated with employment and housing opportunities existing locally, with the offer and quality of public services, and with the general character of the metropolitan area centered in Jerusalem. The broader Jerusalem metropolitan area was not discussed in this paper, but it should be noted that Jerusalem based institutions provide employment and educational, health and other services to a much larger population than the municipal residents. However the two fundamental criteria by which the future of Jerusalem will be determined concern the cultural balance between different subpopulations that coexist in the city, and the quality of life in relation to the physical environment. Ideally in the unique ethnic, social and cultural situation outlined here—and more generally in any major city characterized by significant internal diversity—population size and composition would reflect the harmonious weighing and balancing of different sociodemographic forces. Special attention should be given to the equilibrium between population and physical

constraints on the one hand, and preservation of the existing equilibrium between the various subpopulations on the other hand.

The different growth rates of the various subpopulations, each related to a particular set of determinants, actually tend to produce significant departures from the current sociocultural and ecological equilibrium, which may in turn lead to further departures from a preferred course of sociodemographic development. In particular, enhanced growth of one particular subpopulation, and the consequent relative shrinking of another one, might induce members of the latter to feel endangered, through a complex interplay of perceptions and realities. This has stimulated in the past, as it might in the future, selective emigration from the city, thus further affecting the shares of particular subpopulations among the total. One important consequence of these population movements actually observed in the past and further expected according to our projections, is a lowering of the average socioeconomic status of Jerusalem's inhabitants.

The expected decline in the weight of Jewish areas of the overall population, especially among the child population, calls for careful consideration. In the much longer term, the population projections presented here suggest a possible shift of the majority of population from Jerusalem's Jewish parts to the Arab and other parts. On the other hand, perhaps contrary to diffuse public perceptions, the projections point to only moderate increase in the weight of the highly religious sections of the Jewish population in relation to the total Jewish population in 2020 as against the situation in 1995.

Regarding the ecological constraints, Jerusalem's maximum carrying capacity has been evaluated at about 900,000 inhabitants (within 1993 borders: Turner et al., 1997). Such an evaluation does not really reflect a physical capability but rather an optimum use of private and public built-up space for residential, industrial, commercial, cultural and institutional needs, and open spaces. That optimum estimate reflects among other things cultural standards about population density that may not be the same in different regions of the world. The total population figures obtained in at least some of the projections illustrated in this paper surpass that optimal threshold. In particular, Model 5—the more complex and in our view the more likely projection—is nearly 50,000 higher than the suggested optimal maximum. According to quite unrealistic Model 1, the mere continuation of the current pace of natural increase for each subpopulation would lead to exceeding the stated ecological optimum by nearly 200,000 people.

The problem is actually more acute considering that some areas of Jerusalem still offer ample space for population growth, while other areas will very soon, or already do face the upper limit of their opportunities for demographic expansion. Not unexpectedly, the parts

of Jerusalem approaching population saturation are those with the highest rates of growth—Jewish areas with more intensely religious population, Jewish areas with intermediate levels of religious voting and lower SES, and predominantly Muslim areas. Among future scenarios to be taken into account, the possibility exists that a certain subpopulation whose territorial resources have dried up would try to expand its presence into areas that naturally represent future areas of expansion for a different subpopulation. Under the present configuration of a segmented population, this may be a determinant of possible future tensions unless a deeper and mutual process of acculturation, integration and perhaps even assimilation takes place across Jerusalem's various subpopulations. But such a process appears for now either unrealistic or, at least, the object for steady policies at the municipal and national level.

As differential fertility continues to be one of the main causes for differential growth, it is natural to ask how existing gaps can be significantly reduced leading in the longer run the various subpopulations to more balanced rates of growth. The answer seems to be intriguingly undetermined. A necessary, though perhaps insufficient factor would be the toning down of political and cultural tensions between the main subpopulations involved in the Jerusalem mosaic, particularly between Israelis and Palestinians and between the Haredi minority and the majority of the Jewish population. Less militancy in the public and community sphere and greater concentration on the promotion of interests in the private and individual sphere might stimulate a transition and convergence toward average, though in any case not very low, family size. It can be hypothesized that normalization would bring about fewer tensions and, as a consequence of less community militancy, lower fertility among the Muslims and the Haredim in particular. On the other hand it can be reasonably argued that following political normalization and the ensuing transferal of resources from national security to private needs, the average standard of living and household income would improve. As long as the strongly ideological framework typical of high fertility subpopulations prevails, augmented economic family resources might lead, at least initially, to better opportunities to cover the cost of child rearing, hence to a fertility increase. Nonetheless, the defusing of political and cultural tensions still seems a prerequisite for the cooling down of demographic trends.

In demographic perspective, a further significant consequence of political normalization, and of the enhanced freedom of movement and access it would ensure, might be a greater propensity among the population of the Arab and other parts of Jerusalem to seek a better quality of life out of Jerusalem city. Some movement of Palestinians might develop from high density housing in Jerusalem's Old City and

eastern parts toward the suburban belt, as has been the established pattern among the Jewish population since the 1980s. The emergence of such a trend would be both conducive to better living conditions, and to a more balanced growth of Jerusalem's various subpopulations.

Clearly, a prerequisite for such demographic transitions is the solution or at least normalization of the major issues of contention in the Middle East conflict, namely the establishment of mutually agreed and formally sanctioned patterns in the relationship between Israel and the Palestinians in Jerusalem and around it. The uneasy relationships between different constituencies within the Jewish population also call for arbitration to regulate mutual relations in a collegial mode. These are obviously central issues for national and not only for municipal strategic policies.

Population projections, successful or not at depicting the reality in Jerusalem in the year 2020, are useful in that they expose the overwhelming challenges to urban planning and public policy. The city's overall vested interest seems to be peace and stability. How to make the complex of value-laden and more pragmatic considerations part of a coherent and functioning program will be a central part of the future Jerusalem demographic equation. Jerusalem planners should seize the opportunity to create a model example of a truly multicultural society and to distance themselves from what might otherwise turn into a serious planning and policy concern.

NOTES

* The author is especially indebted to Dr. Uzi Rebhun who coordinated the project and prepared most of the population projections. Thanks are due to the many people who participated at various stages of consulting and administration in this project: Uri Aviram, Israel Bar-Gil, Moni Ben Ari, Uri Ben Asher, Hagit Bezalel, David Cassuto, Maya Choshen, Ra'anana Dinur, Avraham Diskin, Menahem Friedman, Chaya Gamshee, Shalom Goldstein, Amiram Gonen, Arieh Hecht, Avi Heifetz, Sarah Hershkovitz, Ya'akov Kop, Yosef Landau, Judith Laster, Nehemiah Levzion, Nafaz Nazel, Sarit Rafiah, Paul Ritterband, Avino'am Rosenak, Nissim Salomon, Joe Savitzky, Laura Schneider, Avraham Schwartz, Dvora Shalev, Alice Shalvi, Nadim Sheeban, Moshe Sicron, Nira Sidi, Zion Turgeman, Mike Turner, Batia Vashitz, Michael Weil, Mahfouz Zahir. Judith Even edited the English text. Leah DellaPergola provided graphic help. Responsibility for the contents of this paper rests with the author.

REFERENCES

- Anson, J., Meir, A. (1996). "Religiosity, Nationalism and Fertility in Israel." *European Journal of Population*. 12 (1): 1-25.
- Bachi, R. (1967). *An Introduction to Demography, Vol. 3*, compiled by J. Yam. Jerusalem, Akademon, 465-466.
- _____. (1976). *The Population of Israel. Jerusalem, CICRED Series, 1974 World Population Year*. 127-136.
- Bonné-Tamir, B., Adam, A., eds. (1992). *Genetic Diversity Among Jews: Disease Markers at the DNA Level*. New York, NY: Oxford University Press.
- Boongarts, J. (1978). "A Framework for Analyzing the Proximate Determinants of Fertility." *Population and Development Review*. 4 (1): 105-133.
- Choshen, M., Shahar N., eds. (1998). *Statistical Yearbook of Jerusalem*, No. 15, 1997. Jerusalem, Municipality of Jerusalem, The Jerusalem Institute for Israel Studies.
- Coale, A., Demeny, P., Vaughan, B. (1983). *Regional Model Life Tables and Stable Populations*. 2nd edition, New York, NY: Academic Press.
- DellaPergola, S. (1988). "Some Effects of Religion on Population Trends: The Case of the Jews," in P. Deloos (ed.) *Religions and Population Policies*, Pro Mundi Vita Studies, 5, 40-48.
- _____. (1999). *World Jewry Beyond 2000: The Demographic Prospects*. Oxford, Oxford Centre for Hebrew and Jewish Studies, Occasional Papers 2.
- DellaPergola, S., Rebhun, U. (1999). *Summary of Jerusalem Population Projections 1995-2020*. Jerusalem Municipality, Jerusalem Strategic Masterplan, Demographic-Social Team, Jerusalem, 97 + appendices (Hebrew).
- Friedlander, D., Feldmann, C. (1993). "The Modern Shift to Below-Replacement Fertility: Has Israel's Population Joined the Process?" *Population Studies*. 47 (2): 295-306.

- Goldscheider, C. (1971). *Population, Modernization and Social Structure*. Boston, MA: Little, Brown Pub..
- Hammel, E.A. (1990), "A Theory of Culture for Demography." *Population and Development Review*. 16 (1): 455-481.
- Hershkovitz, S., Fairmont-Rafiah, S., Oval, M. (1998). *Jerusalem: Urban Characteristics, Major Trends in the City's Development and Municipal Services*. Jerusalem, The Municipality of Jerusalem, Division for Strategic Planning and Research.
- Inglehart, R. (1997). *Modernization and Postmodernization: Cultural, Economic and Political Change in 43 Societies*. Princeton, NJ: Princeton University Press.
- Israel CBS (1998a). Statistical Abstract of Israel, No. 49. Jerusalem.
- Israel CBS (1998b). Population and Vital Statistics 1997. Jerusalem.
- Israel CBS (1999). Census of Population and Housing 1995. Jerusalem.
- Lapidoth, R., Hirsch, M. eds. (1994). *The Jerusalem Question and its Resolution: Selected Documents*. Dordrecht/Boston/London, Martinus Nijhoff.
- Lesthaeghe, R., Moors, G. (1995). "Is there a New Conservatism that Will Bring Back the Old Family? Ideational Trends and the Stages of Family Formation in Germany, France, Belgium and the Netherlands, 1981-1990." *Evolution or Revolution in European Population*, European Population Conference - 1995, Vol. 1. Milano, FrancoAngeli, 225-266.
- Lesthaeghe, R., Wilson, C. (1986). "Modes of Production, Secularization and the Pace of Fertility," in A.J. Coale, S. Cotts Watkins (eds.) *The Decline of Fertility in Europe*. Princeton, NJ: Princeton University Press.
- Levy, S., Levinsohn, H., Katz, E. (1993). *Beliefs, Observances and Social Interaction Among Israeli Jews*. Jerusalem, The Louis Guttman Israel Institute of Applied Social Research.
- Lunn, D.J., Simpson, S.N., Diamond, I., Middleton, L. (1998). "The Accuracy of Age-specific Population Estimates for Small Areas in Britain." *Population Studies*. 52 (3): 327-344.

- Morley, D., Shachar, A., eds. (1986). *Planning in Turbulence*. Jerusalem: The Magnes Press.
- Municipality of Jerusalem, Ministry of Transport (1992). *Jerusalem Urban Projections 1995, 2000, 2010*, by C. Feldmann, D. Friedlander. Jerusalem Area Transportation Masterplan.
- Palestinian Central Bureau of Statistics (1997). *The Demographic Survey in the West Bank and Gaza Strip*, Final Report. Ramallah.
- Palestinian Central Bureau of Statistics (1998). *Labor Force Survey*, Annual Report: 1996. Ramallah.
- Peritz, E., Baras, M., eds. (1992). *Studies in the Fertility of Israel*. Jerusalem, The Hebrew University, Jewish Population Studies, No. 27.
- Pritchett, L.H. (1994). "Desired Fertility and the Impact of Population Policies." *Population and Development Review*. 20 (1): 1-55.
- Rallu, J.L., Courbage, Y., PichÉ, V., eds. (1997). *Old and New Minorities*. Paris, John Libbey-INED.
- Schmelz, U.O. (1973). "The Evolution of Jerusalem's Population." *Urban Geography of Jerusalem* (Companion Volume to the Atlas of Jerusalem), Jerusalem, 53-75.
- _____. (1987a). *Modern Jerusalem's Demographic Evolution*. Jerusalem. The Hebrew University, Institute of Contemporary Jewry and the Jerusalem Institute for Israel Studies.
- _____. (1987b). "The Population of Reunited Jerusalem, 1967-1985." *American Jewish Year Book* 1987, 39-113.
- _____. (1989). "Religiosity and Fertility among the Jews of Jerusalem," in U.O. Schmelz, S. DellaPergola (c.) *Papers in Jewish Demography 1985*, Jerusalem, The Hebrew University, The Institute of Contemporary Jewry, 157- 185.
- _____. (1994). "The Jewish Population in Jerusalem, 1949-1967" in A. Brali (ed.) *Divided Jerusalem, 1948-1967*, Jerusalem, Yad Izhak Ben Zvi, 133-165 (Hebrew).

- Sidi, N., Kuhn, C., Ben Asher, U., Etlinger, M., Segal, Z., Korot, B. (1997). *Policy for Jerusalem Development, 1997-2005*. Jerusalem, Municipality of Jerusalem, Division for City Planning, Department for Planning Policy.
- van de Kaa, D.J. (1996). "Anchored Narratives: The Story and Findings of Half a Century of Research into the Determinants of Fertility." *Population Studies*. 50 (3): 389-432.
- Spengler, J.J. (1966). "Values and Fertility Analysis." *Demography*. 3 (1): 109-130.
- Steinberg, M. (1989). "The Demographic Dimension of the Struggle With Israel As Seen by the PLO." *The Jerusalem Journal of International Relations*. 11 (4): 27-51.
- Turner, M. et al. (1997). *Data on Population and Housing Capability*. Jerusalem Municipality, Jerusalem Strategic Masterplan, Physical Planning Team (Hebrew).
- Ziegler, I. (1995). *Family Growth in Israel and the 'Critical Child'*. Jerusalem, The Hebrew University, Unpublished Ph.D. dissertation.