Contextual and individual effects behind fertility change in the West Bank and Gaza Strip

PAA 2015: April 30 - May 2, San Diego, CA

Anaïs SIMARD-GENDRON and Simona BIGNAMI [1]
anais.simard-gendron@umontreal.ca

Even though the fertility transition in the West Bank and Gaza Strip is well under way, it is clear that the classical theory of the demographic transition alone cannot explain the ongoing high demand for children in the modern yet conflicting context of the Palestinian territories. Individual-level variables have always been the main focus of studies on Palestinian fertility. However, the role of contextual variables is of central importance to best capture the mechanisms of fertility change in the region. To better understand the fertility behaviour of Palestinian women over time, we use the most recent retrospective data available from the Demographic and Health survey conducted by the Palestinian Central Bureau of Statistics in 2004 by modeling a multilevel discrete-time logistic regression on the birth histories of ever-married women aged 15-49 at the time of the survey. Regional characteristics representing the proportion of Jewish settlers, the status of women, and infant mortality are the three main contextual dimensions considered in this study. We argue that the status of women, especially through higher education, is the main factor behind the decline of Palestinian fertility, especially among older women. The decline in infant mortality only has a slightly negative impact on fertility. Finally, the presence of Jewish settlers contributes to decrease Palestinian fertility as regions with a higher proportion of settlers had a significantly lower fertility.

1 Introduction

The literature on fertility in Israel has benefited considerably from various comparative studies. In Israel, maintaining fertility well above replacement level despite a relatively high degree of social development and strong economy is an astonishing phenomenon in the field of social sciences. For that matter the high fertility of this heterogeneous population has been extensively studied (Okun (1997); Goldscheider and Friedlander (1974); Friedlander et al. (2010)). The fertility of the main minority group, the Israeli Palestinians has also been documented (Stecklov and Nahmias (2007); Schellekens and Eisenbach (2010); Bystrov (2012)). On the other hand, the literature on the Palestinian territories is less abundant. Although there is a fair number of articles that describe the fertility behaviour of the Palestinian population of the West Bank and Gaza Strip (Khawaja (2000); Khawaja et al. (2009); Courbage (2006)), there is no clear explanation for their high fertility or the regional differences. In addition to individual characteristics, structural factors such as the presence of Jewish settlements, child mortality, and the status of women come into play in explaining childbearing behaviours. The role of these factors has not yet been fully examined.

Figure 1: Evolution of Palestinian fertility in Israel, the West Bank, and Gaza Strip, 1983-2011

Sources: ICBS and PCBS
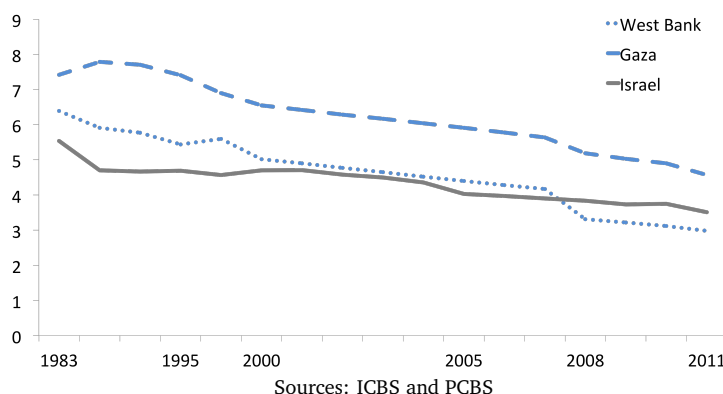
As shown in Figure 1, Palestinian fertility has been constantly decreasing over the past 30 years in both the West Bank and Gaza strip at a similar pace, but fertility is still higher in Gaza. The TFR dropped from 6.2 children per woman in 1990-1994 to 4.6 in 2000-2003 (Khawaja et al., 2009), and to 4.1 in 2008-2009 (PCBS,

---

[1] Département de démographie, Université de Montréal

2012). Despite such a global reduction, there are major differences between the West Bank and Gaza Strip. While the former experienced a constant decrease, the TFR in the latter stalled for much of the 1980's which resulted in a much higher level today in Gaza.

Many studies highlighted the role of the political context as a trigger to anomalous fertility dynamics (Randall and Khawaja (2006); Fargues (2000); Courbage (1999)). Such a context affects a whole set of socioeconomic and demographic factors that impact on individual childbearing decisions. It is also very likely that other higher-order variables such as the proportion of women in the workforce, the percentage of educated women, or the presence of Jewish settlers also have a role in maintaining high fertility levels. The challenge is then to formulate a model that captures all determinants of fertility change and to test it with appropriate data.

2   Fertility in the West Bank and Gaza Strip

In the Palestinian patriarchal family structure large family sizes have always been valued and their high fertility is seen as a threat to Israel's Jewish numerical superiority (Zureik, 2003). For that matter, a lot has been said about the "exceptionally" high fertility of Palestinians. Despite that all conditions are met for a successful and rapid fertility decline (low infant mortality rate, high urbanization, high female education, contraceptive use, etc.) they still have one of the highest fertility in the Arab world (Fargues, 2000).

Both regions are different and at different stages of the demographic transition. The "native" population in Gaza is much lower than in the West Bank as there are many more refugees. The multiple origins of the inhabitants of Gaza may in part explain the demographic specificity of this region. The West Bank also has a much lower population density (230 inhabitants per square kilometre and 2,100 in Gaza) (Khawaja, 2000) while Gaza is one of the most densely populated areas of the world. Furthermore, since 2007 the two regions are headed by two very different political regimes who partake in an ongoing ideational conflict: the Hamas in Gaza and the Fatah in the West Bank. As this change is recent, it may be too early to determine whether or not it has an impact on fertility-related behaviours.

The Palestinian fertility decline was mostly achieved through changes in contraceptive use and attitudes towards nuptially (Khawaja et al., 2009). The contraceptive prevalence is much higher in the West Bank and seems to appeal more to older women, which might imply a desire to limit family size once the ideal number of children is reached. There is a growing number of women who remain single, especially in the West Bank. Starting in 1995, the proportion of never-married women increased up to age 30-34, which could be partly explained by the rising cost of marriage during a prolonged period of economic instability. Among married couples there is however little change to the desired fertility (Khawaja, 2000).

Fertility is the highest among women aged 20-29 but overall fertility declined among all age groups in both regions, especially among older age groups. The fertility differential between more and less educated women is very small, especially in Gaza. Indeed, more educated women in Gaza had slightly less children than other women but still had a TFR of 5 children per woman in 2000-2003 which is very high compared to the West Bank (3.5) and by international standards (Khawaja et al., 2009).

Khawaja et al. (2009) argue that the classical theory of demographic transition cannot explain the continued strong demand for children in the modern yet conflicted context of Gaza or the differences with the West Bank as the usual predictors of fertility do not seem to be able to explain the dynamics in the region. Significant improvements to reduce infant mortality, reducing illiteracy and increasing income, among other factors, have had a minor impact on fertility (Courbage, 1999). We must look away from the classical theories of fertility transition and find new theories that better suit the complex dynamics of the region that take into consideration the relationship between community conditions and individual behaviour.

3   Objective, background, and hypotheses

The aim of this paper is to analyze the main drivers of fertility in the Palestinians territories, accounting for individual and contextual effects. More precisely, we ask ourselves what factors are associated with the probability of giving birth? To get a better understanding of the situation an analysis including higher-order predictors is necessary. For that matter, we investigate how much of the individual variations in fertility are due to variations in social context, net of individual characteristics. To do so, a multilevel discrete-time logistic regression model is used to disentangle the individual and contextual effects that come into play.

Palestinian children and women are among the most educated in the Arab world and mass education is often perceived as a key determinant of fertility decline. However no social or economic benefits emerged from the increasing enrolment in school because access to the labor market is very limited. Also, a decline in infant mortality is often accompanied by a reduction in fertility as parents, irrespective of background, will compensate for higher infant mortality with more births (Ying, 1992). In the Palestinian territories, infant mortality rate is among the lowest in the Arab world. The population is predominantly urban, especially in Gaza. Characteristics associated with urban living and life styles initiate and promote a desire for smaller families which leads to a reduction in fertility (Hank, 2002). Finally, the same contraceptive prevalence is observed in the Palestinian territories as in neighbouring countries but there is a smaller gap between actual and desired fertility. None of these seems to have had a significant impact in lowering Palestinian fertility near replacement level.

Islam's pronatalist attitude supports conditions favourable to higher fertility such as universal marriage and positive values conferred on marital relations is often brought up (Courbage, 1992) for a better explanation of high fertility. It is also frequently associated with nationalism as Palestinian fertility tends to increase in the aftermath of a conflict, especially among the more educated, supposedly the most politically conscious (Courbage, 1999). In a warlike environment having many children can be considered a long-term security when being especially vulnerable to death (Randall, 2005). Consequently, the political fertility thesis according to which the persistence of high fertility is a result of ideological motives conveyed by political leaders is often cited in regards to Palestinian fertility. The conflict caused a change in the ideals associated with fertility and provoked a "war of cradles" (Courbage, 1995). A concrete and direct evidence for this thesis is however lacking (Khawaja et al., 2009). Indeed the observed fertility decline could reveal a divergence between individual and societal values, as Palestinian couples have to choose between the future of their children and the national cause (Courbage, 2006).

Conflict can lead to a freeze of demographic behaviors. Randall (2005) proposed a conceptual framework that highlights its impacts. The first phase, *disorder* corresponds to the beginning of the crisis where massive movements of people and the first reactions to a changing environment can be observed. The second phase, *limbo* is when the conflict is well established and people have learned to live in this situation but the future remains uncertain. Refugees are not yet able to rebuild their lives but are no longer in immediate danger. This period may be short-lived or as long as several years. Finally, a *new order* is established and reconstruction can begin. Palestinians have been *in limbo* for several decades which causes uncertainty and prevents the completion of their fertility transition.

According to the demand for labor theory, high levels of fertility are the result of an expected future demand for waged labor force in the Israeli labor market (Khawaja, 2000). Major changes in the Palestinian labor include the abandonment of the agricultural economy caused by the entry of Palestinians in the Israeli labor market, the loss of agricultural lands, and the Israeli control of water resources. However, since the second *Intifada*, the Israeli job market has completely closed to Palestinians, causing financial insecurity, some of them having to make professional migrations to the Gulf countries. Palestinians who did not migrate can receive funds from family members working abroad alleviating the cost of childbearing (Fargues, 2000).

One of the most commonly used theories in the field of fertility differentials is the minority group status hypothesis. The effect of being affiliated with a religious or ethnic group will be different depending on whether this group represents a major subgroup or not. Minority groups tend to have higher fertility rates than the majority group to ensure their survival in the community. They put more emphasis on aspects of family life that lead to procreation or reduced use of contraception (Morgan et al., 2002). Randall and Khawaja (2006) extended this theory to Palestinians as describing them not by being a "minority within a nation state, but a minority who perceive themselves to be occupied and oppressed by a nation state".

If fertility is deeply rooted in strong cultural, religious, or political beliefs, the fertility reduction is less likely to happen in a context of struggle even though the economic pressure is strong. Based on previous research, we expect that the minority group status as described by Randall and Khawaja (2006) plays a role in explaining the high fertility of Palestinians. Being surrounded by a higher number of Jewish settlements should have a positive impact on Palestinian fertility as they are in direct competition. Also, being involved in a prolonged conflict can result in pro-natalism mainly due to biosocial, psychological and socio-economic factors. We expect that the high fertility of the Palestinians living in the Occupied Palestinian territories is partially due to the permanent state of belligerence and its consequences on a contextual level and that the effect of standard individual determinants of fertility decline are absorbed by the wider political context. It is also expected that governorates with a higher proportion of highly educated women will have a lower fertility as educated women

with better knowledge of fertility control not only influence their peers but also other with less education. For that matter, education could be a key factor at both the individual and contextual levels.

4 DATA AND VARIABLES

4.1 DATA

To shed the light on fertility behaviour in the Palestinian territories, retrospective survey data offers much information about various in-depth subjects. The Palestinian *Demographic and Health Survey* of 2004 used stratified random samples drawn from the 1997 Palestinian census. It includes data on 5,799 households and 4,972 ever-married women and assures a complete coverage of all 16 governorates and of individuals of all age groups. Some contextual variables linked to this database come from indicators provided by the Palestinian Central Bureau of Statistics (PCBS). The survey includes a series of question regarding socioeconomic status, the composition of the household, use of family planning, prenatal care, and desires regarding family size.

Because fertility is observed almost exclusively within marriage (Randall and Khawaja, 2006) and to further limit issues related to joint custody of children and women having children living elsewhere, we have limited our sample to currently married women of reproductive age.

Figure 2: Entry (marriage) and exit (age) of Palestinian women in the observation period
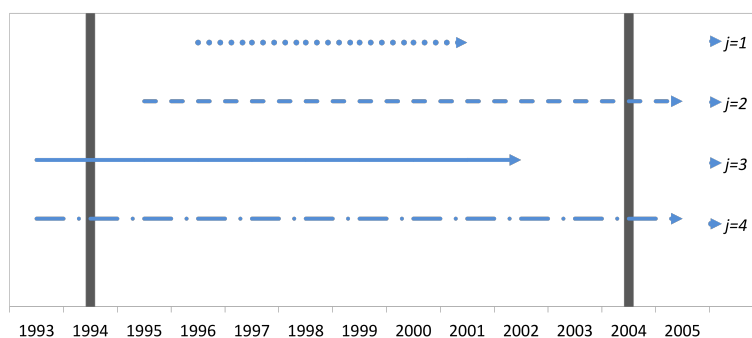
The final sample for the analysis consists of 2,204 women observed in the past 10 years prior to the survey or from the year of their marriage if it occurred after 1994 (the observation period is from June 1994 to June 2004). Because each woman is allowed to contribute multiple observations, this leads to a total 13,573 individual records of women living in the 16 Palestinian governorates. The observation period thus begins once a woman gets married or at the beginning of the study period, if the marriage occurred before (see Figure 2).

4.2 DEPENDENT VARIABLE

The outcome of interest is an individual-level binary variable indicating whether an i-birth occurred in year t to a woman with i-1 children in year t-1. Discrete-time logit models use multiple observations for each individual in the sample, that is, each time unit during which a woman is observed contributes a separate and independent observation to the input data. For each of these observations, the dependent variable is coded 1 if the event occurs (a birth in the given year) and 0 otherwise.

4.3 INDIVIDUAL-LEVEL PREDICTORS

Education is one of the most largely used indicators of socioeconomic disparities and of status of women. With the raising opportunity cost of a woman's time, high education should have a negative impact on fertility. It also tends to depress fertility by delaying the age at marriage, fostering a favorable attitude toward small families and family planning, and strengthening the propensity for women to be in the labor force (Kaur, 2000). The effect of eduction is not as clear for Palestinian women. Khawaja (2002) argued that Palestinian women had a high desire for children, especially among the educated and the young and that the relationship was non-linear. We hypothesize that the effect of education on fertility is negative nonetheless.

It is hypothesized that women's employment status is negatively associated with fertility as the birth of a subsequent child raises the amount of unpaid family work. A woman with a full time job would have to lower her number of paid work hours to have another child which would raise the opportunity cost of having that child. Stecklov and Nahmias (2007) state that a woman's participation in the labor force is an important

measure of fertility but whose causal relationship is hard to predict due to potential endogeneity with other socioeconomic variables. The results of many empirical studies on the relationship between the participation in the workforce and the number of children are weak. The negative relationship between participation in the workforce and fertility is tested in this study.

The type of locality is also being used whether the respondent lives in a rural area, an urban area, or a refuge camp. It has been argued that urbanization creates an inappropriate environment for childbearing because of the presence of other opportunities for women and poorer housing conditions compared to rural areas (Hank, 2002). Lving in urban areas should therefore have a negative impact on fertility. Previous work has shown that refugee status is not an important discriminator of fertility behaviour in the Palestinian territories (Randall and Khawaja, 2006).

Finally, the respondent's age and marital duration are used as continuous time-varying control variables.

4.4 CONTEXTUAL-LEVEL PREDICTORS

To account for the level of education and the overall socioeconomic status in each governorate, the percentage of women with post-elementary education is calculated and is constant throughout the observation period. A higher proportion of educated women should have a negative impact on fertility as information about family control can be diffused to a wider number of women. All women would benefit from living in a region with more educated women.

The percentage of women working at a job or business is measured for each governorate to assess the labor market opportunities and the acceptability of women in the workforce (Stecklov and Nahmias, 2007). Regions where more women participate in the labour force are expected to be more liberal and women to have a higher status which would have a depressing effect on fertility.

To account for the political aspect of fertility and the minority group status hypothesis, a continuous time-varying indicator of the percentage of Israeli Jewish settlers in each governorate has been created. If there is a competitive aspect to fertility it would be expected that fertility in governorates surrounded by Israeli settlements is higher. This indicator also serves as a control for the region of residence as the literature points out the fertility differences between the West Bank and Gaza Strip.

The child mortality rate is also used as a continuous time-varying variable. It has been said that fertility in regions where child mortality is important is high to compensate for the losses.

Finally, a time-constant indicator of the proportion of women in polygamous relationships is used as it has been shown that women in polygamous marriages have fewer children than only wives of monogamous husbands (Muhsam, 1956). Region with a higher proportions of polygamous couples should be expected to have a lower fertility.

5   METHODOLOGY

The data used in this project have some particular characteristics that guide the choice of methods for the analysis. At first, because women are nested in different governorates. Multilevel hierarchical linear models are the most appropriate. They can also determine whether these between-group variations affect all the members of the groups, or only specific sub-groups and estimate how much of this between-group variability is explained by the contextual factors included in the model. For these reasons they produce richer and more consistent results than when the focus is limited to individual-level variables. The HLM model improves the estimation of effects within individual units and models cross-level effects by showing how variables measured at one level affect relations occurring at another level. Basically, it takes an individual-level outcome and partitions its variance among two level's units, and uses each level's characteristics as predictors of the outcome at its level and also considers it in the same overall equation (Raudenbush and Bryk, 2002).

Because we are interested in the yearly probably of having a child, a discrete-time model is required. It allows to assess the effects of the independent variables on the probability of giving birth. Discrete-time methods allow for the use of time-varying variables such as age and marital duration, and to evaluate how the chances of having a child change over time. It is also possible to censor women who have not completed childbearing by the time of the survey (right-censoring).

6 PRELIMINARY RESULTS

The data from Table 1 provide information about the individual-level background characteristics of women in the way they were categorized for the explanatory analysis. All currently married Palestinian women who had at least one child are married before age 20 and women with the most children have in majority no more than a five years age difference with their husbands compared to women who havent had a birth. finally, as expected, as the number of children increased, the participation in the labor force and education both decrease.

Table 1: Background characteristics by number of child to currently married Palestinian women aged 15-54

Characteristics		No birth	Any birth	First birth	Second birth	Third birth	Fourth birth	Fifth + births
Age		25.99	26.26	23.16	24.70	26.94	28.58	29.29
		(8.97)	(5.01)	(4.85)	(4.75)	(4.64)	(4.26)	(3.70)
Age at first marriage		20.90	19.13	19.51	19.39	19.12	18.75	18.56
		(5.66)	(3.67)	(3.42)	(3.84)	(3.63)	(3.76)	3.50)
Age difference with husband	Older/same age	7	8	7	8	8	8	10
	1-5 years younger	32	43	43	42	45	44	43
	5+ years younger	61	49	50	50	47	48	47
Region of residence	West Bank	60	63	64	65	69	61	50
	Gaza	40	37	36	35	31	39	50
Type of locality	Urban	56	56	57	57	55	59	53
	Rural	28	28	30	27	27	28	27
	Camps	16	16	13	16	18	13	20
Socioeconomic variables								
Participation in the labor force	Participates	12	11	12	12	13	6	9
	Does not participate	88	89	88	88	87	94	91
Years of study	Less than 8	15	13	9	9	14	18	24
	8-11	41	46	43	48	43	48	46
	12	19	20	21	21	20	19	18
	13+	25	21	27	22	23	15	12
Total		385	1,819	330	469	464	350	206

Source: Calculations from the *Demographic and Health Survey* of Palestine, 2004

The first explanatory results show that Palestinians surrounded by a higher number of Jewish settlers do not have a higher fertility over the observed period. Such a result would be consistent with Goldscheider and Uhlenberg (1966) argument according to which a minority group that does not have an organized system that reflects their values might have a residual lower fertility resulting from the insecurities associated with the minority group status.

The women's status is however a good predictor of Palestinian fertility, especially education at both individual and contextual levels. The negative effect of higher education on fertility was stronger among older women. Stecklov and Nahmias (2007) argued that there is a critical value of mass education needed to change the attitudes and values towards childbearing. For that matter, the effect of mass education might be saturated among younger women. The effect of the participation in the workforce was never significant.

The decline in infant mortality does not have a strong negative impact on fertility as it remained high. The permanent state of belligerence and the frequent uprisings must be part of the reason for a high demand for children as the risk of losing older children or husbands increases as mortality rises in periods of conflict or war and that they live in a permanent state of uncertainty.

REFERENCES

Bystrov, E. (2012). The Second Demographic Transition in Israel: One for All? *Demographic Research*, 27(10):261–298.

Courbage, Y. (1992). Demographic Transition Among Muslims in Eastern Europe. *Population: An English Selection*, 4:161–186.

Courbage, Y. (1995). Fertility Transition in Syria: From Implicit Population Policy to Real Economic Crisis. *International Family Planning Perspectives*, 20(4):142–146.

Courbage, Y. (1999). Issues in fertility transition in the middle east and north africa. Working Papers 9903, Economic Research Forum.

Courbage, Y. (2006). Les enjeux démographiques en Palestine après le retrait de Gaza. *Critique Internationale*, 31:39–52.

Courbage, Y. (2011). Gaza, an Ever Rebellious Demography? *Birzeit University Working Paper - Conference & Public Events Module*.

Courbage, Y. (2012). Demographic Trends and Challenges in Case of Statehood in Palestine, 2012-2048. *Birzeit University Working Paper - Conference & Public Events Module*.

Fargues, P. (2000). Protracted National Conflict and Fertility Change: Palestinians and Israelis in the Twentieth Century. *Population and Development Review*, 26(3):441–482.

Friedlander, D., Okun, B. S., Ben-Moshe, E., and Hleihel, A. (2010). Stall, Resistance, and Classic Patterns in Demographic Transition: Variations Among Major Population Groups in Israel. *Chaire Quetelet Annual Symposium in Demography at the Catholic University of Louvain*, Belgium.

Goldscheider, C. and Friedlander, D. (1974). Peace and the Demographic Future of Israel. *The Journal of Conflict Resolution*, 18(3):486–501.

Goldscheider, C. and Uhlenberg, P. R. (1966). Minority Group Status and Fertility. *The American Journal of Sociology*, 74(4):361–372.

Hank, K. (2002). Regional Social Contexts and Individual Fertility Decisions: A Multilevel Analysis of First and Second Births in Western Germany. *European Journal of Population*, 18(3):281–299.

Hauser, R. M. (1974). Contextual Analysis Revisited. *Sociological Methods & Research*, 2:365–375.

Kaur, H. (2000). Impact of Income and Education on Fertility. *Journal of Family Welfare*, 46(1):70–76.

Khalil, A. (2008). Irregular Migration Into and Through the Occupied Palestinian Territory. *Euro-Mediterranean Consortium for Applied Research on International Migration*, CARIM-AS 2008/79.

Khawaja, M. (1998). Poverty Profile. *Al-Ram: Palestinian Ministry of Planning and International Cooperation*.

Khawaja, M. (2000). The Recent Rise in Palestinian Fertility: Permanent or Transient? *Population Studies*, 54(3):331–346.

Khawaja, M. (2002). La fécondité des Palestiniennes à Gaza, en Cisjordanie, en Jordanie et au Liban. *Population*, 58(3):309–342.

Khawaja, M., Assaf, S., and Jarallah, Y. (2009). The Transition to Lower Fertility in the West Bank and Gaza Strip: Evidence from Recent Surveys. *Population Research*, 26:153–174.

Morgan, P., Stash, S., Smith, H., and Mason, K. O. (2002). Muslim and Non-Muslim Differences in Female Autonomy and Fertility: Evidence from Four Asian Countries. *Population and Development Review*, 28(3):515–537.

Muhsam, H. V. (1956). Fertility of Polygamous Marriages. *Population Studies*, 10(1):3–16.

Okun, B. S. (1997). Family Planning in the Jewish Population of Israel: Correlates of Withdrawal Use. *Studies in Family Planning*, 28(3):215–227.

Randall, S. (2005). The Demographic Consequences of Conflict, Exile and Repatriation: A Case Study of Malian Tuareg. *European Journal of Population*, 21:291–320.

Randall, S. and Khawaja, M. (2006). Intifada, Palestinian Fertility and Women's Education. *Genus*, LXII(1):21–51.

Raudenbush, S. W. and Bryk, A. (2002). *Hierarchical linear models: Applications and data analysis methods*. Sage.

Schellekens, J. and Eisenbach, Z. (2010). Religiosity and Marital Fertility: Israeli Arab Muslims, 1955–1972. *Journal of Family History*, 35(2):147–163.

Stecklov, G. and Nahmias, P. (2007). 'The Dynamics of Fertility Amongst Palestinians in Israel from 1980 to 2000. *European Journal of Population*, 23:71–99.

Ying, S. L. (1992). Determinants of Fertility in Malaysia - How Much do We Know? *Journal of Southeast Asian Studies*, 23(1):112–132.

Zureik, E. (2003). Demography and Transfer: Israel's Road to Nowhere. *Third World Quaterly*, 24(4):619–630.