Marriage Timing in Post-Transition Kazakhstan:

Who is the Minority Group Now?

Elwood Carlson

Heather Griffis

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INTRODUCTION

In times of economic and sociopolitical crisis, research shows that individuals may adjust their reproductive patterns and family formation in response to uncertainty. In Eastern Europe, the marriage rate decreased and the age at first marriage increased through the independence period. Research on marriage timing in Kazakhstan has shown that, similar to other post-Soviet states, marriage rates slightly decreased during the 1990's, resulting in an increasing age at first marriage (Dommaraju and Agadjanian 2008). However, there is little research on how trends in education, ethnicity, and their interaction influence marriage and first birth timing before, during, and after the fall of the Soviet Union.

We extend the literature on demographic change in Kazakhstan by investigating how ethnicity (based on the degree of 'Russification') and education influence timing of marriage and first birth in the late Soviet and early post-Soviet periods. Using the nationally representative 1995 and 1999 Kazakhstan Demographic and Health Surveys, we employ log-normal hazard models to investigate transitions to marriage and first birth among women between ages 15 and 49. Additionally, we investigate timing changes between cohorts of women in Kazakhstan, with particular emphasis on those cohorts marrying and having a child before versus after the Soviet era. The following sections document the education and ethnic changes that may influence marriage, as well as previous marriage trends in Kazakhstan. Data and methods are described, and results are presented for the risk of marriage and first birth comparing cohort, education, and ethnic groups.

ETHNICITY

From the beginning of the Soviet Union's rule in the 1920's, Kazakhstan experienced increasing Soviet influence via politics and demographics. Soviet authorities governed the majority of Kazakhstan and Europeans began migration to the northern region of Kazakhstan. Because the administration and population was becoming more Russian, the Russian language was introduced in primary and secondary schools across the region. While native Kazakh elites held government positions, they often had little authority. Russians in government positions located in Kazakhstan and Russia would often implement policies and law. In addition, Russian language was deemed the official language of Kazakhstan in the 1950's (Kreindler 1991). As a result, Kazakhs were encouraged to adopt Russian cultural features, including speaking Russian. Kazakhs who had more interaction with Russians were usually the native elite and highly educated. The degree to which Kazakhs became more like Russians in language and culture is called "Russification."

The initial European migrants (majority Russians, but Poles, Germans, Ukrainians and others are included) to Kazakhstan were farmers and agricultural specialists. Henceforth, we will call this group Europeans. With the onset of modernization and industrialization by the Soviet Union beginning in the 1950's, most European migrants entered the industrial sector, while Kazakhs were primarily in agriculture, services, and administration. Industry was primarily located in the northern region of Kazakhstan, close to the Russian border. Because Europeans were disproportionately employed in industry and government administration, they tended to live in northern urban areas and Kazakhs in southern rural areas (Olcott 1995).

In an effort to gain political acceptance and reinforce Soviet political ideals

among the local population, the active recruitment of local natives into the Soviet administration, known as korenizatsia began in the 1920's (Olcott 1995: 169). Korenizasia practices dissipated with the advent of administration purges in the 1930's. However, the 1970's experienced a resurgence of korenizasia as a result of increasing ethnic Kazakh education and population growth compared to the European population (Ata-Mirzayev and Kayumov 1992). Due to the Soviet Union's mandatory educational system, the average educational attainment of Kazakhs increased, which led to demand for placement in higher employment positions. Higher natural growth of Kazakh population due to a higher fertility rate than Europeans increased the proportion of the population that was ethnic Kazakh. In addition, European emigration as a disgruntled response to korenizasia beginning in the 1970's contributed to the Kazakh increase in population proportion. Censuses from 1970, 1979, and 1989 show an increasing share of ethnic Kazakhs—from 32.54 percent, to36.02 percent, to 39.68, respectively.

The revival of korenizatsia policies during Brezhnev's rule placed Russified Kazakhs in higher government, administrative, and industrial managerial positions while displacing Europeans. Not only were Europeans displaced in employment positions, but they were losing power in the Kazakh government, leading to increasing insecurity among the European population residing in Kazakhstan. Consequently, the political base and power of ethnic Kazakhs was increasing, leading to increasing demand for voice in politics (Karklins 1984). As a result, three distinct groups of citizens were forming—ethnic Kazakhs who retained primarily Kazakh culture, ethnic Kazakhs who were Russified through language and education, and ethnic Europeans. Russified Kazakhs, and Europeans tended to live in urban areas, while other ethnic Kazakhs resided in rural

areas.

Until the 1970's, the in-migration of Europeans remained positive—more Europeans moving into Kazakhstan than moving out (Rowland 1992). Since Europeans in privileged government and administrative positions were beginning to be replaced by ethnic Kazakhs, a small movement of European emigration began during the second round of korenizasia. This emigration continued and increased during the 1980's. According to the Kazakh census in 1970, Russians held 42.44 percent of the population, while in 1989 Russians constituted 37.82 percent (slightly higher than Kazakh's share of the population).

Although emigration of Europeans began in the late 1970's, mass emigration started in 1991, peaking between 1992 and 1994. Europeans lost their majority status in 1997. Between the 1989 and 1999 censuses, the share of Russians in Kazakhstan dropped from 37.82 to 29.95 percent, while ethnic Kazakh share jumped from 39.68 to 53.40 percent. Other ethnic groups made up the remaining population. Yet while many Europeans left, those who remain face a climate of discrimination and hardship that continues to fuel emigration (Dave 2003). This discrimination is the result of policies that tend to privilege ethnic Kazakhs through Kazakh language requirement and citizenship policies, and as a result appear to disadvantage to Europeans in Kazakhstan (Khazanov 1995).

In addition to possible discriminatory policies by the government of Kazakhstan, Europeans are also at an economic disadvantage. Because they were the core of the industrial sector in Kazakhstan, the selective emigration process of ethnic Russians and Europeans in higher employment positions accentuated the concentration in industry

(Liebowitz 1992). Since industry was a heavily devastated sector of the economy in post-Soviet Kazakhstan, Europeans became increasingly economically disadvantaged due to their position in this sector (Rudensky 1994; Sinnott 2003). The closure of industrial centers during the independent period left thousands unemployed (Olcott 2002: 8).

During the Soviet era, mandatory education for all Kazakh citizens created a highly educated society. As a result, over 99 percent of the population is literate. Although only a select portion of the population attended a university, the majority had primary and secondary schooling. After the fall of the Soviet Union, the state-run educational system did not have the Soviet system to rely on for funding or resources. Mandatory state education was no longer available or provided to all citizens of Kazakhstan. As a result, enrollment in Kazakhs kindergartens dropped from 52 percent in 1989 to only 11 percent in 1998 of all children between 1 and 6 years old (UNICEF ICDC 2002).

Not only did enrollment decrease substantially, but the quality of education diminished. Teacher shortages plague the education sector and government spending allocated to education continually decreases. While the government mandated all textbooks be re-written to fit the Kazakh historical perspective of the Soviet years and earlier, this has led to increased pressure for schools to provide proper reading material on tight budgets. In addition, as Kazakh language is replacing Russian in schools across Kazakhstan, funding to print textbooks in Kazakh is limited. As a result, the majority of Kazakh-instruction schools have limited books or materials (Kissane 2005).

Higher education has particularly suffered, as the cost of a university education in Kazakhstan increased substantially. Privately funded schooling is now becoming a

business enterprise. Many elite Kazakhs have social networks that allow for their children into the best Kazakh schools, but the majority of the population does not have this luxury. Poorer Kazakhs, primarily residing in rural areas, cannot afford to send their children to private schools or universities—they must either settle for poor quality schools or not attend school. Some have resorted to private tutoring, but many cannot afford this luxury (Silova et al. 2006; Silova et al. 2007).

MARRIAGE AND FIRST BIRTH TIMING IN KAZAKHSTAN

Little research has investigated the changing socio-political and ethnic climate in regards to marriage and first birth timing in Kazakhstan. This is partially due to lack of data, as Soviet censuses did not collect extensive data on ethnicity and the 1999 Kazakh census language question is not adequate to inform about language preferences (Dave and Sinnott 2002; Kolsto 2003).

Two recent Demographic and Health Surveys in Kazakhstan (KDHS) include questions on ethnicity and relevant to investigating marriage and birth trends. Research using these data reveals ethnic, educational and cohort differences. Using the 1995 KDHS, Agadjanian (1999) found that Europeans marry significantly earlier than ethnic Kazakhs, taking urbanicity, education, and childhood place of residence into account. Later work revealed that the degree to which Kazakhs are Russified also influences marriage timing, with Russified Kazakhs determine by interviewing in Russian rather than Kazakh. Russified Kazakhs marry significantly later than otherKazakhs, with Europeans still marrying the earliest (Agadjanian, Dommaraju and Glick 2008). In addition, women with higher education tend to delay marriage (Dommaraju and Agadjanian 2008).

For first births, Europeans were found to have significantly lower odds of a first birth after marriage compared to both Russified Kazakhs and Kazakhs. Additionally, Europeans have even lower odds of second and third births comparatively (Agadjanian, Dommaraju and Glick 2008). However, the birth interval between marriage and first birth is longest for Europeans compared to Russified Kazakhs and other Kazakhs (Agadjanian 1999). Thus, while Europeans marry the earliest of the studied ethnic groups in Kazakhstan, they have the lowest probability of having a first birth after marriage and the longest first birth interval.

In this paper, we connect these trends by investigating marriage and first birth timing, and the interval between marriage and first birth. We specifically look at how ethnicity and education may influence the timing of these events, as well as trends by cohorts of women. These cohorts may capture the effect of the political, social, and economic environment during the last fifty years in Kazakhstan.

DATA

The 1995 and 1999 Kazakhstan Demographic and Health Surveys (KDHS) are nationally representative samples of women between ages 15 and 49 at the time of survey. The 1995 KDHS interviewed 3,771 women, and the 1999 KDHS interviewed 4,800 women, both using similar stratified cluster sampling. We consider ethnic Kazaks and Europeans (Russians, Ukrainians, and Germans) only, leaving a final sample size of 7,772 when combining both surveys (90.7% of all respondents in both surveys).

Similar to previous research (Agadjanian, Dommaraju, and Glick 2008), ethnicity is divided into three groups based on ethnic identification and language of interview. Kazakhs are individuals who reported “Kazakh” as ethnic background and chose the

interview to be in Kazakh. Russified Kazakh women reported Kazakh as their ethnic background, but chose to be interviewed in Russian. Europeans reported Russian or a different European ethnicity (Ukrainian and German). All of these women chose to interview in Russian. Education is comprised of three categories—primary/secondary, secondary special, and higher.

To capture possible differences in marriage timing among cohorts of women, the sample is divided into four cohorts—women born in the years 1945-1957, 1958-1965, 1966-1974, and 1975-1984. The oldest group, born between 1945 and 1957, were typically marrying between ages 17-22 during the 1960s and early 1970s. Likewise, the 1958-1965 cohort was marrying during the mid/late 1970s and early 1980s. The 1966-1974 cohort was marrying primarily during the 1980s.The youngest cohort, born between 1975 and 1984, is marrying during the transition period in the 1990s.

Each woman is coded 1 if married and 0 if not married, and 1 if she had a birth and 0 if not. Because cohabitation is extremely rare in Kazakhstan, we group the few women who report cohabiting with the ever-married sample.

Marriage and first birth timing are recorded in the KDHS data as century-months, which we converted to months from exact age 12, given that the first woman in the sample reported marrying at age 13. Age at first marriage is reported for every woman who has ever been married, which includes currently and formerly married women. Time at first birth is reported in the KDHS data in century-months as well, which we converted to measures of both months since exact age 12 and months since marriage for every woman who has had a first birth. Women who are unmarried and/or do not have a birth at the time of survey are coded in our duration measures as their age at the time of each

survey due to right censoring (described below).

STATISTICAL METHOD

We use a log-normal hazard model to estimate the hazard of events of interest—marriage and first birth by months starting from age 12. Our times units are months to eliminate as many ties in the data. In preliminary analysis, the log-normal model showed the best model fit statistics compared with ~~the~~ exponential, Weibull, and Cox proportional hazard models.

The lognormal hazard model defined as:

$$h(x,\sigma) = \frac{\left(\frac{1}{x\sigma}\right)\phi\left(\frac{\ln x}{\sigma}\right)}{\Phi\left(\frac{-\ln x}{\sigma}\right)}, \text{ x>0, } \sigma \text{ >0,}$$

where Φ is the cumulative distribution function of the normal distribution, x is the timing of the event, and σ is the distribution the error terms. This function gives the hazard at which an individual may experience the event of interest for any particular age. For finding the proportion of women who "survive" to a particular age never experiencing the particular event of interest, the hazard function is changed to a cumulative function, known as the survival function. This is defined as:

$$S(x) = 1 - \Phi\left(\frac{\ln x}{\sigma}\right).$$

The survival function also gives the median age at the particular event, which occurs when fifty percent of individuals have experienced the event. To calculate the median age at an event, survival function is set equal to 0.50, including any covariates in the model, and solve for the median time of the event (x).

RESULTS

Descriptive Statistics

Table 1 displays socio-demographic, marriage, and first birth characteristics Each cohort is equally distributed in the sample. As expected the youngest cohorts have the lowest proportions married and with a first birth. Europeans are about two-fifths of the sample, and also show the highest proportion married and with a first birth. Russified-Kazakhs have the lowest proportion married and with a first birth. The secondary education groups are the largest, and have the highest proportions married and with a first birth.

Table 1 about here

Multivariate Analysis

Table 2 displays the lognormal hazard analysis coefficients for marriage timing. A coefficient greater than zero indicates a longer expected survival ratio relative to the reference group, and a coefficient lower than zero indicates a shorter expected survival ratio than the reference group. The reference group has a coefficient equal to zero (and a hazard equal to the exponentiated constant of the model). To find the relative survival time for a particular group, exponentiate the coefficient. Compared to the oldest cohort (born between 1945 and 1957), younger cohorts of women marry slightly younger as shown by negative coefficients that indicate shorter survival times. Primary and secondary educated Europeans marry significantly earlier than primary educated Kazakhs, while all other ethnic and education groups marry significantly later than primary educated Kazakhs. Figure 1 shows the survival curves for all ethnic and education groups for the 1966-1974 cohort. The other three cohorts show the where the primary educated Europeans' curve is shifted to the left (marries the earliest) and the

higher educated Russified Kazakhs' is shifted to the right (marries the latest).

Table 2 and Figure 1 about here

Table 3 displays coefficients for the timing of first birth from the lognormal hazard analysis. Similar to marriage timing, primary educated Europeans have shorter survival times indicated by negative coefficients, meaning that these groups tend to have first births younger compared to primary educated Kazakhs. Higher-educated Russified Kazakhs delay first births about 1.4 times longer than primary educated Kazakhs. Figure 2 displays the survival curves for the 1966-1974 cohort. This figures shows that, similar to the survival to marriage, Europeans tend to have a first birth at younger ages compared to all other education and ethnic combinations. However, this does not show the birth interval for any group. Europeans marry and have a first birth earlier than both ethnic categories of Kazakhs, but is the interval between marriage and birth shorter for Europeans? Or do Europeans tend to delay first births longer than the other groups, but have first births younger due to younger marriage age?

Table 3 and Figure 2 about here

To explore the relationship between marriage and first birth timing, the median age at marriage, first birth, and first birth interval is display in Figures 3-5. Median values for marriage and first birth were calculated from the survival functions as the age at which fifty percent of each cohort, ethnic, and education group were married or had a birth. The median birth interval is simply the median marriage age subtracted from the median age at first birth. We investigate the median age because it will give a better idea of the relative timing of events for combinations of cohort, education, and ethnicity than simply log-normal model coefficients. This also avoids right censoring issues that may

affect estimation of these events arising at the youngest ages when more women experience right-censoring before reaching the maximum considered ages.

Figures 3-5 about here

Across all ethnic groups, being in a higher-educated group is associated with an older median age at marriage. Europeans tend to marry the youngest when comparing across education group. These is about a six year difference in median marriage age between the youngest and oldest groups—primary educated Europeans and higher educated Russified Kazakhs. For each more recent cohort, median marriage age decreases except for the youngest cohort which is primarily marrying in the 1990s. For this cohort, born between 1975-1984, these is a slight increase is marriage age. This increase is most likely underestimated, as the median age is capturing in the marriage ages of the oldest women in this cohort while the youngest still have yet to marry.

A similar pattern is found for median age at first marriage—lowest median age among Europeans and higher median age among women with more education. Primary educated Europeans have the youngest median age at first birth around age 21, while the higher-educated Russified Kazakhs have the oldest median age at birth around 26.

When looking at birth interval, however, Europeans delay first births after marriage compared to Russified Kazakhs or other Kazakhs. This pattern holds across education as well. Europeans with higher education have the longest birth interval (aound two years), while primary educated Kazakhs have the shortest birth interval (slightly over one year). In general, first birth interval decreased for the oldest three cohorts but increased for the youngest cohort. The youngest cohort has the longest birth interval for all education and ethnicity combinations.

CONCLUSION

In this article, we combined marriage and first birth timing to show that although European women living in Kazakhstan marry and have first births earlier than Russified Kazakhs and other Kazakhs, European women have longer first birth intervals. This holds across all education groups. Additionally, while marriage and first birth median age is decreasing amongst cohorts of women born between 1945 and 1974, the most recent cohort of women born between 1975 and 1984 marrying and have first births at older ages. This cohort is also delaying first births more so than any other previous cohort.

Longer birth intervals for Europeans, particular for the youngest cohort, may be due to increasing economic, social, and political insecurity. As evidenced by the changes in language, territorial boundaries, and employment opportunities during the 1990s, Europeans are faced by the resurgence of Kazakh traditional culture in the name of Kazakh nationalism that is resulting in lower status of Europeans. Longer birth intervals of Europeans may also be partially due to contraception use, as Europeans are more likely to use an IUD or the pill than Russified Kazakhs or other Kazakhs. Europeans are also more likely to approve of abortion (Agadjanian 2002).

Gradually earlier marriage and first birth timing and shorter birth interval of all women born in the oldest three cohorts may have been a response to pronatalist policies of the Soviet Union during the 1980s. These policies were meant to target women living in areas of the Soviet Union with extremely low birth rates (such as Russia), but they could have also influenced women in relatively high birth rate areas (such as Kazakhstan). Another explanation may be that the political climate was becoming more uncertain with more recent cohort, resulting in marriage as a response to uncertainty. This

is a possible explanation given by Agadjanian and Makarova (2003) in relation to early marriage in Uzbekistan through the late 1980's, as women were rushing to marriage to affirm social status during the pre-transition time of uncertainty

The later marriage and first birth timing, as well as longer birth interval, for all women may be a response to the decreasing availability of maternity leave, childcare, and other programs whose funding declined as a result of less government programs in Kazakhstan. The new openness of Kazakh culture to Western ideals may also influence women to marry later or chose not to marry at all. This hypothesis is argued by Rabusic (2001) in relation to changing behaviors that reflect Western influence in post-socialist Czech Republic which has resulted in later and less marriage.

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Tables and Figures

Table 1. Descriptive Statistics (Merged KDHS 1995 and 1999), N=7,772				
Variable	N	Percent	Percent Married	Percent with First Birth
Cohort (Year Born)				
1945-1957	1,900	24.45	96.31	94.57
1958-1965	1,852	23.83	95.14	92.97
1966-1974	2,047	26.34	83.63	77.17
1975-1984	1,973	25.39	24.81	16.79
Ethnicity				
Kazakh	2,517	32.39	72.09	68.51
Russified Kazakh	1,956	25.17	68.18	64.45
European	3,299	42.45	80.18	74.10
Education				
Primary	2,848	36.64	63.98	60.00
Secondary	3,238	41.66	84.34	79.43
Higher	1,686	21.69	73.49	68.09

Table 2. Lognormal Coefficients for Hazard of Marriage			
Variable	Coef.	St. Error	P-value
Cohort (Year Born)			
1945-1957	(ref)		
1958-1965	-0.027	0.013	0.031
1966-1974	-0.081	0.012	0.000
1975-1984	-0.038	0.015	0.015
Ethnicity and Education			
Kazakh			
Primary	(ref)		
Secondary	0.102	0.018	0.000
Higher	0.294	0.024	0.000
Russified Kazakh			
Primary	0.067	0.023	0.004
Secondary	0.171	0.019	0.000
Higher	0.333	0.021	0.000
European			
Primary	-0.172	0.018	0.000
Secondary	-0.036	0.016	0.021
Higher	0.199	0.020	0.000
Constant	4.707	0.014	0.000
Sigma	0.379		
Log likelihood	-3591.445		
N	7742		

Person-years	851501	

Table 3. Lognormal Coefficients for Hazard of First Birth

Variable		Coef.	St. Error	P-value
Cohort (Year Born)				
	1945-1957	(ref)		
	1958-1965	-0.031	0.012	0.011
	1966-1974	-0.084	0.012	0.000
	1975-1984	-0.016	0.017	0.329
Ethnicity and Education				
Kazakh				
	Primary	(ref)		
	Secondary	0.105	0.018	0.000
	Higher	0.273	0.024	0.000
Russified Kazakh				
	Primary	0.065	0.023	0.006
	Secondary	0.159	0.019	0.000
	Higher	0.326	0.021	0.000
European				
	Primary	-0.113	0.018	0.000
	Secondary	-0.002	0.016	0.918
	Higher	0.239	0.020	0.000
Constant		4.832	0.014	0.000
	Sigma	0.373		
	Log likelihood	-3424.944		
	N	7749		
	Person-years	949119		

Figure 1. Log-normal Survival Curves for Cohort Born 1966-1974, Marriage Timing

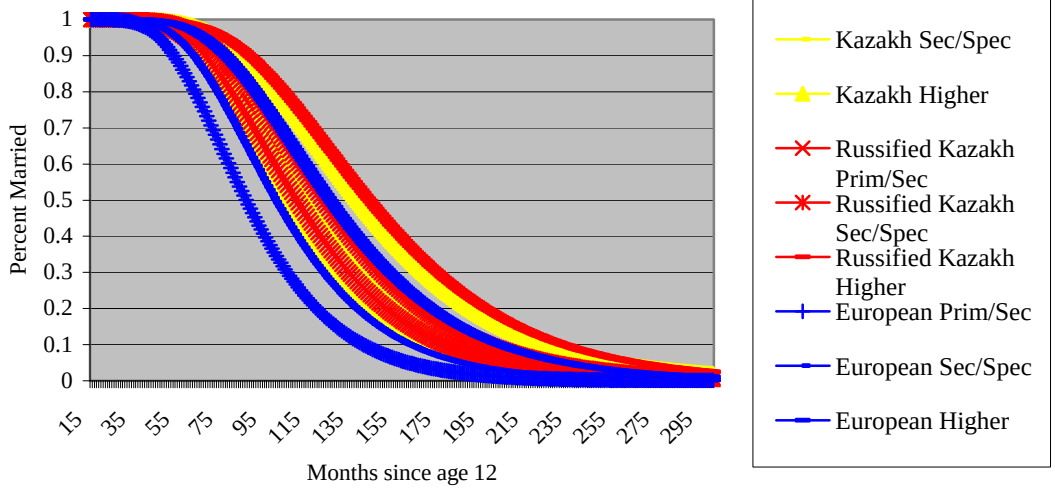
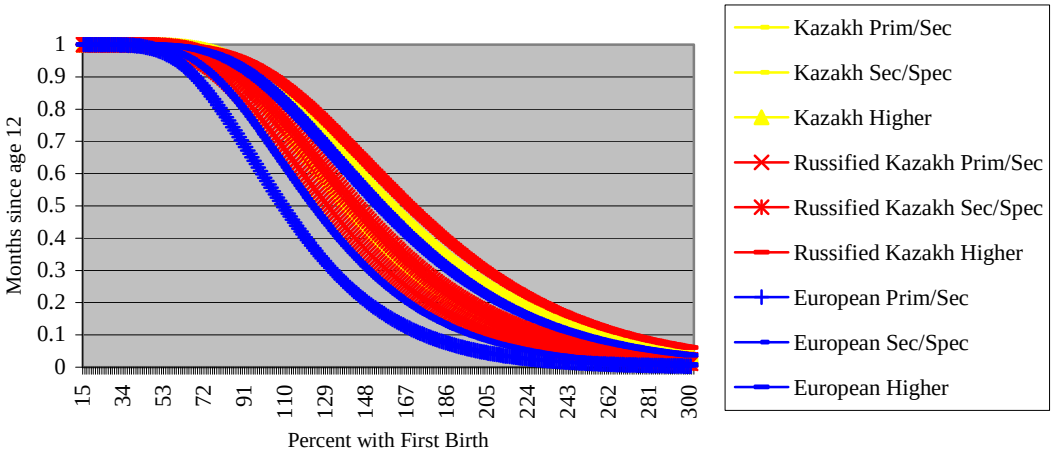


Figure 2. Log-normal Survival Curves for Cohort Born 1966-1974, First Birth Timing



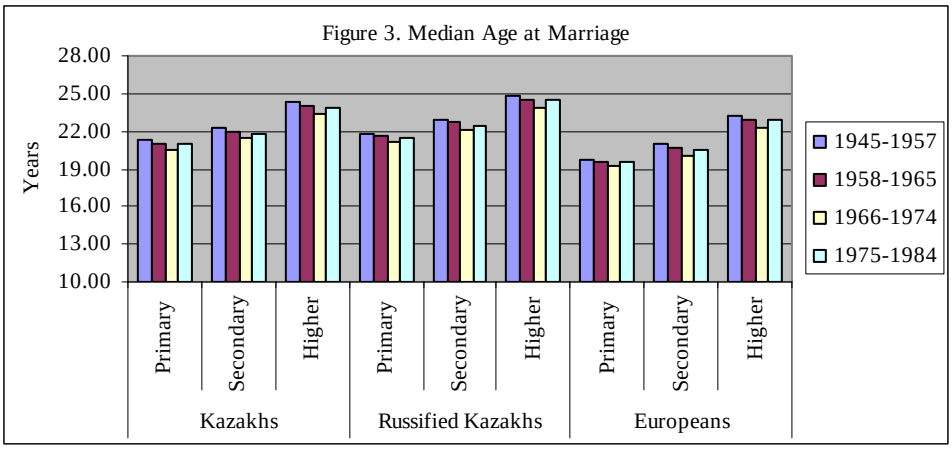


Figure 3. Median Age at Marriage
28.00
25.00
22.00
19.00
16.00
13.00
10.00
Years
1945-1957
1958-1965
1966-1974
1975-1984
Primary
Secondary
Higher
Kazakhs
Russified Kazakhs
Europeans

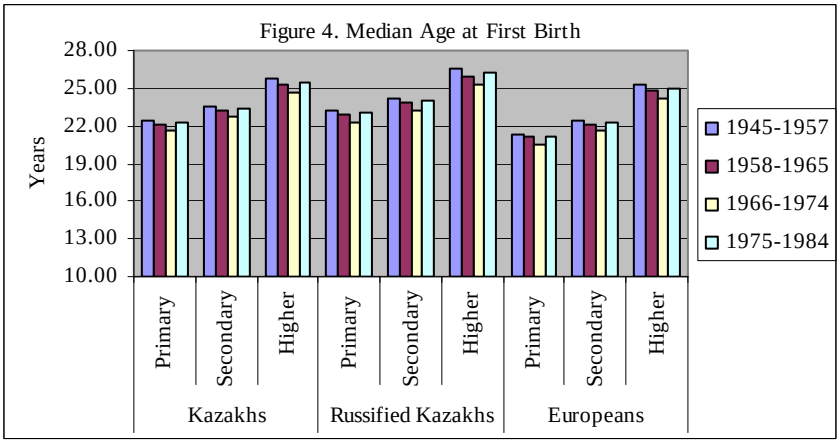


Figure 4. Median Age at First Birth
28.00
25.00
22.00
19.00
16.00
13.00
10.00
Years
1945-1957
1958-1965
1966-1974
1975-1984
Primary
Secondary
Higher
Kazakhs
Russified Kazakhs
Europeans

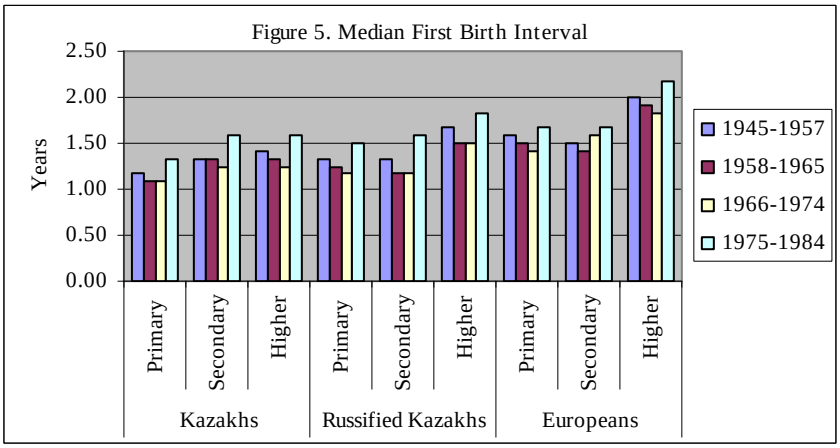


Figure 5. Median First Birth Interval
2.50
2.00
1.50
1.00
0.50
0.00
Years
1945-1957
1958-1965
1966-1974
1975-1984
Primary
Secondary
Higher
Kazakhs
Russified Kazakhs
Europeans