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CHARLES UNIVERSITY IN PRAGUE

Faculty of Science

Department of Demography and Geodemography

**REPRODUCTIVE BEHAVIOR AND ITS PATTERNS
IN THE SOUTH KAZAKHSTAN REGION**

Dissertation Thesis

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Reproductive behavior and its pattern in the South Kazakhstan region

Abstract

This study is focused on reproductive behavior issues in the South Kazakhstan region over the period from 1999 to 2010. The main objective is to contribute to the scientific cognition of reproductive attitudes, intentions and its realization among South Kazakhstani couples. The analysis is based on data collected for couples in the survey “Reproductive behavior of a family of Kazakhstan” held in the year 2007. In addition to that, trends in population development and impact of recent socio-economic changes on reproductive behavior in the selected region are studied. Differences in age, sex, ethnicity, place of residence as well as religious affiliation, educational attainment and respondents’ incomes are considered in data analysis. The results of fertility decomposition method showed, that recent increase in fertility was predominantly caused by the factor of age-specific fertility rate. Factors of urban-rural difference and birth order were not significant. With regard to reproductive attitudes, intentions and its realization it was found that reproductive preferences among South Kazakhstani couples were devoted to a large family, while their reproductive intentions were focused on two-three children at most.

Keywords: reproductive behavior, reproductive attitudes and intentions, the South Kazakhstan region, fertility development

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- Changing fertility patterns in the South Kazakhstan region, 2nd conference of Demographers at Charles University, “Actual Demographic research of young demographers (not only) in Europe”, Prague 2010

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Introduction

Sweeping changes of natality in Kazakhstan during the past quarter of a century attracted attention of social scientists as well as decision makers and politicians dealing directly or indirectly with the questions of demographic reproduction on both national and regional levels. These changes were also observed in the South Kazakhstan region, the most populated part of the country with the highest proportion of Kazakh ethnic group among the inhabitants and relatively traditional demographic behavior of its population. The highest overall fertility rates and population size among the regions of Kazakhstan have delegated the role of population reproduction centre of the country to this region. However, the process of complex modernization observed on national level during the recent decades affected also the southern territories of the country. As a result, step-by-step erosion of a traditional way of life has taken place and reproductive attitudes and behaviors have been changed. Therefore, presented doctoral research identifies the extent of occurring changes in reproductive intentions and behavior.

Aim of the study

As a part of the modern era, the world population is gradually passing through the process of demographic transition characterized by the declining mortality and fertility. In this respect, Kazakhstan with its trends in population development is not an exception. Thereby to understand possible future demographic development and its consequences in Kazakhstan, it is necessary to grasp an essence of this transition and to specify at least its basic determinants. Without doubt, one of the determinants is a reproductive behavior which is reflected in reproductive attitudes and intentions.

Reproductive behavior which we can understand as a sequence of actions related to childbearing process or denial of a child's birth is

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population in the research region. Since, the effect of educations showed a less significance while analyzing reproductive thought and realization of respondents or did not show it at all.

The gender effect did not show significance, but differences appeared in reproductive preferences as well as plans related to reproductive behavior in traditional society in the same way as it is proposed in the theoretical concept of P. McDonald focused on gender equality or inequality. South Kazakhstani males declared desire and intentions to have large family more often than females (McDonald, 2000). This finding indicates that society still keeps in mind traditional model of fertility. In respect of it the government has to pay more attention to supporting childbearing process.

Conclusively, reproductive behavior and its pattern relatively changed towards so-called “modern” reproduction in researched region, however, reproductive thoughts and preferences maintain in traditional view. Reproductive plans of respondents are not as optimistic as preferences what let us assume that patterns of reproductive behavior would change towards families with two children. Assessing demographic problem, we require improving conditions for families, working mothers, couples or individuals. Moreover, there is need to pay proper attention to the medical system and service in the region. Population is the main capital of state and children are the future of the country, therefore reproductive issue cannot be left unattended.

examined as the key issue. To be more precise, reproductive behavior, its patterns and their differences among generations and couples, which were observed in South Kazakhstan from the earliest 1990s to the end of 2000s, are studied.

The overall goal of the research is to contribute to the cognition of demographic reproduction in the South Kazakhstan region as well as in the entire country. Following this goal, our research is focused on identification and explanation of the existing trends and patterns of reproductive behavior observed among couples living in South Kazakhstan. Despite this we aim to reveal reproductive behavior of couples from the South region in oppose to couples of North Kazakhstan, because given regions are with respect to culture, traditions, ethnic distribution of population and demographic development (e.g. in the year 2010, the total fertility rate in North Kazakhstan equaled to 1.94 live births per woman, and in South Kazakhstan 3.67 live births per woman (Demographic Yearbook, 2011) profound contrast.

The research involves following objectives. Firstly, the study is going to understand and analyze couples’ reproductive views and behavior today. Secondly, the role of modernization process in the South Kazakhstan region is going to be identified and whether and to what extent it influences reproduction. Thirdly, the linkage, possible coincidences or incompatibility between couples’ reproductive thoughts and their realization in respect to urban-rural differentiation, sex and age differences, ethnicity and religious affiliation, educational attainment as well as financial income of respondents will be uncovered. Finally, current fertility pattern in South Kazakhstan is going to be evaluated and examined by differential factors (urban-rural differences, ethnicity, marital and extramarital fertility, fertility by birth order). Identifying reproductive parameters (reproductive attitudes, intentions and behavior) of couples living in Southern Kazakhstan, comprehending current reproduction

patterns and its changes uncover real fertility situation for stakeholders as well as decision makers. Besides that, it gives a chance to predict better future course of fertility process and its development in South Kazakhstan.

Data and methods

The study used published and unpublished data from the Statistical Agency of the Republic of Kazakhstan as well as from the Department of Statistics in South Kazakhstan covering years from 1991 to 2011. Furthermore, the research data from survey (“Reproductive behavior of a family of Kazakhstan”, 2007) of reproductive behavior of couples in South and North Kazakhstan conducted by Kazakhstani social scientist Z. Valitova were utilized.

This study provides descriptive analysis of fertility on the basis of demographic method.

However, the descriptive analysis shows the main changes in reproductive behavior, they have to be proved by using additional appropriate approaches. For this purpose a decomposition method by three factors was used. Additionally, reproductive behavior of couples living in South and North Kazakhstan (survey data) was examined through multinomial logistic regression method.

In order to understand the effect of changes in reproductive behavior during observed period from 1999 to 2009, the decomposition methods of three factors were used: age, birth order and residence. This analysis covers effect of aforementioned factors, through the main formula:

$$f - F = [R(f) - R(F)] + [X(a) - X(A)] + [J(b) - J(B)] + [K(c) - K(C)]$$

Where:

R (f) and R (F) express the effect of difference due to the age-specific fertility rate correspondingly to R (F) as the first population/region and R (f) for the second population/region.

Conclusion

This study analyzed reproductive behavior of people living in South Kazakhstan. Additionally, changes in reproductive attitudes and current fertility due to newly formed values in society towards modern way of life were determined. As it was defined the traditional fertility in researched region has preserved among Kazakh women. By this fact, current fertility in South Kazakhstan remains substantial. Recent increase of reproduction in South Kazakhstan based on fertility augmentation and not so much depends on the age, place of residence or birth order.

The findings related to the reproductive attitudes among couples living in South Kazakhstan revealed that fertility preferences among couples maintain towards large family i.e. four children, however, plans are narrowed to two children. In respect of reproductive intentions families with lower wages plan to have more children rather than those who have better living condition. It seems that, J.C. Caldwell’s rational decision concerning number of children (Caldwell, 1976) is suitable to understand fertility development in researched region. Real number of children among couples living in South Kazakhstan equals two children, whereas only Kazakhs couples have four children in majority.

Effects of reproductive attitudes and their realization appeared due to urban-rural differentiation and to a considerable extent by ethnic and religious variations. It showed that social environment has significant power. In South Kazakhstan, social network identified by the family communication, lineage groups, friends or colleagues corresponding to the elements of interaction proposed by G. McNicoll in developing countries where social characteristics seem to be encouraged high levels of fertility or its social control (McNicoll, 1980).

With regard to modernized values (Giddens, 1990; Inglehart and Weizel, 2005) and development level (Bongaarts and Watkins, 1996) we cannot conclude that they play relevant role to reproductive behavior of

However, ethnic and religious factors have a sharp distinction among the respondents from South Kazakhstan. Muslim families have 3.0 times higher odds ratio of having three children and 23.9 times higher ratio of having four and more children compared to Christian families. This differentiation has taken place in ethnic factor as well since Kazakh couples have 3.7 times higher odds for three children and 44.6 times higher odds for four and more children (tab. 5).

Tab. 5 Impact of residence, education, income, religion, ethnicity, and age on real number of children; South Kazakhstan

	Effect		P-value	Odds ratio	Confidence limits	
1st child						
	Residence	Rural vs. Urban	0.0335	0.417	0.186	0.934
2nd child						
	Age	18-22 vs. 38-54	0.0004	0.088	0.023	0.334
		23-27 vs. 38-54	0.0127	0.283	0.105	0.764
3rd child						
	Income	50,001 > vs. 10,000-30,000	0.0155	5.227	1.370	19.945
	Religion	Islam vs. Christianity	0.0165	3.021	1.224	7.457
	Ethnicity	Kazakhs vs. Russians	0.0050	3.785	1.495	9.582
	Age	23-27 vs. 38-54	<.0001	0.069	0.019	0.247
4th child						
	Education	Higher education vs. Secondary school	0.0576	0.340	0.112	1.035
	Religion	Islam vs. Christianity	<.0001	23.984	6.884	83.559
	Ethnicity	Kazakhs vs. Russians	<.0001	44.625	12.056	165.176
	Age	28-37 vs. 38-54	0.0009	0.117	0.033	0.414

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is real number of no child (0). Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females), own calculations

X (a) and X (A) express the effect of difference due to age

J (b) and J (B) express the effect of difference due to birth order

K (c) and K (C) express the effect of difference due to residences (urban/rural)

The next method used is multinomial logistic regression. With this method we analyzed the effect of independent variables such as place of residence, educational attainment, and financial income of family, religious affiliation, sex difference, ethnicity and age of respondents in comparison with their reproductive views and behaviors. This assessment was done with the help of SAS (9.3) program through formula:

$$\log(\pi_{hij}/\pi_{hir}) = \alpha_j + x'_{hi} * \beta_j$$

The π_{hij} is the probability that a respondent living in the urban area (h) and with one of the level of education analyzed (i), prefers particular number of children equals j , $j \neq r$ and r is the baseline style that corresponds to reference category. In the same way this formula was used for each dependent variable (number of children) and independent variables mentioned above.

However, the meaning of (h), (i), (j) letters changes due to exchanged variables in calculation. In addition, (r) reference categories are also changed.

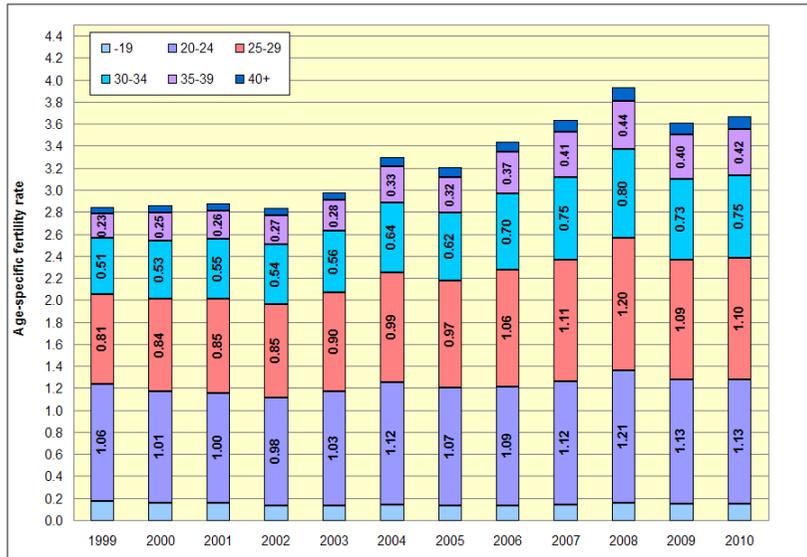
Results and discussion

5.1 Fertility development in South Kazakhstan (2000s)

The research was mainly based on reproductive behavior and its patterns in South Kazakhstan from 1999 to 2010. This period considers by fertility increase that occurred after 1990s. The 1990s characterized by rapid fertility decline due to the socio-economic crisis at most. During the 1999-2010 the total fertility rate (TFR) increased. However, this augmentation in childbearing process appeared as recuperative fertility.

From figure 1 it seeing, the highest fertility level occurred in 2008, when TFR reached 3.93 live births per woman. In 2009 fertility level decreased to 3.61 live births per woman (fig. 1). Those changes might be the first notes that indicate completion stages of compensative fertility.

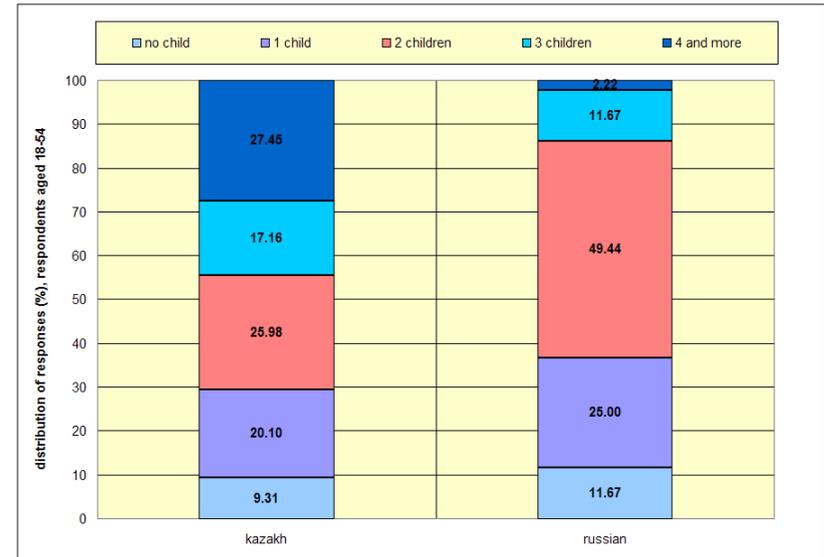
Fig. 1: Trends in the age-specific fertility rates in South Kazakhstan, 1999-2010



Source: Authors calculation based on data from the Agency of Statistics of Kazakhstan

In order to understand fertility increase in South Kazakhstan during 2000s the decomposition method of fertility was implemented. Result showed the increase in the total fertility between 1999 and 2009 was caused by the birth rate factor with 96.82 %, while the age factor was at 2.11 %, the factor of birth order at 1.26 % and the differences in urban-rural fertility did not turn out to be significant not having shown any effect (tab. 1).

Fig. 16: Real number of children by ethnicity of the respondents (%), South Kazakhstan, sample, 2007,

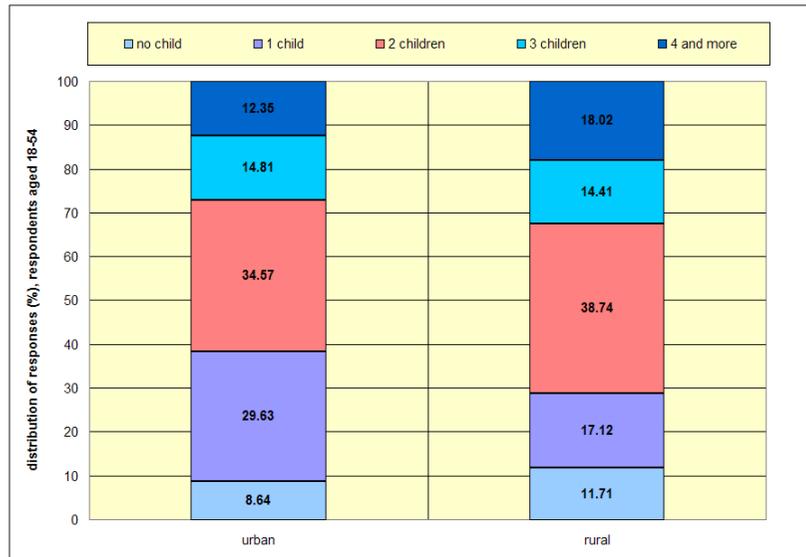


Note: Statistical significance of total data set $p < 0.0001$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

Thus, the overall analysis of reproductive behavior in the South Kazakhstan region has displayed that most of the respondents by now have two children. Nevertheless, age factor plays an essential role among all age groups, the respondents at the age of 45-49 (born during the Soviet time), for example, have mainly four children. Two younger groups (18-24 and 25-29 years old) have families with one child. Urban-rural differences in South Kazakhstan are not that strong any more. However, ethnic factor is significant.

Multinomial analysis of the real number of children among the respondents living in South Kazakhstan has demonstrated the substantial effects related to age differentiations and comparative differences by ethnicity, religious affiliation and family income of the respondents (tab. 5).

Fig. 15: Real number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.0842$, own calculations
 Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

With reference to ethnic differentiation, it can be noted that this factor still plays the most important role in reproductive behavior of the respondents and its significance has been determined at less than 0.0001 (fig. 16). It is seen from the differences in two, four and more children (the number of the Russian couples with two children is 23.46 % higher compared to the Kazaks (fig. 16). Meanwhile the number of the Kazaks which have four and more children is 25.23 % higher in contrast to the Russians (fig. 16).

Tab.1 Standardization and decomposition of fertility rates in South Kazakhstan, 1999 and 2009

	Standardization		Decomposition	
	2009 (population 2)	1999 (population 1)	Difference (effects)	Percent distribution of effects
Age	93.14	93.54	0.40	2.11
Birth order	93.22	93.46	0.24	1.26
Urban-rural	93.36	93.32	-0.03	-0.17
Rates	84.01	102.44	18.43	96.82
GFR	83.51	102.52	19.03	100.00

Source: Authors calculation based on data from the Department of Statistics in South Kazakhstan

From these findings it is evident that recent fertility growth based on the increase of birth rate as a major in South Kazakhstan. Almost absence effects of age difference, birth order factor and urban-rural differentiation showed insignificance, especially by place of residence inclining that there is some convergence in urban and rural fertility.

5.2 Reproductive behavior of couples living in South Kazakhstan

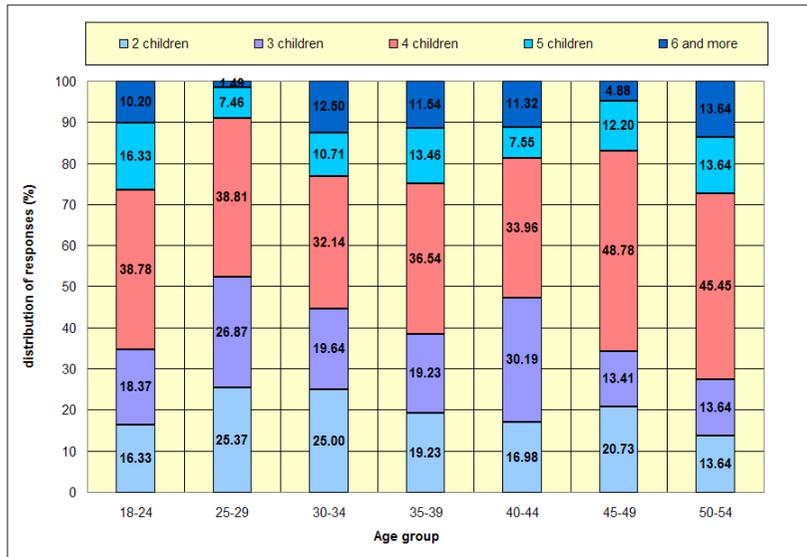
Studying reproductive attitude is essential for understanding fertility behavior. According to M. Fishbein and I. Ajzen (Fishbein and Ajzen, 1975) attitudes along with social and individual norms predict intentions and behavior. In this survey labeled as "Reproductive behavior of a family of Kazakhstan" questions of reproductive attitudes and its realization are at special attention. The survey was conducted in 2007 by Kazakhstani social scientist Z. Valitova. The survey based on couples living in North and South Kazakhstan. However, the main focus is reproductive behavior of couples living in South Kazakhstan.

The results of the analysis of the ideal number of children by age group of respondents showed no significance (0.7939). It enables us to infer that the age difference as an independent variable is not significantly important

for respondents in identifying reproductive ideals. Four children remain to be the reproductive ideal in each age group (fig. 2).

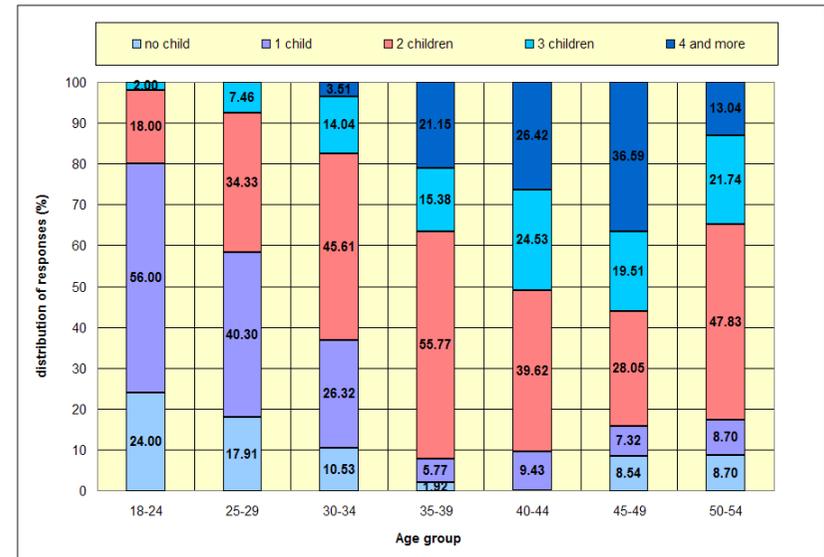
The reproductive ideals by urban-rural distinction resulted in the significance at 0.0001 what determines substantial discrepancy. For the rural respondents unlike for urban natives the ideal number of children is four (49.77 %). Slightly more than half of urban respondents (53.13 %) choose two and three children to be ideal (fig.3).

Fig. 2: Ideal number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.7939$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”,
 384 respondents (males and females)

Fig. 14: Real number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”,
 384 respondents (males and females)

The result of the analysis by urban-rural belonging has identified insignificance (0.0842) (fig. 15) what has revealed that reproductive behavior nowadays is more or less similar in urban and rural areas.

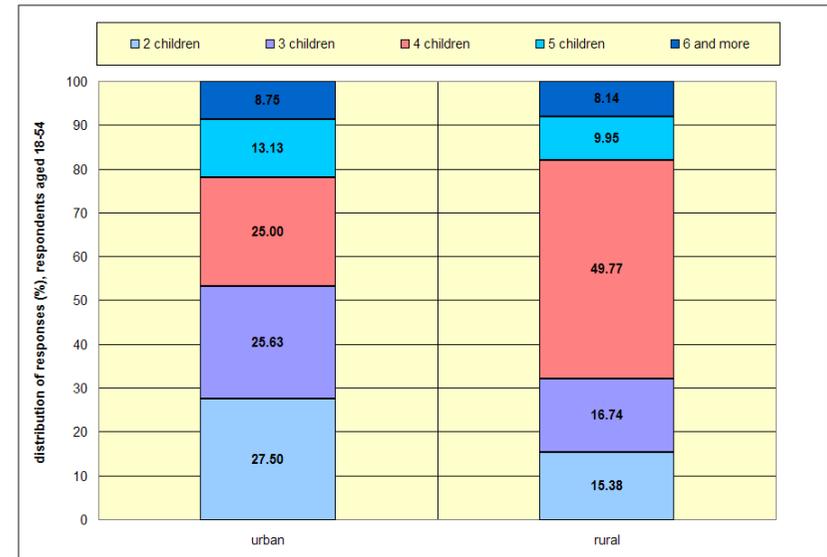
ethnic factors have played quite a significant role according to the odds value. The number of Muslim families planning to have three and four children is 5.3 and 57.6 times higher accordingly in comparison with Christian families. The ethnic factor exposed approximately similar distribution: 4.9 times higher odds with three children and 45.6 higher odds with four children.

Overall analysis of reproductive intentions in South Kazakhstan has revealed that for couples living there factors such as religious affiliation, ethnicity, urban-rural belonging as well as family income are predominant.

Being the main object of the research, reproductive behavior in South Kazakhstan holds the special attention. Real number of children has revealed the situation with the current fertility level and has given the opportunity to compare it with reproductive intentions.

Age factor has significance at less than 0.0001 what specifies that there are dissimilarities in the real number of children between the respondents according to their age. At a first glance the respondents at the age of 30 and above have two children at most except for the 45-49 year old respondents who have mostly four children (36.59 %) (fig. 14). The majority of the respondents from the two youngest (18-24 and 25-29 years old) groups have one child.

Fig. 3: Ideal number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.0001$, own calculations

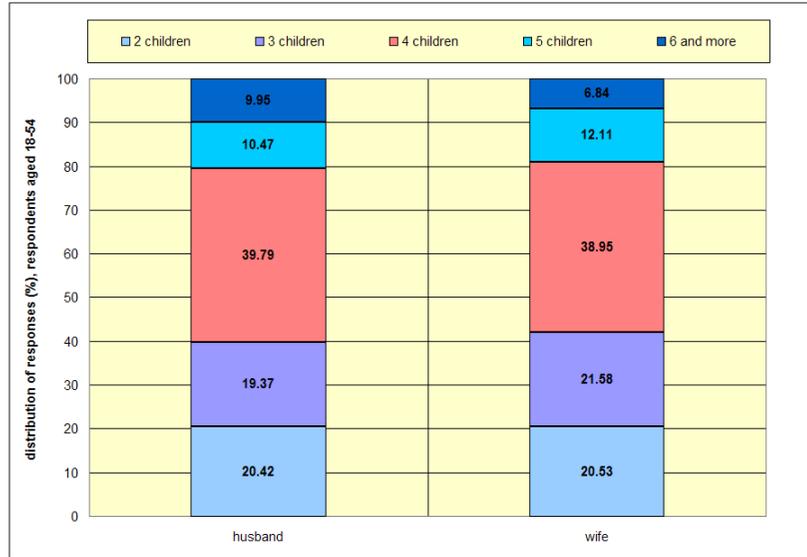
Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

The next factor to analyze is sex difference. As it is clearly depicted in figure 4 the ideal number of children does not differ by sex as there is no significance (0.8033). Such result is considered to be unexpected since it has been assumed that due to strong gender differentiation based on the traditional and patriarchal families it is associated with reproductive differences in intentions and their implementation.

The only slight difference was found between husbands' and wives' opinions of six and more children as ideal (fig.4). Males considered six and more children as the ideal number of children which was slightly higher by percentage (9.95 %) in comparison with females (6.84 %). That may have related to either idealistic view of males (due to not understanding the childbearing process) or to the examples of families

they grew in since 30.97 % of respondents grew up in families with six and more children.

Fig. 4: Ideal number of children by sex differences of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.8033$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

The analysis investigated different aspects in reproductive ideals including ethnic difference as an independent factor. Two ethnic groups (Kazakhs and Russians) whose reproductive behavior differs significantly participated in the survey. With reference to reproductive ideals among the respondents from South Kazakhstan we can confirm that ethnic divergence in the ideal number of children is significant (< 0.0001) (fig. 5).

Tab. 4 Impact of residence, education, income, religion, gender, ethnicity, and age on planned number of children; South Kazakhstan

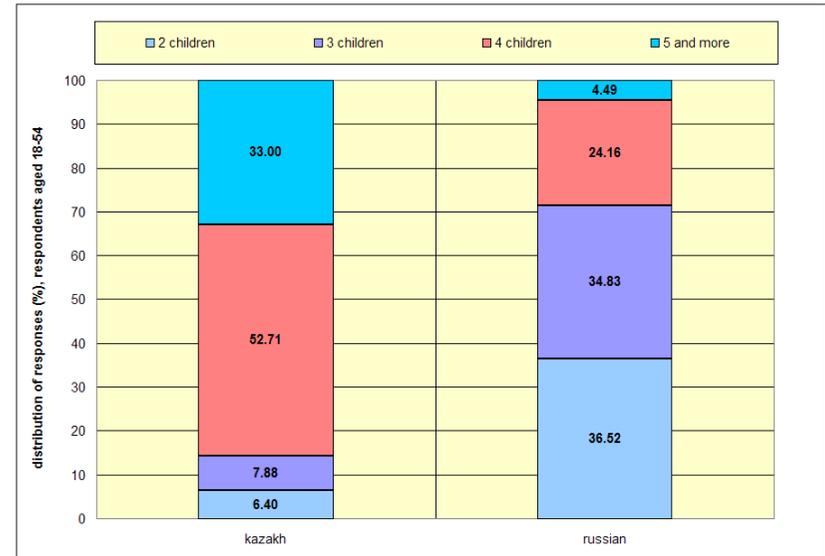
		Effect	P-value	Odds ratio	Confidence limits	
no child	Residence	Rural vs. Urban	<.0001	0.939	0.926	0.951
	Income	30.001-50.000 vs. 10.000-30.000	<.0001	1.073	1.053	1.094
1st child		50.001 > vs. 10.000-30.000	<.0001	1.385	1.340	1.432
	Residence	Rural vs. Urban	<.0001	0.454	0.445	0.463
3rd child	Income	30.001-50.000 vs. 10.000-30.000	<.0001	0.566	0.551	0.581
		50.001 > vs. 10.000-30.000	<.0001	2.809	2.743	2.878
4th child	Residence	Rural vs. Urban	<.0001	0.929	0.921	0.937
	Income	30.001-50.000 vs. 10.000-30.000	<.0001	0.556	0.549	0.563
		50.001 > vs. 10.000-30.000	<.0001	2.426	2.393	2.460
		No income vs. 10.000-30.000	<.0001	0.646	0.635	0.658
	Religion	Islam vs. Christianity	<.0001	5.387	2.843	10.208
	Ethnicity	Kazakhs vs. Russians	<.0001	4.961	2.669	9.221
4th child	Residence	Rural vs. Urban	<.0001	1.233	1.224	1.243
	Income	30.001-50.000 vs. 10.000-30.000	<.0001	0.549	0.543	0.555
		50.001 > vs. 10.000-30.000	<.0001	0.953	0.938	0.969
		No income vs. 10.000-30.000	<.0001	0.441	0.433	0.448
	Religion	Islam vs. Christianity	<.0001	57.675	26.213	126.898
	Ethnicity	Kazakhs vs. Russians	<.0001	45.679	21.443	97.306

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is planned number of 2 children. Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females), own calculations

Among the couples living in South Kazakhstan the urban-rural factor plays the considerable role as well as family income (tab.4). Religious and

reference category and independent variables are as follows: urban-rural belonging, educational attainment, family income, religious affiliation, sex differences, ethnicity and age differentiation.

Fig. 5: Ideal number of children by ethnicity of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations
 Source: Survey "Reproductive behavior of a family of Kazakhstan",
 384 respondents (males and females)

The analysis of the reproductive ideals in South Kazakhstan has showed that reproductive preferences remain with respect to traditional fertility since mean value of the ideal number of children is 4.47. The age and sex differentiations did not show any significance which enables us to infer that even young generation retains reproductive ideals of conventional South Kazakhstan. Male respondents keep in mind reproductive ideals corresponding to traditional patriarchal type of family.

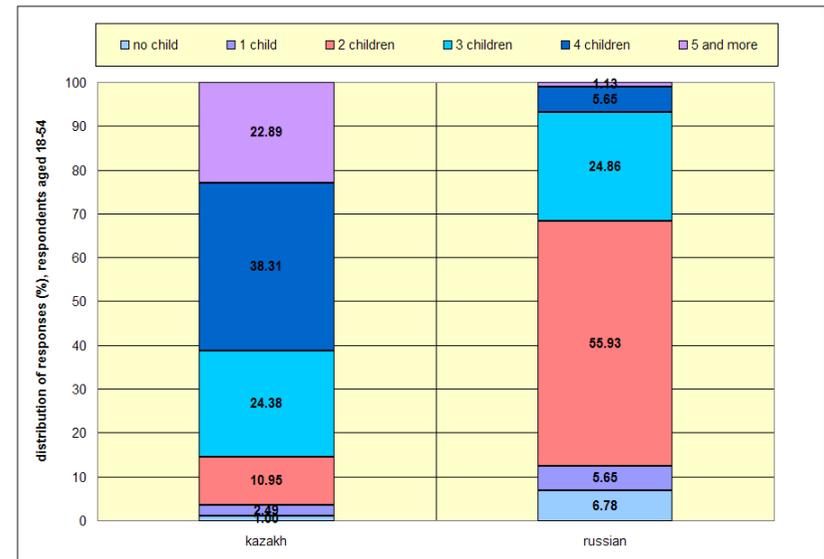
Lifestyle and social environment between urban and rural inhabitants, Kazakhs and Russians are significantly different what has an influential effect on their reproductive ideals.

Summing up the analysis results of reproductive ideals in South Kazakhstan it has become evident that for the respondents the process of shifting the ideal number of children towards modernized fertility

preference is not easy even if the current reproduction shows downward trend in each age group. This finding is positive and important for policymakers who care about the population size in Kazakhstan since it is considered to be an under-populated country.

The analysis of reproductive ideals was comprehensively performed by using multinomial logistic regression methods with the dependent variable ideal number of children (1, 2, 3, 4, 5+) and independent variables place of residence (rural, urban), educational attainment (higher, professional, secondary), income (10,000-30,000; 30,001-50,000; 50,001+), religion (Islam, Christianity), gender (husband, wife), ethnicity (Kazakhs, Russians), and narrowed age groups (18-22; 23-27; 28-37; 38-54). The results presented show the effect of selected factors within the ideal number of children among couples living in South Kazakhstan (tab.2). Since three children did not show any significance by selected factors and one child did not mentioned by respondents the results demonstrated in table 2 start from four children. Moreover, the results presented show the effect of factors found statistically significant (tab. 2).

Fig. 13: Planned number of children by ethnicity of the respondents (%), South Kazakhstan, 2007,

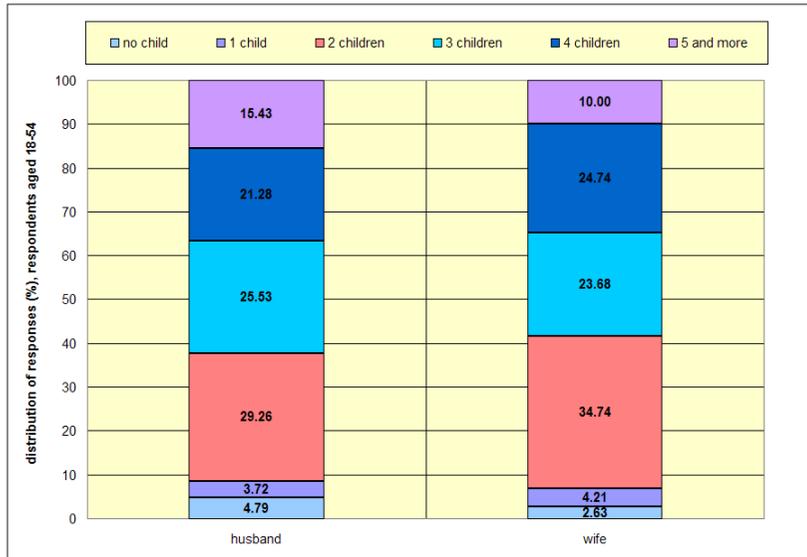


Note: Statistical significance of total data set $p < 0.0001$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

Overall analysis of reproductive intentions in South Kazakhstan has shown that age differentiation plays an essential role even though each selected age group mostly considered two children as planned except for the youngest generation (18-24 years) which prefers to have three children. Urban-rural belonging expressed a small difference that was mostly reflected in the plans of four children in favor of rural couples. Ethnic factor has evidently demonstrated a considerable difference with readiness of Kazakh couples to have large families. The only factor which has not shown any significance is sex difference what indicates that husbands and wives have approximately the same reproductive plans.

Multinomial logistic regression has been used to examine reproductive intentions among the couples living in South Kazakhstan. When analyzing reproductive intentions the category of two children has been chosen as a

Fig. 12: Planned number of children by sex differences of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.8421$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

Ethnic differentiation is sharply evinced in South Kazakhstan which was proved through reproductive ideals and preferences between Kazakh and Russian couples. According to the level of statistical significance (less than 0.0001) there are dissimilarities in the planned number of children between the two observed ethnicities. As reflected in figure 13 more than half of Russian couples plan to have two children, whereas the most frequent planned number of children among the Kazakhs is four.

Tab. 2 Impact of residence, education, income, religion, gender, ethnicity, and age on ideal number of children; South Kazakhstan

Effect		P-value	Odds ratio	Confidence limits		
4 th child	Residence	Rural vs. Urban	0.0002	3.504	1.830	6.708
	Income	50,001 > vs. 10,000-30,000	0.0383	0.380	0.152	0.949
	Religion	Islam vs. Christianity	<.0001	13.250	6.493	27.040
	Ethnicity	Kazakhs vs. Russians	<.0001	12.739	6.222	26.081
5 th +	Religion	Islam vs. Christianity	<.0001	50.250	18.605	135.720
	Ethnicity	Kazakhs vs. Russians	<.0001	42.874	16.555	111.035

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is ideal number of 2 children. Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females), own calculations

The ideal number of four, five and more children differs considerably, especially by ethnicity and religious views. These factors appeared to be the most substantial in measuring the reproductive attitudes which reveals that familial background and life experience are strong enough to form the respondents’ views. For instance, the differences in odds of assuming four children as the ideal number differ by ethnicity being 12.7 times higher among the Kazakhs compared to Russians. This value prevailed in the assumption of five children as the ideal and was 42.9 times higher. That points out how important and significant ethnic factor is in South Kazakhstan. It can be assumed that Muslim families compared to Christian families maintain high reproductive ideals of large family since the results showed that with regards to four children as the ideal number it was 13.2 times higher and with five children 50.2 times higher in favor of Muslim families.

In South Kazakhstan poor families are 2.6 times (1/0.38 odds ratio equals to 0.380 with regards to those who earn 50,001 tenge (national currency) and more vs. 10,000-30,000 tenge) more likely to assume four

children as ideal compared to families with considerable income. Thereby for the couples living in South part of Kazakhstan financial position plays an important role. It is well known (Caldwell, 1976) that traditional poor societies tend to have higher reproductive preferences.

Despite the fact that urban and rural lifestyles differ to a large degree in South Kazakhstan the significance of this factor appeared only in the view of four children as ideal 3.5 times higher in favor of rural couples versus urban.

Among all the observed factors, ethnicity and religious affiliation turned out to have more influence whereas age and sex differences as well as educational level did not show any discrepancies. Such a result is probably related to openness or direct perceptions of respondents about reproductive ideals so the answers were not quite weighted because it is the ideal number and the respondents are not under pressure to reduce their idealistic reproductive views.

In most of the fertility researches (WFS and DHS) special attention is given to reproductive preferences in contrast to reproductive ideals. It is very important to examine preferences as individuals tend to orient on their desired number of children that implies the question of how many children the respondents actually want.

From the analysis of South Kazakhstan it has become evident that the region is traditional and conventional in each sphere and consequently in reproductive views as well. Our objective in this descriptive analysis is to reveal reproductive preferences among couples living in South Kazakhstan. Therefore, we try to understand what their desired number of children is and whether it differs from generation to generation, by urban-rural belonging or sex and ethnicity.

Differences of reproductive preferences by age have generally showed no significance (0.2248) (fig. 6).

higher than the number of urban couples. A slight divergence has been noted in the plans of two children (5.54 % higher) in favor of urban couples. This finding suggests that in rural areas reproductive plans are maintained towards larger family with four children while in urban areas the most feasible number is two children.

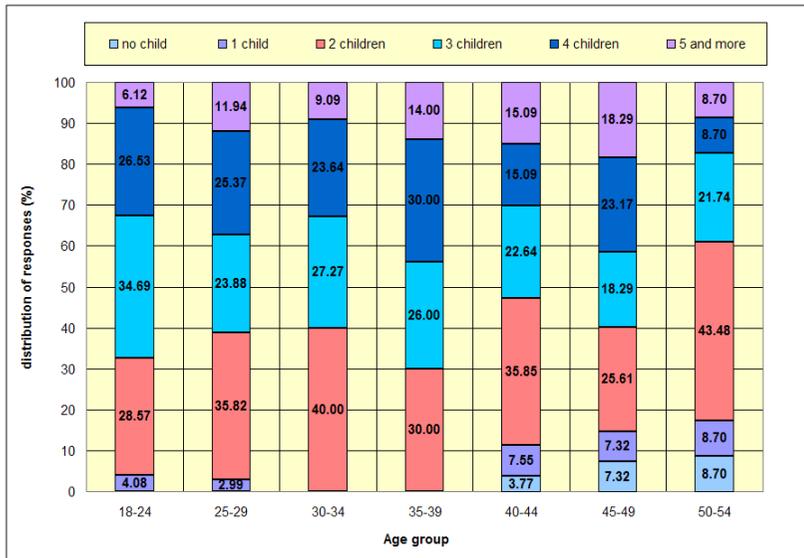
Fig. 11: Planned number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.0255$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

In terms of sex differentiation, the significance between reproductive plans of males and females was not found (0.8421) (fig. 12).

Fig. 10: Planned number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.0003$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

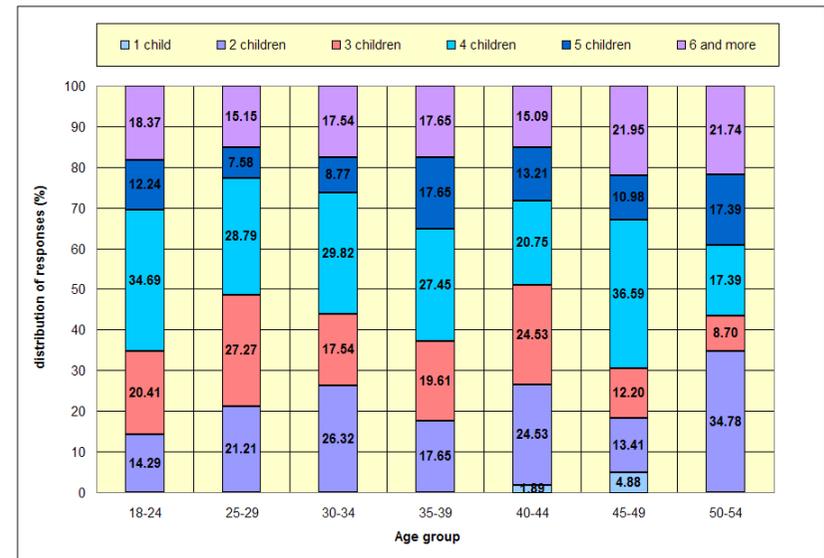
The frequent answer is two children. Such result indicates that couples from South Kazakhstan are able to afford only two children regardless of their ideals and preferences to have large families.

Among all the respondents the youngest generation (18-24 years old) has relatively more optimistic plans since three children is their most frequent answer (fig. 10).

The result has revealed that age factor plays a significant role in reproductive planning. However, the category of two children remains to be the most preferred even in traditional South Kazakhstan.

The result of reproductive intentions among urban and rural couples has shown the significance (0.0255) (fig. 11). The most considerable differences of opinions are related to the category of four children since the number of rural couples having this reproductive intention is 11.50 %

Fig. 6: Desired number of children by age of the respondents (%), South Kazakhstan, 2007,



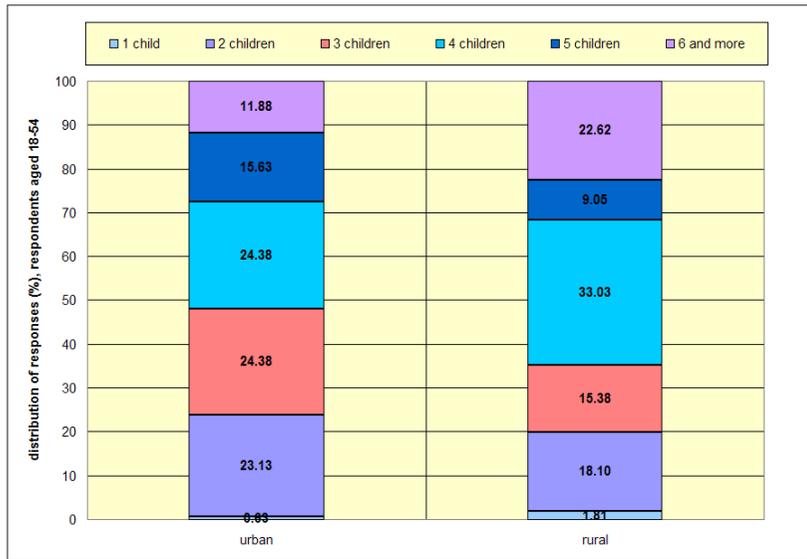
Note: Statistical significance of total data set $p = 0.2248$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

For each age group the most preferred number of children is four, except for the respondents at the age of 40-44 and 50-54 who in the majority considered two children as their reproductive preferences but for the respondents at the age of 40-44 three children was equally preferable as two. However, it was surprising to find out that substantial weight of respondents’ answers in each age group was six and more children. This means that not only reproductive ideals but the desired number of children as well are related to antecedent reproductive attitudes.

Reproductive preferences due to the place of residence display sustainable effect of urban-rural differences since the level of statistical significance is 0.0171. That directly indicates the existence of differentiations between urban and rural respondents in their opinions about the desired number of children. As seen in figure 7 the most

preferred desired number of children among rural couples is four (33.03 %) whereas urban families showed equality in their desires of three and four children.

Fig. 7: Desired number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p = 0.0171$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

It is interesting that urban couples have chosen five children as the desired number meaning that urban respondents have higher inclination to prefer this number of children than those of rural origin. Such finding is difficult to explain although due to regional characteristics and urban-rural belonging, it has been expected that rural inhabitants desire larger families with relation to their lifestyles. The only reasonable argument for such a result is related to the feature of South Kazakhstan as a more rural region, therefore the link between urban and rural areas is very prominent. As noted by the Kazakhstani scholar Z. Valitova determining South

that the respondents who specified that they do not have their own income desired to have five children 3.6 times higher (odds ratio is $0.274 (1/0.274 = 3.6)$, 10,000-30,000 national currency (tenge) vs. no income) than those who earn minimum wage. These findings proved that couples with lower income show greater attitude towards large families (Caldwell, 1976).

The responses did not show any relative significance with regards to educational attainment, though in case of three children it was revealed that the respondents who graduated from college have 2.4 times higher odds of desiring three children than those who finished secondary school. This finding does not carry considerable information due to insignificance of educational factor in relation of to highly educated respondents with those having a certificate from secondary school.

The analysis of reproductive intentions in South Kazakhstan has been carried out with the aforementioned factors including age differentiation, urban-rural belonging, sex differences and ethnicity. The result by age difference has shown that there is a significance of 0.0003 (fig. 10).

Tab. 3 Impact of residence, education, income, religion, gender, ethnicity, and age on desired number of children; South Kazakhstan

Effect		P-value	Odds ratio	Confidence limits		
3 rd child	Education	College vs. Secondary school	0.0380	2.460	1.051	5.755
	Income	30.001-50.000 vs. 10.000-30.000	0.0373	0.473	0.234	0.957
4 th child	Religion	Islam vs. Christianity	<.0001	12.487	5.873	26.553
	Ethnicity	Kazakhs vs. Russians	<.0001	25.381	9.925	64.909
5 th +	Income	30.001-50.000 vs. 10.000-30.000	0.0107	0.403	0.201	0.810
	Income	No income vs. 10.000-30.000	0.0137	0.274	0.098	0.768
5 th +	Religion	Islam vs. Christianity	<.0001	40.067	17.348	92.542
	Ethnicity	Kazakhs vs. Russians	<.0001	192.627	61.223	606.066

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is desired number of 2 children. Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females), own calculations

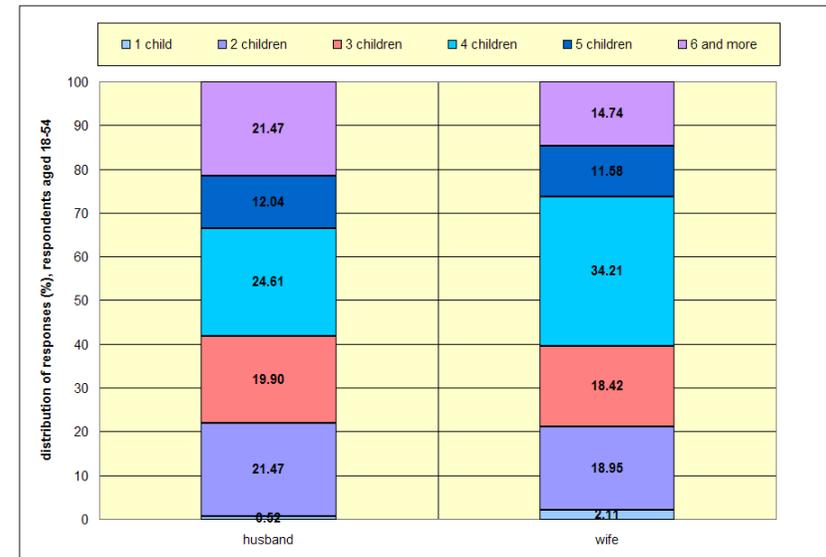
Reproductive preferences are more correlated with the views of individuals regarding the number of children they want than reproductive ideals. That might be reason why the factor of family income played a significant role in desiring the particular number of children. For instance, couples who earn less money are more likely to desire four children than those who earn 2.1 times more (odds ratio is 0.473 ($1/0.473 = 2.1$), 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge). In consideration of five children this interaction presents 2.4 times higher odds among poor families versus those who more or less belong to medium class (odds ratio is 0.403 ($1/0.403 = 2.4$), 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge). The interesting observation is

Kazakhstan lifestyle “The body resides in the urban part, but the soul lives in the rural” (Valitova, 2010).

The result of six and more children showed considerable differentiation (by 10.74 %) between urban and rural couples in favor of rural respondents.

In the subsequent consideration of reproductive preferences sex differentiation took a special attention. The result showed statistical insignificance (0.3097) what identifies almost no difference between the responses of husbands and wives (fig. 8).

Fig. 8: Desired number of children by sex differences of the respondents (%), South Kazakhstan, 2007,



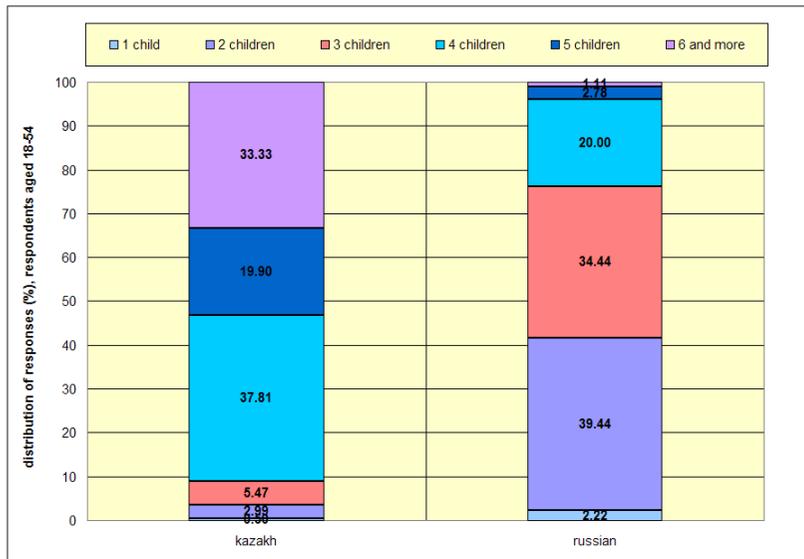
Note: Statistical significance of total data set $p = 0.3097$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”, 384 respondents (males and females)

In two categories including four and six and more children reproductive views between husbands and wives differ to some extent. For instance, the number of wives considering four children as a desired

number is 9.6 % higher while husbands are by 6.73 % more optimistic in their desires of six and more children.

With regards to ethnic differentiation we can note that this factor is considerable because the level of significance was determined at less than 0.0001. It is also evident from the percentage distribution that the number of the Russians desiring two children is higher with 39.44 % whereas the number of the Kazakhs is 2.99 % (fig. 9).

Fig. 9: Desired number of children by ethnicity of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations
 Source: Survey “Reproductive behavior of a family of Kazakhstan”,
 384 respondents (males and females)

The outcome for the Kazakhs is as follows: the most preferred number of children is four and six. The Russians give their favor to two and somewhat to three children in the family.

The overall analysis of reproductive preferences among couples living in South Kazakhstan has revealed that age factor did not show discrepancies between young and old generations. Urban-rural differences

are very important as it was found that rural respondents maintain preferences of large families. According to sex differentiation, the effect was not exuding as husbands and wives have more or less similar views of the desired number of children. Ethnic component showed its significance the way it occurred with reproductive ideals.

Reproductive preferences were analyzed among couples living in South Kazakhstan by using multinomial logistic regression methods. It was aimed to examine the influential effect on reproductive views of the desired number of children among the respondents.

Based on the obtained results we can confirm that for the respondents of South Kazakhstan the most significant factors are ethnicity and religious affiliation. Expectations were corroborated by statistical significance level and consequently odds ratio value. For instance, odds ratio of Kazakh couples compared to Russians are 25.3 times higher in assuming four children. With regard to reproductive preference of five children the value is higher by 192.6 times among Kazakhs versus Russians.

In the analysis of the religious factor the proposed hypothesis was confirmed as the odds ratio of four and five children as the desired number is 12.4 and 40.0 times higher respectively among Muslims in contrast to Christians (tab. 3).