Determinants of household size in Iran

Fatemeh Torabi[1]
Muhammad Haddadi[2]

Abstract

Despite a substantial decline in household size (i.e. from 5.1N in 1976 to 3.5 in 2011), no study, to date, has investigated the determinants of household size in Iran. The existing literature suggests that the social and economic context influences household size through demographic determinants such as nuptiality, fertility, adoption, mortality, migration (the movement in and out of the household), and divorce. This paper applies multiple regression and path analyses to the district-level data from the latest Iranian census in 2011 to determine the proximate and socioeconomic determinants of household size. The results of multiple regression analysis indicate that household size is positively associated with the level of fertility, the mean age at marriage, and negatively with men's widowhood. These variables account for 69 per cent of the variation in household size among Iranian districts. The results of path analysis show that how and to what extent modernization influences household size.

[1] Assistant Professor, Department of Demography, Faculty of Social Sciences, University of Tehran. Email: Fatemeh_torabi@ut.ac.ir
[2] Masters in Demography, Department of Demography, Faculty of Social Sciences, University of Tehran.

INTRODUCTION

According to the Oxford Dictionary of Sociology "a household is usually defined as a group of persons sharing a home or living space, who aggregate and share their incomes, as evidenced by the fact that they regularly take meals together. A family is defined as an intimate domestic group made up of people related to one another by bonds of blood, sexual mating or legal ties". (Marshall, 1998, p. 222 & 283). Thus, the terms "household" and "family" are not used interchangeably here.

Changes in the average household size in Iran is depicted in Figure 1. The average household size was stable at around 5 for two decades (between 1976 and 2006), before a constant decline to 4.0 in 2006 and 3.5 in 2011. The existing literature suggests that the social and economic context influences household size through such demographic determinants as nuptiality, fertility, adoption, mortality, migration (the movement in and out of the household), and divorce. Despite recent changes, no study, to date, has investigated the determinants of household size in Iran. This paper uses the district-level data from the latest Iranian census in 2011 to determine the proximate and socioeconomic determinants of household size.

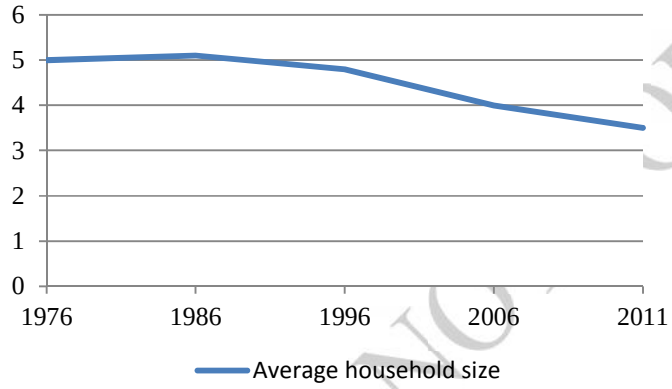

Figure 1: Trends in average household size in Iran 1976-2011.

Source: Published results of 1976-2011 Iranian censuses

LITERATURE REVIEW

During the last century, household has experienced dramatic changes in many dimensions. Modernization has been expressed as one of the main contributing factors (Bongaarts 2001; Abbasi-Shavazi et al. 2008; Kobrin, 1976). The relationship between household size and modernization is not always clear. Some studies have tried to examine this relationship. Depending on different regions, different results have been obtained: some studies point out a negative association between modernization and household size, and found that with the increase of modernization in a society, household size decreases (Wirth, 1938; Rosen and SimmonsSource, 1971). On the other hand, some found a positive correlation between these vaiables (Stinner 1977). Paydarfar (1975), however, in his study of the Iranian provinces using the 1956-1966 censuses, did not find any relationship between household size and modernization. Moreover, with the

increase in modernization, the main form of production has shifted from agricultural sector to industrial and service sectors (Aghajanian and Thompson 2013).

As modernization expands fertility began to decrease due to a lot of causes. This widespread decline in fertility, over the past decades in districts of Iran is partly responsible for the decline in household size in Iran. If all other things were the same, a decrease in fertility, reduces the number of children per household, which leads to a decline in household size (Bongaarts, 2001; Aghajanian, Akbar; Thompson, Vaida; 2013).

Individualism is one of the basic presumption of the second demographic transition theory (Ritzer, 2012). The ongoing decline in household size in recent years, is predominantly the result of intensifying the number of one-person households. Individualism motivates young and old people to live alone. A decline in mortality, and as a result, an increase in life expectancy, leads the one-person households to become more prominent households in which parents live much longer after the separation of their children (Kobrin 1976).

Additionally, the increase in divorce rate break the families into two parts, which in turn, reduces the household size (Carliner 1975; Chevan and Korson 1972,1975; Kobrin 1973, 1976; Kuznets 1978). Corbrin (1976) demonstrated that fertility and mortality declines have an ambiguous impact on household size until the increase in individualizm begins.

Burch (1977), tried to examine the effects of demographic factors, such as fertility, mean age at marriage, and mortality on household size. Here population was an objective, because Burch used the concept of stable population, not the actual population. The results of his study indicate that household size has a positive correlation with fertility, mean age at marriage, and life expectancy.

Freedman, et al (1978) studied factors that change the extended kinship in Taiwan. They discuss the role of modernization that affect some factors in society such as urbanization, education, communication, and equality of income. Modernization has also affected the demographic determinants of household size such as fertility, mortality, and so on. All of these factors change the household size.

Kuznetz (1978) shows one of the main factors in explaining variations in household size is the number of children living in a household, which is usually related to fertility behavior (see Kuznets 1978). In Iran, the number of children under the age of 17 per household declined from 2.6 to 1.07 between 1976 and 2011 (Aghajanian &Thompson 2013; Statistical Center of Iran 2011).

Another important determininant of household size is the number of adults per household, which has not substantially changed in Iran between 1976 and 2011 (i.e. 2.5 and 2.4, respectively). Althought the Iranian society has moved towards nuclear family, which includes married couples and their unmarried children (see ladier-Fouladi 2002), but the age at marriag of both men and women has increased over time (see Torabi et al. 2013). This may partly explain the relative stability of the number of adults per household in Iran durring the past four decades.

Bongaarts (2001) examined determinants of household size and composition in 43 [developing] countries. The role of three key factors was examined: (1) fertility, (2) mean age at marriage, and

(3) marital interruption. In this article, Bongaarts refers to his pervious study about household size, in which he had distinguished direct and indirect determinants. Also he had introduced six proximate demographic determinants of the size of households: nuptiality, fertility, adoption, mortality, migration, (movement in and out of the household) and divorce (Bongaarts, 2001, p. 270).

Recenly Aghajanian & Thompson (2013), provided a review about houshold size and its structure in Iran, in which they show a decline in fertility, an increase in child survival due to imporvements in health programs, an increase in age at marriage and for both males and females, and a rise in the incidence of divorce. Their study also demonestrates structural changes such as urbanization and movement from agriculture to manufacturing and service sectors.

Based on the existing literature, this paper examines the proximate and socio-economic determinants of household size in Iran.

DATA and method

The data is derived from the published results of the 2011 Iranian census. The data from 397 districts are included. The district of Abomoosa, located in Hormozgan, was removed because it was shown as an outlier. Multiple regression models are used to determine the impact of proximate determinants of household size and path analysis is used to show how and to what extent modernization influenced household size via different proximate determinants.

RESULS

Average household size in each district is calculated by the population divided by the number of household in that district. The
Average household size in Iran was around 3.71 in 2011. It varies among different districts from 6.5 in Kangan (in Bushehr province) to 2.9 in Taleqan (in Alborz Province).

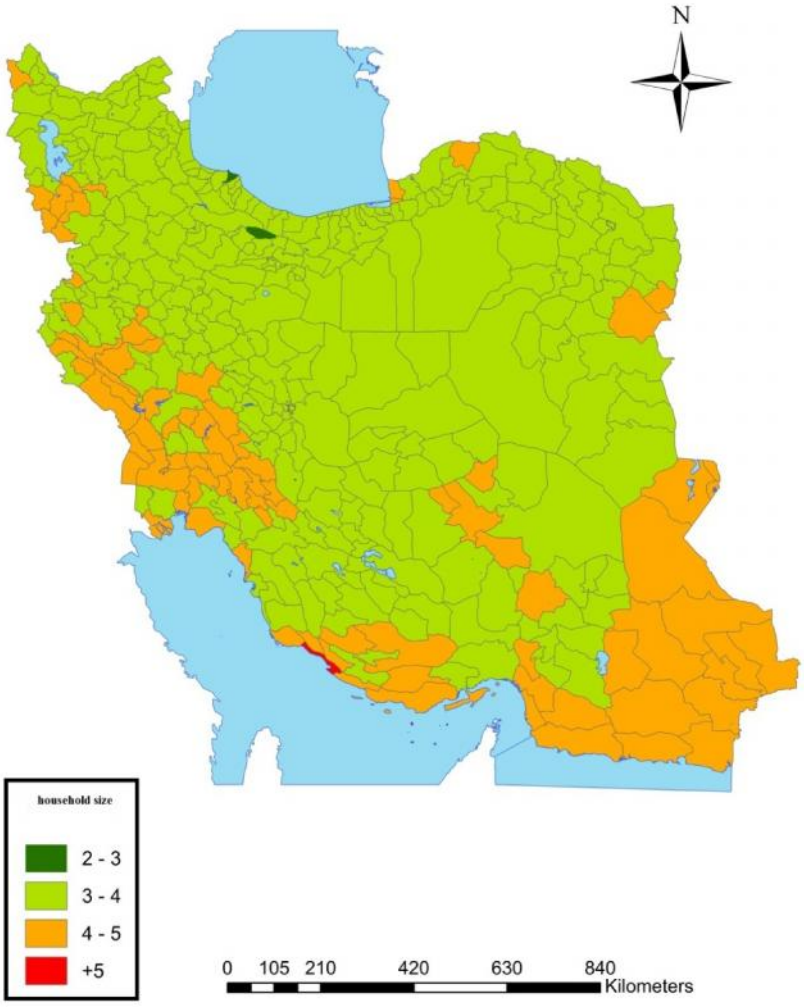

Figure 2: map of household size distribution in districts of Iran, 2011

FERTILITY AND HOUSEHOLD SIZE

As mentioned before, level of fertility is one of the main determinants of household size. This study used average fertility rate for 15 years, because children live in their parents' household until they are 15 years old, therefore, it is not just the current fertility rate that matters. The fertility data taken from 1996, 2006 and 2011 censuses in Iran that were calculated by abasi-shoavazi et al (2013) provide estimates of fertility levels and trends over the 15 years based on the own children method. Own children method also considers children mortality that is necessary.

Average total fertility rate, for 15 years before the census, is around 2.21. This amount varies from approximately 1.18 in Taleqan to 5.41 in Zaboli in Sistan and Balochestan (Fig.2). Figure 4 plots the relationship between household size and average total fertility for each of the 396 districts of

Iran. The correlation between these two variables, household size and 'average' total fertility, is quite strong (R2=0.48).

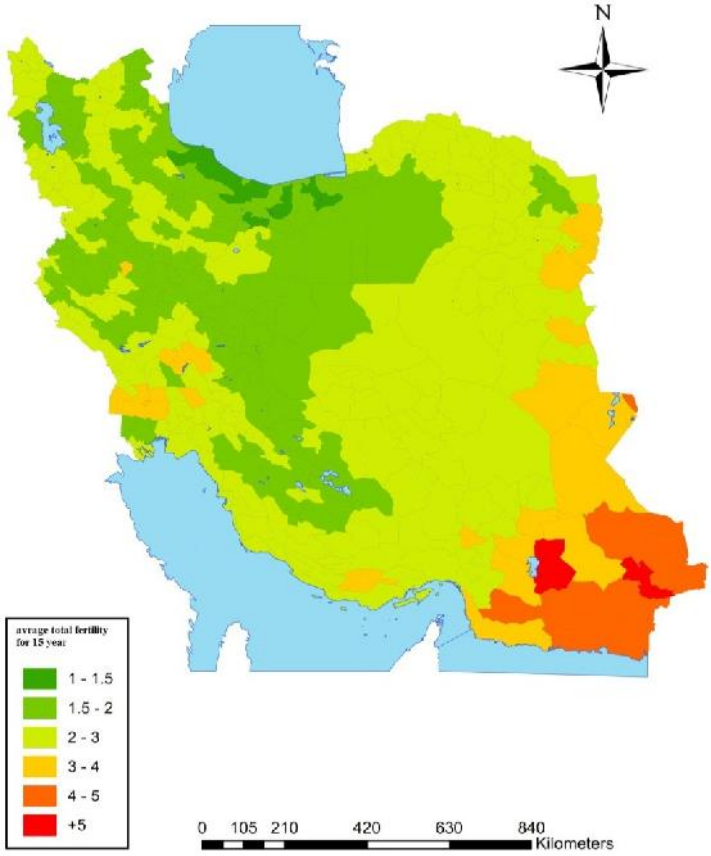

Figure 3: map of average total fertility rate distribution in districts of Iran, 2011

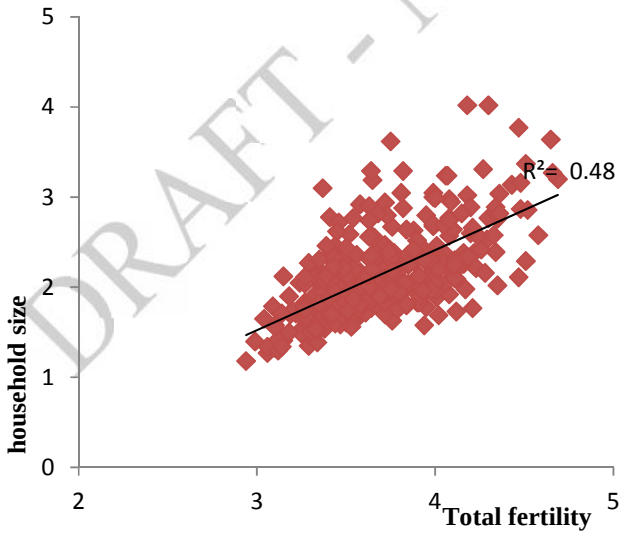

Figure 4: Relationship between household size and total fertility, 396 districts in 2011

Source: Iran Statistical Center 2011

AGE AT MARRIAGE AND HOUSEHOLD SIZE

This study used from singulate mean age at marriage (SMAM) method which was first proposed by Hajnal (1953) to estimate mean age at marriage form current status censuses (Andrew, 2014, p. 90). Mean age at marriage shows a discrepancy among districts of Iran, from a lowest mean of 22.18 for men in Sib and Soran (from province of Sistan and Baluchestan) to its highest mean of 30.40 in Gilaneqarb (from province of Kermanshah). And for women varies from 18.95 in Khalilabad (from province of Khorasan Razavi) to 27.97 in Gilaneqarb (from province of Kermanshah).

Since leaving household normally occurs at or close to the period of marriage, we could presume a correlation between mean age at marriage and household size. This presumption is shown in Figure 5. There is a weak correlation between the mean age at marriage of women and the household size. It is probably due to our data, because the available data did not draw a distinction between adult daughters and sons in the household size. A parallel analysis of the correlation between the mean age at marriage for men and the household size was not statistically significant. It is not clear why the relationship between the mean age at marriage for men and the household size is not significant. For an explanation, as Bongaart (2001) indicates, the time of departure from home for women is often delayed until marriage, but for men it takes place without any definite pattern, before and after marriage.

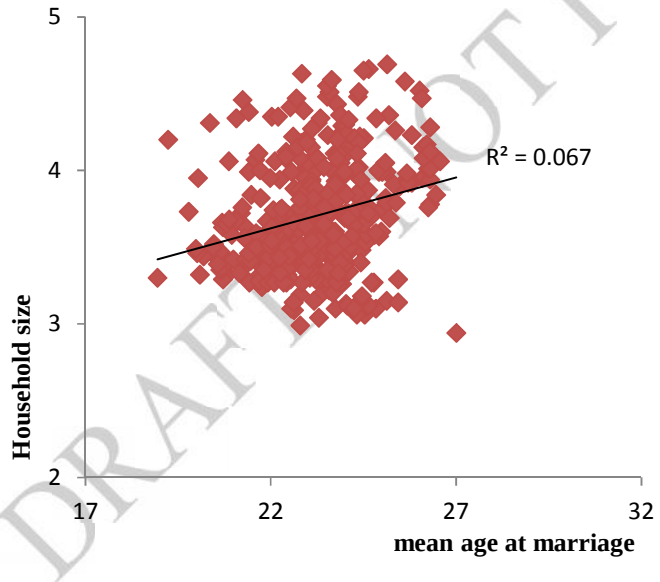

Figure 5: Relationship between household size and mean age at marriage of women in 396 districts of Iran in 2011.

DIVORCE AND HOUSEHOLD SIZE

With regard to our data that were extracted from the census, a better way to express the divorce rate in a year is to relate the number of divorces in the year to the number of married women or men in the middle of the year, or to the average number of married women and men. This measure is a type of refined divorce rate (Siegel & Swanson, 2004, p. 196).

As noted before divorce is one of the proximate demographic determinants of the household size. Refined divorce rate is calculated for women and men, separately. The average of this rate for women is approximately 1.93 percent, and for men around 0.73 percent. This rate for men is not equal to that of women, probably because of a higher rate of remarriage between men than women. Refined divorce rate demonstrate that increase in rate of divorce frequently relies on modernization. Because the highest rate of divorce relate to district of Tehran, and the lowest rate of rate relates to district Andica from province of Khuzestan.

There is a weak correlation between divorce of women and the household size (0.07). A similar analysis of the correlation between the divorce of men and the household size was statistically significant but not in a strong way (0.13). The correlation is different between men and women. It is likely that some women do not live alone and live with their parents or other relatives.

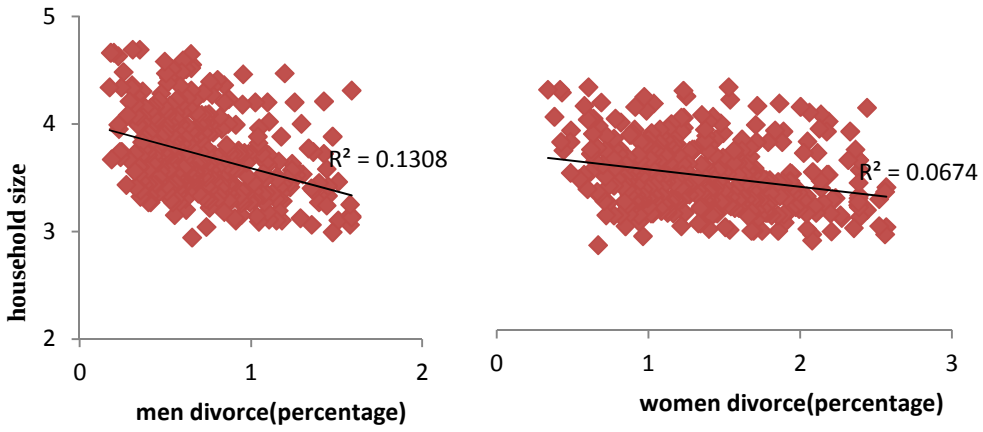

Figure 6: Relationship between household size and divorce of men/women, in 396 districts of Iran in 2011

Source: Iran Statistical Center 2011

WIDOWHOOD AND HOUSEHOLD SIZE

For computing the widowhood (death of husband) rate like divorce, number of widow /widower is divided by the number of married females/male. We expected that one-person household to be enhanced as a result of increasing individualism and life expectancy. The average of widowhood among men is 1.74 percent, and among women 10.99 percent. This discrepancy could be the

result of remarriage, and also, the eight-year war with Iraq that increased the number of young widows. Widows who are single because their husband is dead, do not have a statistically significant correlation with household size, because there is no clear pattern of residence after their widowhood. Widowers accounts for 0.14 of differences in variance of household size (Fig.7)

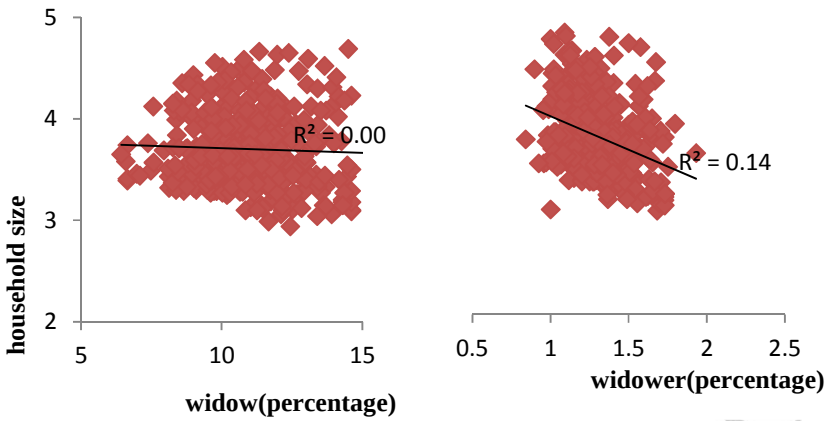

Figure 7: Relationship between household size and widowhood, in 396 districts of Iran in 2011

Source: Iran Statistical Center 2011

MODERNIZATION AND HOUSEHOLD SIZE

Modernization is one of the most essential factors in transition of household size in the literature. Modernization changes the dominant belief and culture about the ideal size of household. In this study, it is measured by industrialization, urbanization, education (primary & university), and internet usage. For reducing a set of variables (for measuring modernization) to a smaller set of underlying variables that are referred to as factors that we used in factor analysis. In one variable analysis, modernization accounts for 0.18 of differentiations in variance of household size in districts of Iran.

Fertility, nuptiality, divorce, widowhood and modernization are the key factors of household size determination that were assessed here. The collective effect of these determinants on total average household size is examined with regression. As expected, household size is positively related to average of fertility (B= 0.60), the mean age at marriage (B= 0.12), and negatively to divorce of men. Divorce of women is not statistically significant, probably as a result of their unclear state of residence after widowhood. Widowers (men that are single because their wife died) is negatively related to household size. For every unit change in the widower, we predict that the household size will change (-0.26). Other things being equal, these additional households reduce average household size

The coefficient for modernization is not statistically significant. This variable does not participate in explaining the independent variable. One reason for that could relate to the kind of variables. Demographic variables such as fertility have a direct impact on household size. In contrast,

socioeconomic variables, such as modernization, probably do not affect household size directly and have an indirect impact through the proximate determinant. This subject is examined with path analysis, subsequently.

Fertility, nuptiality, divorce and widowhood account for 69 per cent of the variance in household size. Conversely, 31 per cent of the variation in Household size is not due to this variable. One reason why 31 percent of the total variation in the average household size is not explained by this regression is that some of them have indirect impact on house hold size. In addition, some of the other variables that impact household size are not examined in this study, including: mortality, migration, and so forth.

Path analysis

Modernization does not have a significant direct association with household size, and as fig. 8 shows, this variable has only an indirect association with household size. Modernization, also, impacts household size through divorce, albeit this association is weak. It relates to the average of fertility inversely, in others it relates with household size directly. 21 per cent of the variation in household size is due to the difference in modernization levels of districts in Iran.

Table 1: Mutual effects of determinants on household size in regression modeling, 2011

		B	SE	β	T
constant		0.671	0.227		
Total fertility rate (average of 15 years)		0.60	0.03	0.71	19.50
		0.12	0.01	0.49	15.09
Mean age at first marriage					
Divorced (%)	**Men**	-0.26	0.12	-0.13	-2.14
	Women	0.08	0.10	0.05	**0.863
Widowed	**Men(%)**	-0.29	0.05	-0.21	-6.24
Indicator of modernization		-0.02	0.01	-0.06	**-1.615
R2				0.69	
F				144	

N=396
****p> 0.05**

Source: Iran Statistical Center 2011

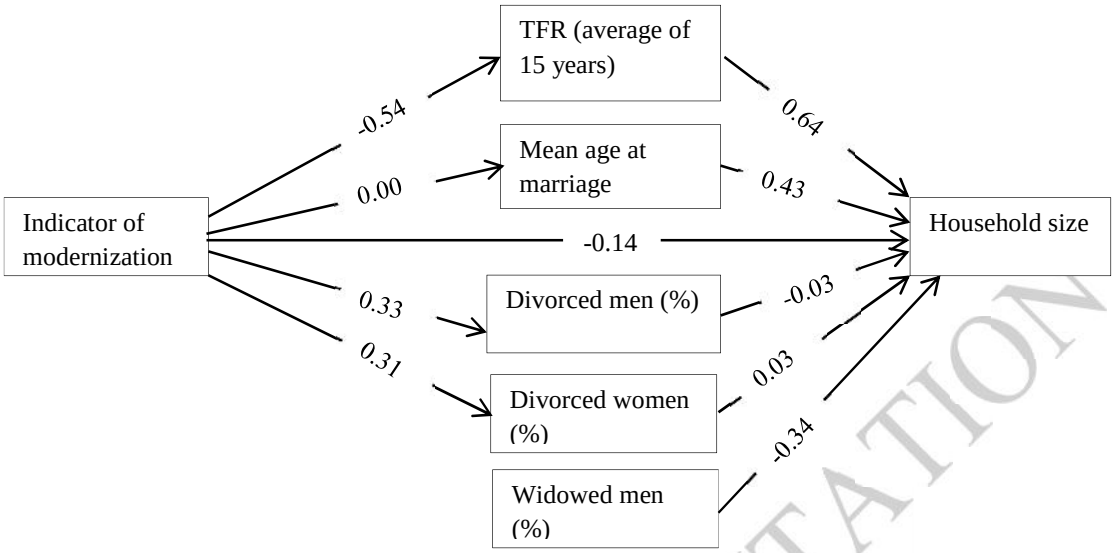

Figure 7: Path analysis of variables that participate in study

CONCLUSION

In the 396 districts of Iran, average household is 3.71 members. Average household size varies among districts from 6.5 in Kangan (in Bushehr province) to 2.9 in Taleqan (in Alborz Province). The districts in Iran, given their distance to the center, experience a different level of development, which impacts social and demographical variables; although, some districts have unbalanced development. Therefore, it leads some districts that have less modernization to have low fertility.

In regression modeling, household size positively correlates with the fertility and the mean age at marriage, and negatively correlates with the divorce and widowhood rate. Divorce of women and modernization are not significantly related. High level of Fertility causes the household to have a higher proportion of children that leads household to grow. Mean age at first marriage depending on the Iranian culture, is simultaneous with abandoning of the parents' household. If mean age at marriage increases, it will cause children to remain in house much longer, which as a result, increases the household size, and vice versa. Divorce, normally, divides the household into two parts. Widowhood demonstrates indirectly the level of mortality and living alone after death of the partner. These four variable that are significant, explained 69 percent of the district variation in household size.

In one variable examination, modernization had a significant impact on household size, however, in regression molding this relationship disappeared. It can be due to indirect impact of modernization on household size through proximate determinants. Therefore, we examined modernization impact with path analysis. Path analysis results show that modernization had direct and indirect association with household size that is statistically significant. In fact, modernization impacts are mostly through proximate determinant variables.

References

Abbasi-Shavazi, Mohammad Jalal; McDonald, Peter ; Hosseini-Chavoshi, Meimanat. (2008). Modernization or cultural maintenance: the practice of consanguineous marriage in Iran. *biosocial science, 40*(06), 911-933.

Aghajanian, Akbar; Thompson, Vaida;. (2013). Household Size and Structure in Iran: 1976-2006. *The Open Family Studies Journal, 5*(1), 1-9.

Andrew, H. (2014). *Demographic Methods.* New York: Routledge.

Bernard C. Rosen and Alan B. SimmonsSource. (1971). Industrialization, Family and Fertility: A Structural-Psychological Analysis of the Brazilian case. *Demography, 8*(1), 49-69.

Bongaarts, J. (2001). Household Size and Composition in the Developing World in the 1990s. *Population Studies, 55*(3), 263-279.

Burch, T. K. (1979, april). Household and Family Demography: A Bibliographic Essay. *Population Index,, 45*(2), 173-195.

Carliner, G. (1975, february). Determinants of household headship. *Journal of Marriage and Family, 37*(1), 28-38.

Chevan, Albert; Korson, J. Henry;. (1975). Living arrangements of widows in the United States and Israel, 1960 and 1961. *Demography , 12*(3), 505-518.

Chevan, Albert; Korson, J. Henry;. (1972). The widowed who live alone: an examination of social and demographic factors. *Social Forces, 51*(1), 45-53.

Hammel, E., & Laslett, P. (1974). Comparing household structure over time and between cultures. *Comparative studies in society and history, 16*(1), 73-109.

Jiang, Leiwen; O'Neill, Brian C. (2007, september). Impacts of Demographic Trends on US Household Size and Structure. *Population and Development Review, 33*(3), 567-591.

Kobrin, F. (1973, december). Household headship and its changes in the united states, 1940-1960, 1970. *Journal of the American Statistical Association, 68*(334), 793-800.

Kobrin, F. (1976, february). The fall in household size and the rise of the primary individual in the United States. *Demography, 13*(1), 127-138.

Kuznets, S. (1978, Jun). Size and Age Structure of Family Households: Exploratory Comparisons. *Population and Development Review*, 187-223.

Marshall, G. (1998). *Dictionnary of sociology.* New York: oxford university press.

Paydarfar, A. A. (1975). The Modernization Process and Household Size: A Provincial Comparison for Iran. *Journal of Marriage and Family,, 37*(2), 446-452.

Ritzer, G. (2012). *Wiley-blakcwell companions to sociology.* Malden: Blackwell.

Siegel, J., & Swanson, D. (2004). *the method and materials of demograpgy.* San Diego, California: Elsevier Academic Press.

Stinner, W. F. (1977, May). Urbanization and Household Structure in the Philippines. *Journal of Marriage and Family, 39*(2), 377-385.

Wirth, L. (1938). Urbanism as a Way of Life. *American Journal of Sociology, 44*(1), 1-24.