Kin Outside the Household and Household and Demographic and Social Outcomes in Rural Liaoning, China, 1774-1909

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Introduction

We make use of a uniquely detailed and voluminous longitudinal, individual- and household-level dataset from rural Liaoning in northeast China during the eighteenth and nineteenth century to examine the role of kin networks beyond the household in determining individual social and demographic outcomes in late imperial China. We examine how individual chances of attainment, fertility, marriage, and mortality were affected by measured characteristics of the household, an administrative unit known as the household group, the descent group, and the village. We assess the role of kin networks beyond the household by examining whether characteristics of the household group and descent group affected individual outcomes once characteristics of the household and village were controlled for. Results so indicate that indeed, the household group and descent group were important units of family and social organization in late imperial Chinese society, as reflected in the importance of their characteristics in determining individual social and demographic outcomes.

In this very extended abstract we introduce our data, outline our approach to assessing the importance of kin networks beyond the household, and present tables of results. The discussion of results is necessarily cursory reflecting that we have only just completed the calculations.

Data

The data we use in this analysis are a subset of one of the larger and certainly longer individual level longitudinal panel data sets assembled for micro-level historical studies. All together we have linked as many as seventeen generations from the seventeenth century to the present with 275,000 individual histories, their households, their descent groups, and their demographic and social outcomes. The household register data for 1749 to 1909 that we use in this analysis come from triennial household registers for almost 500 villages from Liaoning province dating from 1749 to 1909 which we have entered into machine readable form and linked to both other historical populations recorded in family genealogies and grave inscriptions from these same villages, and to other contemporary populations of their descendants recorded in current censal and household registers as well as retrospective surveys. We have also located and linked a variety of contextual information about the region and specific communities.

The linked data have six distinct features that make them uniquely suited to address a variety of substantive questions in historical demography and family sociology. First, they are longitudinal and individual-level and include not only demographic information, but social, economic, and political information as well. Second, they locate individuals within their households and kin groups, distinguishing kin by relationship and co-residence. Third, they include parallel information at the community level on local practices, economic conditions, and state policies. Fourth, they follow the population from their origins in the seventeenth century to the present. Fifth, they are numerous and varied enough to test many of the assertions about the relationships between kinship and demography over space and time. Sixth, they come from disparate but complementary sources to provide population information from the points of view of the state as well as the local population themselves.

We have been able to produce such historical data because of the internal consistency of the core household register data, their availability through the Genealogical Society of Utah and the Liaoning Provincial Archives, and the sustained efforts of teams of colleagues and data entry operators in the Peoples Republic of China. We have described the data and data entry operation elsewhere (Ding, Guo, Lee, and Campbell 2004; Lee and Campbell 1997; Lee and Wang 1999). In addition, since 1998 an on-going collaborative project with the Liaoning Provincial Local History Office allows us to visit these villages to collect historical and contemporary population sources, survey specific lineages, and record analogous contemporary information to the historical records. All together we have spent over 500 person-days in fieldwork visiting almost 50 of the largest villages to collect over 30 bound genealogies and over 50 genealogical charts and lists. We have also collected and transcribed dozens of long historical grave inscriptions, half a dozen other inscriptions, and half a dozen contemporary village census or household registers. Most importantly we have completed retrospective and contemporary surveys in over a dozen villages recording each individual born in the village since 1949, their birth, marriage, death dates, education, occupation, and migration history and have linked these contemporary and historical populations.

Table 1 summarizes the currently linked data: 1.3 million observations of 225 thousand individuals who lived between 1750-1909 of which 1,066,004 observations for 187,389 individuals have been checked and cleaned, 80 largely patrilineal genealogies with some 25,000 largely male descendents and their spouses who lived between 1650-2000, 30 inscriptions from 1770-1940 with as many as 1000 linked relatives, and 11 retrospective surveys and 3 contemporary household registers with over 15,000 individuals born between 1880-2002. By supplementing the household registers with genealogies and other historical sources, we can trace 20,000 individuals from the arrival of their descent group founders in Liaoning in the late seventeenth century forward to the present. In addition, by surveying contemporary descendants from these historical populations and linking them to the registers, we can trace 50,000 people from the present back to the mid-eighteenth century.

Table 1. Demographic Sources for Northeast China

Population	Period	Registers	Observations	Coding	Genealogy	Inscription	Survey

Aerjishan	1813-1909	18	13,622	Done			
Bakeshu	1759-1909	32	48,709	Done	7	5	2
Changzhaizi	1768-1909	25	46,810	Done	2		
Chengnei	1798-1909	24	55,671	Done			
Dadianzi	1756-1909	27	76,984	Done	3	3	1
Dami	1759-1909	32	31,544	Done	2		
Daoyitun	1774-1909	35	118,633	Done	8	7	2
Daxintun	1749-1909	29	86,956	Done	10		1
Diaopitun	1768-1909	26	70,153	Done			
Feicheng	1756-1909	39	70,175	Done	8	5	
Gaizhou Manhan	1753-1909	20	50,110	Done			
Gaizhou Mianding	1789-1909	25	56,051	Done			
Gaizhou	1762-1909	27	42,834	Done	4		
Guosantun	1774-1909	34	35,073	Done	4	2	1
Haizhou	1759-1909	26	100000	Correcting			2
Langjiabao	1756-1909	25	47,340	Done			
Nianmadahaizhai	1749-1909	29	53,882	Done	4	9	1
Niuzhuang Liuerbao	1780-1906	23	50,253	Done			
Wangduoluoshu				Collecting			
Wangzhihuitun	1765-1909	28	60,339	Done		5	1
Waziyu	1777-1906	21	50000	Entering			
Wuhu				Collecting			
Zhaohuatun	1774-1909	26	50,865	Done	1	1	

For this analysis we make use of the triennial historical household registers that provide detailed information on social outcomes, demographic behavior, and kinship organization for a population of hereditary royal peasants between 1749 and 1909. As summarized in table 1, we have completed data entry and data cleaning of the household registers for 19 administrative populations, are cleaning the data entry of a twentieth population, Haizhou, are entering a twenty-first population, Waziyu, and are collecting the registers for two more populations, Wangduoluoshu and Wuhu. In addition, we have launched a similar data project for 120 other villages in another northeastern Chinese province, Jilin.

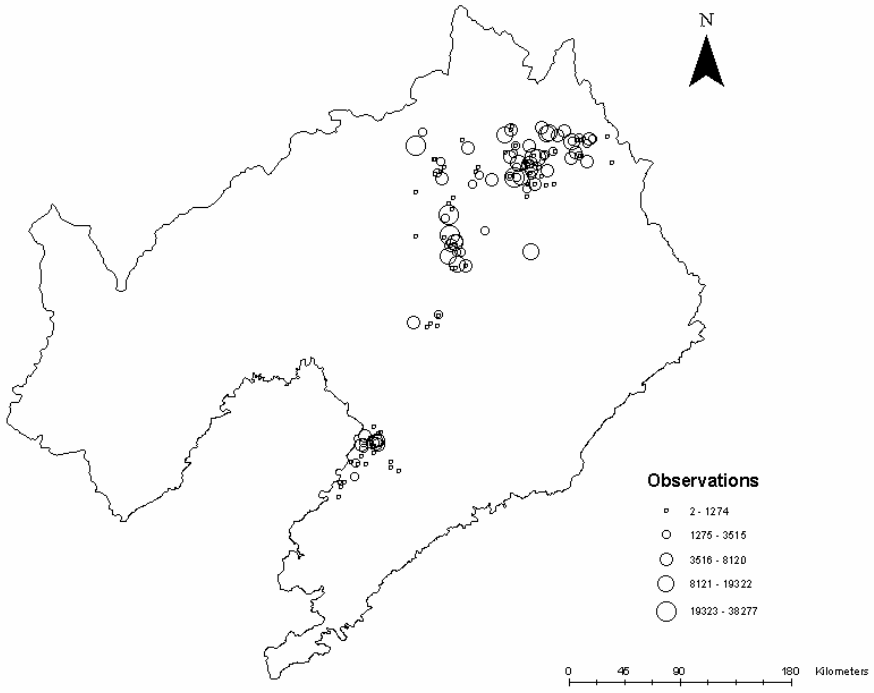
The institutional contexts of these populations varied dramatically. While most of these populations produced grain, several of them produced more specialized goods. The Dami population gathered honey, the Gaizhou Mianding population raised cotton, and the Diaopitun population produced animal furs. While most of these populations consisted of royal peasants, some such as Aerjishan were royal serfs. Others such as Gaizhou Mianding were in-between. As a result of such institutional variation, the opportunities for economic, educational, political, and social advancement varied across populations. Members of some populations were eligible to take state examinations, serve in state offices, and to earn state titles; others were not.

The registers record these populations more completely than almost any other historic rural population in China because they were affiliated with the imperial household as royal peasants or royal serfs, and because they were organized under the Han Martial Banners, and therefore liable for military service. The Imperial Household

Agency surveyed and registered the population triennially beginning in 1749 with the establishment of the General Office of the Three Banner Commandry and designed a system of internal cross-checks to ensure data consistency and accuracy. First, they assigned every person in the banner population to a residential household called a *linghu* and registered them on a household certificate. Then they organized households into local household groups called *zu*, and compiled annually updated local household registers. Finally, every three years they compared these local registers and household certificates with the previous larger population and household register to compile a new register. They deleted and added people who had exited or entered in the last three years and updated the ages, relationships, and official positions of those people who remained as well as any changes in their given names. Each register, in other words, completely superseded its predecessor.

The registers list each individual one to a column in order of their relationship to the household head, with his children and grandchildren listed first, followed by coresident siblings and their descendants, and uncles, aunts, and cousins. Wives are always listed immediately after their husbands, unless a co-resident widowed mother-in-law supercedes them. For each person in the target population the registers report the following information: relationship to their household head; name(s) and name changes; adult banner status; age; animal birth year; lunar birth month, birth day, and birth hour; marriage, death, or emigration, if any during the intercensal period; physical disabilities, if any and if the person is an adult male; name of their household group head; banner affiliation; and village of residence. For adult males, the registers also record official titles and occupations that allow us to measure individual income or wealth. 4 percent of males held such titles at some point in their life; they and their families comprise the rural local elite. For working-age males, the registers also record whether or not they were considered disabled. 10.2 percent of males were classified as disabled. Additional information, such as reproductive histories, are available through record linkage and comparison. Since individuals are listed in the same order in successive registers, longitudinal linkage of entries is straightforward.

As Map 1 shows, the more than 500 Liaoning villages are arranged in three distinct regions over an area of 40,000 square kilometers, approximately the size of the Netherlands: a commercialized south from Haicheng to Dalian down the Liaodong peninsula, an administrative center located on the Liaodong Plain around the provincial capital, and an agricultural north in the hills and mountain ranges directly north. These pronounced regional differences enable us to test a variety of hypotheses about socioeconomic conditions and demographic behavior, and measure regional characteristics as well as shared processes and relationships. The common immigration origins and institutional background of our communities allow us to control for such particular circumstances. While our results only illuminate the behavior of specific Chinese populations, we can draw from them implications for the demography not of China as a whole, but of specific social, economic, and political systems. This strategy, comparing local rather than national contexts, avoids the problem of representativeness normally inherent in community studies.



Map 1 Liaoning Historical Study Populations

These registers have a number of features that distinguish them as a source for historical demography. In contrast with historical Chinese demographic sources such as genealogies that only record adult males, the historical registers record most boys and some girls from childhood, as well as all women from the time of their marriage. Unlike genealogies, they also provide detail on village and household residence. In contrast with parish registers, an important source for European historical demography, they allow for precise measurement of the population at risk of experiencing most demographic events and social outcomes. We have already used the registers to investigate the determinants of individual survivorship (Campbell and Lee 1996, 2000, 2002, 2004), marriage (Lee and Campbell 1998a, 1998b), migration (Campbell and Lee 2001), ethnic identity (Campbell, Lee, and Elliott 2002), and social mobility (Campbell and Lee 2003). These publications also detail the strengths and limitations of the register data relevant to the analysis of each outcome.

One of the most important features of these linked data is that they follow families for as many as seven generations, from the middle of the eighteenth century to the beginning of the twentieth. The population is closed, in the sense that the registers followed families that moved from one village to another within the region. Entries into and exits from the region were rare, and when they did occur, their timing was recorded (Lee and Campbell 1997, 223-237; Lee and Wang 1999, 149-153). Through linkage within the registers, therefore, we can identify the paternal kin of individuals, even if they live in other households or even villages. Table 2 summarizes the results of the linkage we have already carried out within the household registers. We can locate a great-great-

grandfather within the registers for 50.2 percent of men overall, and 83.0 percent of men who first appear after 1900. Figure 1 presents this information in graphical form, presenting the proportions of children in each register for whom specified paternal ancestors can be located. The proportions are higher than in Table 2 because of the restriction to children.

Table 2. Males by Number of Generations of Ancestry in Registers (March 2004)

Paternal Ancestor		Percentage of males for whom specified ancestor can be located: All males	Appearing after 1900
Father		89.6	92.8
Grandfather		78.6	89.2
Great-grandfather		65.2	87.1
Great-great-grandfather		50.2	83.0
Great-great-great-grandfather		34.3	73.2
Great-great-great-great-grandfather		19.4	51.3
Great-great-great-great-great-grandfather		8.7	25.0
Great-great-great-great-great-great-grandfather		3.3	9.8
	N	103402	23112

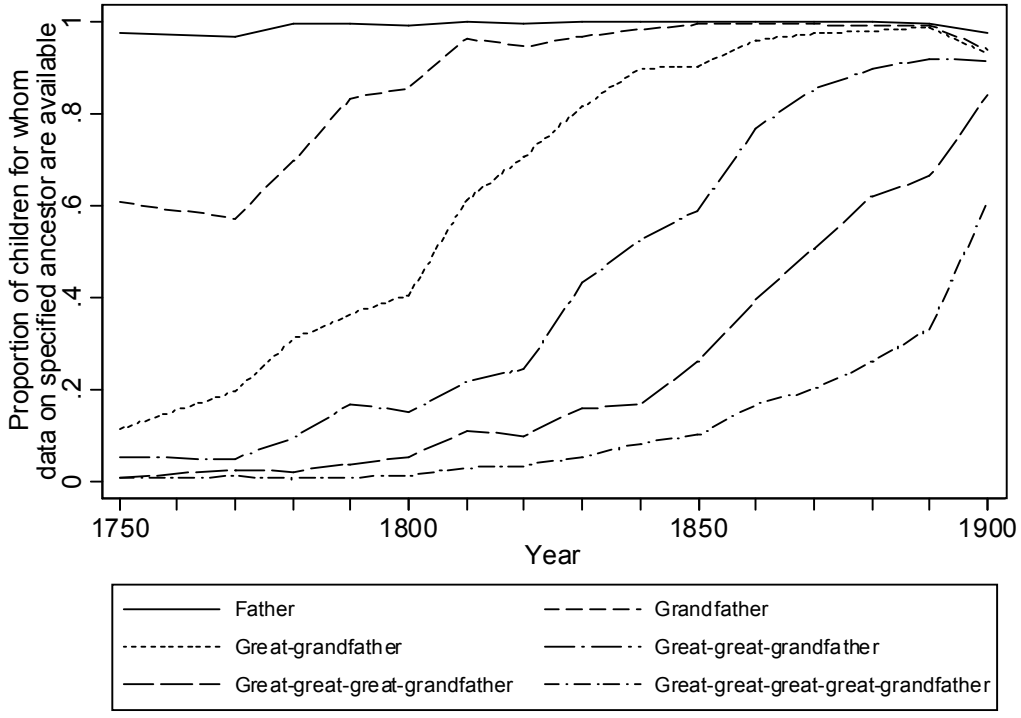


Figure 1 Children by numbers of generations that their ancestry can be traced in the registers

Through such linkage, we have grouped the individuals in the registers into descent groups defined by descent from a common male ancestor who may have lived before the earlier register in 1749. By assuming that households with the same surname

who are listed consecutively in a register are related, these descent lines can be further aggregated into 1,920 descent groups defined by descent from a male founder who preceded the registers. The 758 largest groups account for 95 percent of the population. The small descent groups with only a few identified members tend to consist of the members of households that were first recorded in the registers in the late nineteenth century or beginning of the twentieth and could not be linked to a larger group.

The registers also identify a unit of family organization between the residential household and the descent group: the household group. Household groups were administrative units that consisted of one or more closely related residential households, all in the same village, and all part of the same descent group. Headship of the household group was an unsalaried official position, and the lowest rung in the administrative hierarchy. Household group heads had a variety of powers and responsibilities.

Our data allow for an analysis that distinguishes the roles of each of four levels of social and family organization in accounting for individual outcomes: village, descent group, household group, and household. Table 1 tabulates observations according to the number of descent groups in the individual's village, the number of villages over which the individual's descent group is distributed, and the number of households in the individual's household group. The data are clearly adequate to allow for a distinction between effects of descent group and village characteristics. Roughly ninety percent of observations of individuals are from villages with two or more descent groups. Conversely, more than half of the observations were of individuals whose descent groups were distributed among two or more villages.

Tables 1 and 2 here

Methods

We assess the relative importance household, household group, descent group, and village as units of social organization through estimation of discrete-time event-history analyses of four outcomes: male attainment of official position, male first marriage, male marital fertility, and male and female mortality. For the three binary outcomes, attainment of position, first marriage, and mortality, we estimate logistic regressions. The dependent variable in each case is the probability of experiencing the outcome of interest in the period between the current register and the next. For male marital fertility, the dependent variable is the number of male births between the current register and the next that survive to be registered. Since this is a count variable, we estimate a poisson regression. In all cases, analysis is restricted to the registers where the one immediately succeeding or the one after that is available, thus the outcomes of interest occur in either the next three or four years.

We measure how the individual risks of each of these four outcomes correlated with the components of variations in the four rates at each of the four levels. Thus we construct a total of sixteen right-hand-side variables: for each of the four outcomes under consideration, we construct four new variables that decompose them into portions

attributable to variation at the levels of the village, descent group, household group, and household. In each case, we adjust the measures to exclude information about the individual's own experience.

We include the resulting sixteen right-hand-side variables in the event-history analyses of the four outcomes. Thus for each outcome, we not only measure how individual chances of experiencing it correlated with the rates for the same outcome experienced by members of successively higher units of organization, we also measure how they correlated with the rates for the other three outcomes at each level of organization. We can accordingly examine how the chances of the four different outcomes correlated with each other. We can, for example, examine whether the members of descent groups that had held more official positions also married earlier, had more sons, or had lower mortality.

For the right-hand-side measures of attainment, we construct separate counts of the total numbers of positions currently held by members of the village, descent group, the household group, and household. Coefficients reflect the effects of adding one member with a position at that unit of organization, holding constant the number of positions at other levels. Positions carried with them substantial official salaries and other perquisites. Certain positions also carried considerable power over the allocation of resources. To the extent that material, political or social resources associated with the attainment of position circulated across the boundaries between units at one level of organization, the coefficients at the next level up should be non-zero. Conversely, if the boundaries between units at one level were rigid, coefficients for measures at the next level up should be zero. Thus, for example, if only the positions held by members of the same household improved a man's marriage prospects, the coefficient for positions held by household members should be positive, and the coefficient coefficients for positions held by members of the household group, descent group, and village should all be zero. Of course, since the number of positions held is a direct measure of economic, social, and political status of a group, we are especially interested in how it affects not only individual attainment chances, but fertility, mortality, and marriage chances as well.

For our right-hand-side measures of male marriage, we compute indices at each level that capture variation in the proportions married that cannot be accounted for by variation at the next level up. Male marriage chances in late imperial Chinese society depended not only on individual characteristics, but also on family economic, political, and social status. Identifying the unit of organization within which marriage chances were correlated locates the boundaries of kin groups within which economic resources as well as less tangible social and political resources like power and prestige circulated. For example, to the extent that male marriage chances were determined largely by local marriage market characteristics and the characteristics of their own household, not the household group or descent group, then marriage chances should be correlated within households but not within household groups or descent groups. Since we consider the proportion married indicative of economic, social, or political status, we are of course interested in how it affects attainment, fertility, and mortality chances.

The marriage measure is the difference between observed percentages and those expected if age-specific proportions married were the same as the next level up. Thus, for the village, the index considers of the percent of males married minus the percent expected to be married if age-specific proportions married were the same as for the state farm populations of which the village is a part. Similarly, for the descent group, the index consists of the percent of males married minus the percent expected to be married if age-specific proportions were the same as for the villages in which descent group members living. For the household group, the expected values are based on proportions married in the descent group. For the household, expected values are based on proportions married in the household group. If marriage prospects are determined largely by local marriage market conditions and household characteristics and kin beyond the household are relatively unimportant, only the coefficients for the village and household indices should be positive.

For our right-hand-side mortality and fertility measures, we compute indices at each level that capture the variation that cannot be account for by variation at the next level up. They are the observed proportions dying between the current register and the next minus the proportion expected if age-specific rates were the same as they were at the next level up. Obviously, the values are adjusted to exclude the fertility mortality experience of the individual recorded by the observation. To the extent that fertility or mortality risks are determined largely by the village environment and the economic and social circumstances of the residential household, we expect that to be apparent in the coefficients for measures at those levels. To the extent that there were meaningful interactions between kin living in different households in the same household group or descent group, of course, we expect that to be reflected in the coefficients at those levels.

In our interpretation of results, we focus on the role of kin beyond the household, as represented in the household group and the descent group.

Results

The results in tables 3 through 5 confirm the importance of kin beyond the household in determining social and demographic outcomes in late imperial China. Characteristics of the descent group and household group clearly mattered. Men in descent groups and household groups that held more official positions were themselves more likely to attain position, even after controlling for the attainment of their close kin. Men living in descent and household groups with especially high proportions married were themselves more likely to marry, even after controlling for the proportions married in the village. Correlations are also apparent for mortality, indicating that the epidemiological environments of the village and household were not solely responsible for determining risks, but that the conditions of the kin group were important as well.

For our PAA presentation, obviously, we will expand on our discussion of these results and refine the calculations.

Table 1. Observations by Numbers of Overlapping Units of Organization

	Descent Groups in Village		Villages in Descent Group		Household Groups in Descent Group		Households in Household Group	
	N	%	N	%	N	%	N	%
1	101664	9.67	487806	46.42	194761	18.53	159810	15.21
2	109843	10.45	240704	22.9	149553	14.23	150933	14.36
3	102513	9.75	142124	13.52	121773	11.59	160804	15.3
4	76292	7.26	72778	6.93	83196	7.92	139589	13.28
5+	660568	62.86	107468	10.23	501597	47.73	439744	41.85
Total	1050880	100	1050880	100	1050880	100	1050880	100

Table 2. Observations by Number of Individuals in Household

	N	%
1	18320	1.74
2-4	175206	16.67
5-9	310105	29.51
10-19	321312	30.58
20+	225937	21.50
Total	1050880	100

Table 3. Male Attainment, First Marriage, and Marital Fertility

	Attainment		First Marriage		Marital Fertility	
	Coeff.	p	Coeff.	p	Coeff.	p
Village						
Size (10% increase)	-0.0036	0.18	0.0005	0.56	-0.0022	0.00
# Positions	0.0074	0.00	0.0005	0.46	0.0007	0.13
% Married (Obs.-Exp.)	-0.0009	0.85	0.0143	0.00	0.0048	0.00
Fertility (Obs.-Exp.)	-0.0006	0.14	0.0005	0.00	-0.0004	0.00
Mortality (Obs.-Exp.)	0.0010	0.39	0.0029	0.00	0.0002	0.46
Descent Group						
Size (10% increase)	-0.0044	0.20	-0.0015	0.14	0.0055	0.00
# Positions	0.0233	0.02	-0.0080	0.02	-0.0065	0.00
% Married (Obs.-Exp.)	0.0173	0.00	0.0107	0.00	0.0058	0.00
Fertility (Obs.-Exp.)	-0.0010	0.00	-0.0004	0.00	-0.0009	0.00
Mortality (Obs.-Exp.)	0.0011	0.18	0.0023	0.00	-0.0001	0.43
Household Group						
Size (10% increase)	0.0037	0.45	0.0017	0.24	0.0072	0.00
# Positions	0.1008	0.00	-0.0071	0.44	-0.0016	0.78
% Married (Obs.-Exp.)	0.0244	0.00	0.0086	0.00	0.0044	0.00
Fertility (Obs.-Exp.)	-0.0006	0.02	-0.0002	0.03	-0.0005	0.00
Mortality (Obs.-Exp.)	0.0010	0.20	0.0017	0.00	0.0003	0.03
Household						
Size (10% increase)	0.0170	0.00	0.0010	0.55	0.0199	0.00
# Positions	0.1029	0.00	0.0765	0.00	0.0323	0.00
% Married (Obs.-Exp.)	0.0187	0.00	0.0054	0.00	0.0077	0.00
Fertility (Obs.-Exp.)	-0.0005	0.00	-0.0002	0.00	-0.0020	0.00
Mortality (Obs.-Exp.)	-0.0006	0.25	0.0000	0.91	-0.0003	0.00
Close Kin and Self						
# Brothers	-0.0615	0.04	-0.0013	0.90	0.0199	0.00
# Brothers w/ Position	0.6096	0.00	0.0943	0.25	-0.0520	0.17
Eldest Brother	-0.0147	0.82	0.0546	0.01	0.0461	0.00
# Cousins	-0.0043	0.81	0.0130	0.04	0.0051	0.16
# Cousins w/ Position	0.4291	0.00	-0.0427	0.60	-0.0585	0.18
Eldest Cousin	0.0831	0.24	0.0156	0.46	-0.0357	0.01
Father's Position	1.2931	0.00	0.1961	0.00	0.0238	0.28
Position			0.8667	0.00	-0.0295	0.33
N		276781		99304		188843
Events		1347		20106		55124
Log likelihood		-7146.49		-44566.25		-70945.74
Pseudo-R2		0.16		0.11		0.24

Table 4. Male Mortality

	1-15 sui		16-55 sui		56-75 sui	
	Coeff.	p	Coeff.	p	Coeff.	p
Village						
Size (10% increase)	0.0041	0.01	0.0010	0.34	0.0052	0.00
# Positions	-0.0001	0.96	0.0012	0.16	-0.0016	0.15
% Married (Obs.-Exp.)	-0.0176	0.00	0.0050	0.00	0.0068	0.00
Fertility (Obs.-Exp.)	0.0003	0.29	0.0002	0.33	0.0001	0.77
Mortality (Obs.-Exp.)	0.0052	0.00	0.0041	0.00	0.0048	0.00
Descent Group						
Size (10% increase)	0.0028	0.17	0.0011	0.37	0.0029	0.06
# Positions	0.0028	0.67	-0.0029	0.55	-0.0079	0.16
% Married (Obs.-Exp.)	-0.0039	0.12	0.0028	0.03	0.0051	0.00
Fertility (Obs.-Exp.)	0.0004	0.24	-0.0002	0.33	-0.0004	0.09
Mortality (Obs.-Exp.)	0.0060	0.00	0.0054	0.00	0.0072	0.00
Household Group						
Size (10% increase)	0.0077	0.01	0.0084	0.00	0.0073	0.00
# Positions	0.0177	0.28	-0.0132	0.29	-0.0048	0.76
% Married (Obs.-Exp.)	0.0017	0.41	0.0021	0.05	0.0030	0.01
Fertility (Obs.-Exp.)	-0.0003	0.19	-0.0002	0.16	-0.0004	0.02
Mortality (Obs.-Exp.)	0.0040	0.00	0.0048	0.00	0.0055	0.00
Household						
Size (10% increase)	0.0140	0.00	0.0025	0.23	0.0133	0.00
# Positions	0.0159	0.57	0.0093	0.73	-0.0509	0.13
% Married (Obs.-Exp.)	0.0035	0.04	-0.0006	0.43	-0.0003	0.74
Fertility (Obs.-Exp.)	-0.0005	0.00	0.0005	0.00	0.0001	0.23
Mortality (Obs.-Exp.)	0.0015	0.00	0.0024	0.00	0.0023	0.00
Close Kin and Self						
# Brothers	-0.0648	0.01	-0.0720	0.00	-0.1382	0.00
# Brothers w/ Position	-0.2138	0.36	-0.0643	0.50	0.0720	0.57
Eldest Brother	0.0357	0.45	-0.0303	0.27	-0.0413	0.21
# Cousins	-0.0133	0.28	-0.0230	0.01	-0.0839	0.00
# Cousins w/ Position	-0.0309	0.85	-0.0288	0.79	0.1866	0.33
Eldest Cousin	0.0587	0.18	-0.1369	0.00	0.0127	0.70
Father's Position	0.2553	0.00	0.0120	0.81	-0.0108	0.85
Position			-0.2217	0.00	-0.1126	0.00
Married			0.1837	0.01	0.2095	0.00
N		110290		236907		45768
Events		3857		8246		7059
Log likelihood		-15180.48		-33359.07		-18087.38
Pseudo-R2		0.09		0.07		0.08

Table 5. Female Mortality

	1-15 sui		16-55 sui		56-75 sui	
	Coeff.	p	Coeff.	p	Coeff.	p
Village						
Size (10% increase)	-0.0007	0.83	0.0063	0.00	0.0018	0.18
# Positions	0.0000	1.00	-0.0005	0.58	0.0012	0.29
% Married (Obs.-Exp.)	-0.0028	0.65	-0.0020	0.29	0.0035	0.08
Fertility (Obs.-Exp.)	0.0002	0.77	0.0003	0.17	0.0007	0.01
Mortality (Obs.-Exp.)	0.0077	0.00	0.0059	0.00	0.0067	0.00
Descent Group						
Size (10% increase)	-0.0004	0.94	0.0021	0.10	0.0033	0.03
# Positions	-0.0059	0.67	-0.0055	0.25	-0.0075	0.21
% Married (Obs.-Exp.)	-0.0054	0.26	-0.0035	0.02	-0.0004	0.80
Fertility (Obs.-Exp.)	0.0006	0.41	-0.0003	0.21	0.0004	0.13
Mortality (Obs.-Exp.)	0.0053	0.00	0.0057	0.00	0.0076	0.00
Household Group						
Size (10% increase)	-0.0049	0.45	0.0098	0.00	0.0127	0.00
# Positions	0.0338	0.22	0.0061	0.59	-0.0100	0.51
% Married (Obs.-Exp.)	-0.0069	0.07	-0.0020	0.09	-0.0004	0.77
Fertility (Obs.-Exp.)	-0.0008	0.04	0.0000	0.95	-0.0002	0.15
Mortality (Obs.-Exp.)	0.0038	0.00	0.0051	0.00	0.0055	0.00
Household						
Size (10% increase)	0.0006	0.92	-0.0071	0.00	0.0028	0.19
# Positions	-0.0133	0.76	0.0190	0.44	-0.0045	0.89
% Married (Obs.-Exp.)	0.0012	0.64	-0.0025	0.00	-0.0015	0.04
Fertility (Obs.-Exp.)	0.0001	0.76	0.0003	0.00	-0.0001	0.24
Mortality (Obs.-Exp.)	0.0015	0.01	0.0027	0.00	0.0025	0.00
Close Kin and Self						
# Brothers	0.0728	0.22	0.0139	0.26	-0.0205	0.40
# Brothers w/ Position	0.0736	0.79	-0.0624	0.44	-0.1259	0.27
Eldest Brother	0.0704	0.42	-0.0443	0.10	-0.0202	0.58
# Cousins	-0.0755	0.02	0.0119	0.14	-0.0199	0.33
# Cousins w/ Position	0.3887	0.14	-0.0709	0.49	-0.0922	0.69
Eldest Cousin	0.1351	0.13	-0.0495	0.10	0.0339	0.36
Father's/Father-in-law's Position	0.1116	0.26	0.0294	0.53	-0.0454	0.44
Own/Husband's Position			-0.3994	0.00	-0.2115	0.04
Married			-0.1419	0.05	-0.2255	0.00
N		15491		180491		46290
Events		856		8252		6116
Log likelihood		-3022.95		-31891.76		-16461.12
Pseudo-R2		0.09		0.05		0.09