

Marriage Migration in India

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Abstract

Marriage migration in India is the largest permanent migration in the world, yet it is largely unstudied. Across India two thirds of all women have migrated for marriage, around 300 million women, on average moving approximately three and a half hours from their place of birth. This paper provides the first general description of marriage migration in India. It also shows that the existing explanations for marriage migration are either wrong or inconsequential. Marriage migration is unrelated to consumption smoothing ([Rosenzweig and Stark, 1989](#)). I show that there are almost no transfers between households linked by marriage, and so there is no marriage linked consumption smoothing. Marriage migration is not driven by geographically imbalanced sex ratios: migration is 30 times larger than necessary to completely equalize sex ratios across India, and increases rather than decreases the imbalanced geographic distribution of women. Marriage migration is also unrelated to caste fractionalization. Instead, I suggest a model of geographic spousal search. The model explains the differences between regions, and emphasizes the central role that the value placed on women plays in marriage migration.

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1 Introduction

The largest permanent migration in the world occurs as women in India move to live with their husband's family on marriage. Marriage migration is by far the largest form of migration in India and is close to universal for women in rural areas. Although there are significant regional differences, most of India practices some form of patrilocal village exogamy in which women are married outside of their natal village, joining their husband's family in his village. Across India three quarters of women older than 22 have left their place of birth, 87% on marriage, and in the large northern states more than 90% of women migrate for marriage. Women are typically married young, between 16 and 20, and are generally illiterate or have less than a primary school education. Although the distances are not always large, the mean travel time from her natal village is about three and a half hours and can be much larger. Sent to a new village, new brides are often subject to violence, and are forced to create a new life in a strange place only rarely of their own choosing.¹

Marriage migration is almost entirely unstudied, despite a growing consensus that women play a crucial role in education, health, and economic development (UNICEF, 2007; World Bank, 2012). Part of the reason, as suggested by Lucas (1997), is a lack of good information on rural to rural migration and the focus on urban-rural migration. Since women moving into an area are generally approximately balanced by the women moving out, the net flow is typically very low, even if the gross migration is large. That makes marriage migration easy to miss since there are no expanding urban populations or new slums that signal change.

The lack of attention to marriage migration means that very little is known about its extent, geographical distribution, and how it has changed over time. This paper fills that gap. Moreover, this paper shows that the existing explanations of marriage migration are incorrect or seriously misleading. In the leading approach in the economics literature Rosenzweig and Stark (1989) suggest that female migration is a strategy to smooth consumption for agricultural families. Yet I show that transfers between the birth family and marriage family of married daughters and sisters

¹The statistics in this paragraph are based on calculations from the Indian National Sample Surveys and the India Human Development Survey. On violence and choice see table 1. Also see Bloch and Rao (2002) for the strategic uses of dowry violence.

are almost non-existent. If consumption smoothing is important, the frequency of transfers between households must be approximately proportional to the frequency of shocks. Since there are no transfers, marriage migration plays no role in consumption smoothing.

Another approach has been to assume that marriage migration is part of a process of equalizing geographically imbalanced sex ratios. Some villages and states because of preferences for sons or through random variation have more men than women. Marriage migration is one way to equalize the geographic distribution. Indeed, one might expect that with the spread of technology allowing sex-selective abortion, the worsening sex ratios in some areas would cause other areas to “specialize” and produce more women.² To test this hypothesis I examine the distribution of women and girls across the all of India’s nearly 600 million villages in 1991 and 2001. While there is significant variation in the geographic distribution of girls, I show marriage migration is 30 times larger than necessary to completely equalize the geographic distribution of women. Decomposing the spatial variance, I show that village India has become more homogeneous in its sex ratios both across all India and within states. The village level variance in son preference nearly halved between 1991 and 2001 even as sex ratios worsened. Rather than specializing, villages became more homogeneous both across India and within states. Moreover, comparing the distribution of girls to women in villages, I show that marriage migration is actually worsening the geographic imbalance in sex ratios rather than improving them.

A separate explanation comes from the sociology literature ([Gould, 1960](#)) which suggests that village exogamy is a response to caste and sub-caste endogamy. With relatively small villages and a cultural dislike of marriages to relatives, particularly in the North, endogamous subdivisions mean that a substantial fraction of women will have to leave the village to find suitable spouses. Yet

²The specialization in producing women is the geographic implication of the model introduced by [Edlund \(1999\)](#). In that model hypergamy prompts the poorer or lower caste families to produce more girls. The hypothesis that imbalanced sex ratio leads to high demand and so importing of brides is appealing and describes some marriages. [Kaur \(2004\)](#), for example, examines the phenomenon of long distance marriages to very high male areas. While these long-distance marriages do exist, they are a tiny fraction of marriage migration. Similarly, ([Fan and Huang, 1998](#)) look at rural to urban marriage migration in China. Women are relatively far more abundant in rural areas due to the large migration of young men for work. A larger literature ([Edlund, Liu, and Liu, 2013](#); [Kawaguchi and Lee, 2012](#)) examines cross-country marriages in Asia where women from relatively poor countries (Vietnam, China) marry men from richer countries (Taiwan, Korea, Japan).

there is something missing from this approach as well. Using an index of caste fractionalization created by [Banerjee and Somanathan \(2007\)](#) I show that marriage migration is not higher in more fragmented districts.

So how should we understand marriage migration? I introduce a model of the geographic search for spouses in which the area of search is a decision variable, and both caste fractionalization and the size of the local village play a role. The model yields several predictions that help understand the variations and extent of marriage migration. First, higher fractionalization will tend to reduce migration and distance when migrating. Since the surrounding area likely has a similar caste structure, parents are no more likely to find spouses outside the village as inside when caste fractionalization is higher. Instead higher fractionalization makes search harder since higher caste fractionalization requires searching over a wider area to generate the same number of potential spouses. Parents therefore reduce their search and fewer women have to migrate. Caste fractionalization reduces match quality, but does not drive migration.

Instead, the model suggests that the central driver of marriage migration is the value placed on unmarried women, further supporting the emphasis put on female autonomy by [Dyson and Moore \(1983\)](#). If parents view having an unmarried daughter as a disaster, they will search hard to marry her off. She is more likely to migrate, will move farther when she does, and will be married earlier. And indeed, in the North where women have lower autonomy, lower education, and are more likely to be subject to violence marriage migration is higher, travel times on migration are longer, and women marry younger. Other changes between the North and the rest of India also fit well with the model. One way to avoid such exogamy is to accept a closer degree of familial relationship between spouses. In the southern India village exogamy is less common—only 60 percent of women migrate for marriage—partly because cousin marriages are more acceptable. The model predicts that in areas which accept such marriages women will not just migrate less frequently but will migrate shorter distances when they do migrate, which is again the pattern. Examining the determinants of migration at the household level, however, suggests that both education and non-domestic work have a somewhat ambiguous relationship with marriage migration: some forms of

work and some levels of education are associated with higher migration, others with lower. It is clear that marriage migration is a complex phenomenon, differing by caste, region, and wealth.

This paper fills the large gap in our understanding of migration in India. The existing approaches are either wrong or explain only a small part of the broader phenomenon. One contribution is to describe the extent, regional variation, and changes over time in marriage migration based on new information from large nationally representative surveys and the village census that is sorely missing from the small literature which considers marriage migration.³

This paper also fits into a growing literature that examines the marriage market in India. That literature has largely ignored the inherent geographic component of marriage in India; instead the focus has been on whether dowries help the market clear and whether they have been increasing. [Rao \(1993\)](#) suggests that the increase in dowries that seems to have occurred since the 1960s is a result of the population boom. Since women marry substantially younger than men, in each cohort of spousal matches in a fast growing population there will tend to be more women looking for a mate than men in the relevant age group. [Anderson \(2003\)](#) suggests that rising dowries are a response to increasing inequality in a caste based system, and [Anderson \(2007\)](#) provides a model that suggests that the rising population cannot explain the rise in dowries. [Sautmann \(2011\)](#) introduces search frictions in the marriage market and shows that with frictions rising populations can explain both a narrowing age gap and higher dowries. [Edlund \(2006\)](#) argues that the increase in dowries is largely an artifact of imprecise definitions, particularly the inability to differentiate dowry as a negative bride price from dowry as a form of early bequest (since women will typically not inherit property on her parent's death). Using her more precise definition, [Edlund \(2006\)](#) finds no evidence of dowry inflation. [Behrman, Birdsall, and Deolalikar \(1995\)](#) examine how unobserved human capital affects both marriage and wages. [Bloch, Rao, and Desai \(2004\)](#) focus on wedding expenses, usually borne by the bride's family, as a form of conspicuous consumption. Migration and wedding expenses are interrelated since a family marrying their daughter to a far off groom

³That literature largely relies on small surveys in several villages ([Behrman, Birdsall, and Deolalikar, 1995](#); [Dutt, Noble, and Davigun, 1981](#); [Hyde, 1995](#); [Rosenzweig and Stark, 1989](#)), village ethnographies ([Gould, 1960](#)), or the extremely limited information at the district level in the census ([Libbee and Sopher, 1975](#)).

needs to introduce the groom to the village and spend to signal his quality. Examining the middle-class which advertises in newspapers to help find spouses, [Banerjee et al. \(2009\)](#) suggest that the marriage market clears efficiently and is relatively homogeneous along caste lines.

The rest of the paper is organized as follows: The next section provides a description of marriage migration in India, showing its geographic extent, and examining how it has changed over time. I then examine how marriage migration determines the geographical distribution of women and the sex imbalance hypothesis. In the next section, I consider and firmly reject the consumption smoothing hypothesis. I then examine how marriage migration changes with caste fractionalization. Finally, I introduce a geographic search model and examine the evidence for it.

2 Who is migrating for marriage, where, when, and how far?

Until age 16 male and female migration is nearly identical and driven by family movements. After that, in both rural and urban areas female migration increases rapidly as women marry and move to their husband's family. Migration by age is shown in [figure 1](#) for rural and urban areas (the sector is defined as where the migrant lives). The fraction who have migrated stabilizes for women in rural areas after approximately age 22 when most marriages have occurred, with 74% of all women in rural areas having migrated for marriage (79% have migrated for any reason). While the rate of migration is lower for women living in urban areas, overall 66% of women over 22 have migrated for marriage.

Marriage migration varies substantially across the country. [Figure 2](#) shows both the extent of marriage migration and distance of migration across Indian districts. In the large populous northern states marriage migration is nearly universal in rural areas: Calculating using the 64th round National Sample Survey, an astounding 98% of women over 25 have migrated for marriage in Haryana, 96% in Uttar Pradesh and Rajasthan, 95% in Punjab, and 93% in Gujarat and Madhya Pradesh. Across the upper Deccan, Maharashtra, Chhattisgarh, and Orissa are around 85%, while in the South marriage migration is 63% in Kerala, 50% in Tamil Nadu, and 70% in Karnataka. Marriage migration is 80% in West Bengal, while the culturally very different North Eastern states

it is under 30% for most states. Across the north there is little variation even within states.

While the migration distance is not always large, when married two thirds of women moved more than an hour away from their birth homes in both urban and rural areas. The India Human Development Survey (Desai, Vanneman, and National Council of Applied Economic Research, 2008) asks ever married women the travel time to their natal home when they married. Although it might also be useful to know the physical distance traveled, the travel time is more comparable than physical distance across India and over time since it captures something closer to social distance. Figure 3 shows the distribution of travel times. The top panel shows travel times for urban and rural women across India while the bottom panel shows travel times only for rural women splitting the country into the large Northern states and the rest of the states. In the rural areas of the large northern state women move much further on average. Three quarters move more than one hour away in the the rural north compared to only 60% across the rest of the country.

The geographic distribution across India of travel times is shown in figure 2. While the IHDS is nationally representative, it does not sample in every district, and the sample size in any given district is not necessarily large. Moreover, because of the long tail the mean can be shifted by a few outliers. Nonetheless, it is clear that travel times are typically longer across the north.

Not all women move far, but the large majority are moving far enough to restrict social contact and communication with their friends and birth families. Again using the IHDS, 52% of women in rural areas in the large northern states report no member of their family lives close enough that they could visit and come home in the same day (the figure is 35% in the rural areas of other states, 50% in the urban north, and 37% in urban other states). In Rajasthan, for example, women sing songs about their isolation from their birth families (Hyde, 1995).

The extent of marriage migration does not appear to have changed much over time. Since figure 1 is a cross-section from 2007-2008, it also help examine the past since older women married longer ago. The extent of marriage migration has been approximately stable across India for the last 40 years. Older women seem to have migrated slightly less frequently than younger women, but that may be driven by differential survival—life-expectancy is longer in the South where marriage

migration is less common—or by recall bias.

Women appear to be marrying closer in the sense of fewer hours of travel to their natal home. Figure 4 shows how travel time and age are related in urban and rural areas in the top panel, while the bottom panel focuses only on rural areas and compares the large Northern states with the rest of the country. The figures show two different types of age information: the age of the woman as of the survey in 2005, and the age when she married. Since nearly all marriage is completed by approximately age 22, after that the current age of women shows how long women in the past had to travel on average.

Marriage distance appears to have been stable until recently for both rural and urban women. Older urban women report slightly longer travel times. The age of marriage has a profound effect on distance: younger women marry further away in urban areas, but closer in urban ones. As is evident from figure 3 women in the north migrate farther than the rest of the country. One reason for the steep decline in marriage distance with age in rural areas is that women in the north marry much younger and move much farther. So women who marry at 19 or 20 are much more likely to be in the rest of India, and not move as far. That relationship is illustrated in figure 5 which shows how marriage age and current age are related. Women in the rest of India are on average nearly 18 when they migrate, while women in the northern states are on average 17 or younger. In India there is often a distinction between the marriage ceremony, which may be arranged and performed even when the girl is quite young, and *gauna* when the woman moves to join her husband and consummate the marriage. That distinction is particularly important in the Northern states, when the average age of marriage is almost a year younger than the age of *gauna*. I generally refer to *gauna* as the marriage age for migration purposes.

Travel times for marriage appear to have decreased recently. The younger women in 2005 who are married by 16-19 are moving less far than older women moved on average. That is true even though younger women overall typically move farther. That suggests that the travel time has decreased extremely rapidly recently. Younger women who used to travel the furthest are moving much shorter distances than the average distance for older women. One reason for the change

could be improved transportation infrastructure that has decreased travel times.

Marriage migration is part of a larger phenomenon of low female autonomy in India. Table 1 summarize some of these relationships. Following [Dyson and Moore \(1983\)](#) the table divides India in the large Northern states and the rest of India although as figure 2 suggest there are likely not firm dividing lines. Since marriage migration is so universal areas, the women who are engaged in it look much like the average woman in India: they are mostly illiterate. Despite the rapid gains in education in India in education for girls recently (?), women over 22 in India are still more likely to be illiterate than have any education at all. They are unlikely to have any say in who they marry: 60% report that the choice of spouse was their parents' decision alone, and 75% had no input in the rural north. Most women met their husband on the day of marriage or *gauna*. Women outside of the Northern states are more likely to be consulted in the choice of spouse, and to have met their husband before the marriage. Yet even in urban areas most women met their husband on the day of marriage.

Many of the marriage decisions seem closely linked to cultural beliefs about marrying within the village and whether marriages between blood relations are acceptable. It is important not to necessarily treat these as exogenous, however, since a cultural aversion to marrying within the village may arise because it is so rare for other reasons. As shown in table 1, in the Northern states most women report that in their sub-caste (jati) people do not marry a daughter within her natal village. The practice is more common in the rest of India, but is still viewed as unusual by most women. Perhaps driving the difference is whether cousin marriages are allowed. Cousin marriage is complicated: in the south marriages to uncles are sometimes allowed, and the prohibition in the north can involve any blood relation. Nonetheless it is clearly much less acceptable in the north where marriage migration is more common and travel times are longer.

Women lack autonomy within marriage as well and their lives are often controlled through violence. Across India 73% of ever married women report that they need permission to visit the health center or to visit visit the home of a friend or relative in the neighborhood. Even with permission, around a third need to be accompanied. Such restrictions may be enforced through

violence. Across India 39% of women report that it is *usual* for husbands to beat their wives if she goes out without telling him. It is similarly common to use violence if her family does not give the gifts expected on marriage, a phenomenon studied by Bloch and Rao (2002). Reporting that such violence is usual is more likely in the north and in rural areas, but it is common everywhere.

3 Spatial distribution of women

This section examines the village level variation in women and girl children and how that variation impacts marriage migration. State level differences in the sex ratio are substantial and are well studied, but this section shows that the local village variation is much larger still.

Given the local variation, it seems reasonable to suppose that marriage migration is driven by demand for brides. Some villages produce fewer women either by chance or choice, and so will need to import some brides from other areas. Surprisingly, despite the local variation in the proportion of girls in a village, such demand driven migration can account for only a very small fraction of marriage migration since very little marriage migration is necessary to completely equalize the distribution of women. Actual marriage migration is approximately 30 times larger than necessary for total equalization across all of India. Moreover, marriage migration actually serves to make the distribution worse than it would be if nobody moved at all.

As of 2001 there were approximately 600,000 villages in India and they represent the smallest administrative units with an average of approximately 1,250 residents. Village population varies substantially both within states and between them. Villages need not include an actual village in the sense of a group of dwellings in close proximity. Marriage migration in surveys is defined as having left the native village and so villages represent a useful unit to understand how the geographic distribution of women affects migration. Figure 6 shows the distribution of the proportion of women and girls (age six or less) across the villages of India from the 1991 and 2001 censuses. Tables 3 and 4 give summary statistics of the distribution of women and girls across the universe of villages in India and within the large India states.

As figure 6 shows, there is substantial variation across village India in the proportion of girls

and women. This variation has three primary sources: One source is the variation across states as is evident by looking at the fraction of children under six across states in table 3. Some states produce substantially fewer girls than others, and this tendency became worse between 1991 and 2001 across almost all states. For some states such as Punjab and Haryana it became much worse. A second source is village level variation in the ability or willingness to produce girl children within each state. Finally, village populations are small and so there may be random variation in the number of girls born even without differential preferences.

A useful way to characterize the variation across India and within states is to calculate how many girls would need to move eventually to equalize the distribution whatever the source of the geographical variation. The village census only records the number of girls and boys under six and the size and sex of the total population. With that information it is possible to calculate the fraction of girls below six in 1991 and 2001 that would eventually have to move to equalize the adult population for their cohort. That value helps characterize how diverse the geographic distribution of girls is and how much marriage migration could be driven by geographic variation. For each village i define f_i as the fraction of children under six who are female and define \bar{f}_I or \bar{f}_S as the India or state average across the entire population (not over villages). Then for each village that has more girls than average and has n_i^C total children a total $(f_i - \bar{f}_I)n_i^C 1(f_i \geq \bar{f}_I)$ must leave to equalize using $1(\cdot)$ as an indicator function and ignoring the integer constraint. The limit to only villages with more than the average is to avoid double counting: girls are leaving from some villages but must move to the lower than average female villages. Then the fraction of girls under six who would need to leave to equalize across the state or across India is the sum from each village divided by the total population of girls under six. These calculations are shown in table 3. The calculation is essentially integrating under the the distribution in figure 6 starting from the mean and weighting by the size of the village population under six.

Across India, despite the large disparities across and within states only 2.7 percent of girls under six would need to migrate eventually to exactly equalize the geographic distribution in their cohort across all states and all villages. There would still be too few women—migration does

not create more women—but there would be exactly the same proportion everywhere. State level variation is relatively unimportant in the number of girls who must move. Although there is more village level variation in some states than others, and some states have worse gender ratios, women would still have to move in similar proportion in most states.

The actual movement of women is far larger than necessary to equalize the geographic distribution. Across India 79% of women migrate by age 25, yet only 2.7% would need to migrate to equalize the geographic distribution. Geographic differences ultimately play only a small role in marriage migration.

The proportion of women in a cohort that would need to move has been falling in most states and across India. Village India is becoming more homogeneous in its distribution of girls even as the proportion of girls falls. There has not been a corresponding decrease in marriage migration which further supports that marriage migration is not driven by geographic differences.

3.1 Variance decomposition: Does marriage migration reduce the geographical distribution of women?

Different factors contribute to the underlying spatial variance of girls and marriage migration then determines the spatial distribution of women. To understand the sources of spatial variation I perform a simple variance decomposition which can account for random variation, population size and possible underlying spatial variation in the willingness or ability to produce girls. The approach cannot distinguish between preferences for sons and the ability to act on those preferences such as through sex selective abortion that may differ geographically so I simply refer to underlying spatial differences as preferences to distinguish them from random differences.

The decomposition tells three important things: how important variation in preferences is in determining the geographic distribution of girls and women, whether the distribution of preferences has changed over time, and what the distribution of women would look like if there was no marriage migration. The decomposition assumes that within each village each child has the same probability of being a girl. That probability may differ between villages which leads to the spatial distribution

of preferences.

Suppose village i produces girl children with an underlying “structural” probability of p_i and has n_i^c children. Then if n_i^f is the number of girl children the random variable $f_i = n_i^f/n_i^c$ has expected value $E[f_i|p_i] = p_i$ and variance $Var[f_i|p_i] = (1 - p_i)p_i/n_i^c$ since each child is equally likely to be a girl. Note that the variance of f_i falls as the population rises. Larger villages are much more likely to be close to their structural fraction of girls. The simplicity of the statistical model comes from assuming that the probability of the next surviving child being a girl is constant within a village. That is a useful simplification especially since the limitations of the census data make peering into the household impossible but it clearly sweeps away possibly important family decisions.

Over a population of villages the distribution of f_i depends on the random variation of multiple draws from a binary distribution, the distribution of village sizes, and the underlying distribution of p_i . Denote $Var_v[f_i]$ as the population variance over villages. With known child population n_i^c and but unknown p_i for each village, the variance can be decomposed using the law of total variance into the portion of the variance that comes from random variation around p_i and structural variation from the distribution for p_i :

$$Var_v[f_i] = E[Var[f_i|p_i]] + Var[E[f_i|p_i]] = E[(1 - p_i)p_i/n_i^c] + Var[p_i]$$

using the binomial distribution which each village is drawing from.

I take a simple approach to calculating the decomposition which assumes the independence of n_i^c and p_i . The advantage of this approach is that it makes how changes in population affect the variance very clear. The disadvantage is that it does not constrain the preference variance to be positive. Conditioning on n_i^c then $E[(1 - p_i)p_i/n_i^c] = \eta_c(\bar{p}(1 - \bar{p}) - Var[p_i])$ where $\eta_c = \frac{1}{N_v} \sum_{i=1}^{N_v} \frac{1}{n_i^c}$ is the average over N_v villages of the inverse of the number of children. Then:

$$Var[p_i] = (Var[f_i] - \eta_c\bar{p}(1 - \bar{p})) / (1 - \eta_c).$$

This formula is useful because it emphasizes the importance of village population size. The larger η_c is the lower the random variation across villages in the fraction of girls because each village will be (on average) closer to its structural variance. So larger populations on average imply lower geographic variance.

The decomposition is also useful for calculating what the spatial variance of the adult population would be if there were no migration. Ignoring differential mortality later in life, if there is no migration then each village simply draws from its structural fraction female p_i for a larger population. That should reduce the variance since there are more adults (where adult is over six since that is what the census measures) than children and so the village should be closer to p_i . The predicted variance of the fraction female is then $Var_v^P[F_i] = \eta_A(\bar{p}(1 - \bar{p}) + Var[p_i])$ where $\eta_A = \frac{1}{N_v} \sum_{i=1}^{N_v} \frac{1}{n_i^A}$ replaces η_c .

Table 4 summarizes the results of calculating the village level variances in the fraction female under six, over six, and decomposing that variance. The village level variance fell from 1991 to 2001. Across India 95% of that variance comes from random variation. Local structural variance plays only a small part and the role it plays is diminishing. The fraction of the variance explained by the underlying structural differences halved between 1991 and 2001, even as the total variance decreased. There are substantial differences in the level of variance between states largely due to differences in average village size. Since the calculation of the preference variance does not constrain it to be greater than zero, negative values suggest that in those states random variation explains nearly all of the spatial variance. For example, Punjab has become almost entirely homogeneous in its preferences for boys. While it seems intuitively appealing to think that some parts of Punjab might start producing more women due to the sexual imbalance, instead the villages of Punjab that used to produce women are becoming more like the rest of the state.

Marriage migration then allows a redistribution of women among villages. India has become substantially more homogeneous in the distribution of women from 1991 to 2001. The distribution of adult women is also less diverse than of children as is evident from figure 6 or comparing columns 1 and 2 of table 4 with columns 5 and 6. We would expect a fall in variance even without

marriage migration, however, since the population is larger. The decomposition above showed that it is possible to account for how much the variance should fall because of the larger population. The predicted spatial variance if each village just continued to draw from the same preferences that produced the distribution of girls, instead of sending most of its women away is shown in the last two columns. The adult variance across villages is larger than if no women moved as is shown by comparing columns 5 and 6 with with columns 7 and 8.

Marriage migration is actually making the geographic distribution of women worse than it would otherwise be if all women stayed in their home village. Moreover, rather than specializing, village India is becoming more homogeneous in its preferences for boys. It may still be the case that some communities within villages are producing more girls and marrying them up as suggested by [Edlund \(1999\)](#) but there is no spatial component to that process. Marriage migration tends to exacerbate sex ratio inequalities, and it is so much large than necessary to completely equalize the distribution of women that sex ratios are largely irrelevant for understanding marriage migration.

4 Marriage migration is unrelated to consumption smoothing

The existing economic explanation for marriage migration is that it helps families smooth consumption ([Rosenzweig and Stark, 1989](#)). In rural areas agriculture, which provides much of the income, may vary greatly geographically and over time. One year the local yields may be high, the next year low. If yields in one geographic area are not perfectly correlated with yields in another area, than households may be able to smooth consumption better by co-insuring each other. [Rosenzweig and Stark \(1989\)](#) suggest based on evidence from a small panel of households in several villages (the ICRISAT villages) that households create such links through marriage migration of females. Indeed, as shown in figure 1 since males in rural areas hardly ever leave, females are the only way to create such links. When my family has a good year but my daughter's or sister's family does not, I send them resources, and when they have a good year, they send resources to me.

In equilibrium, even if shocks that require movement of resources across households to smooth

consumption are uncommon for an individual household, across the population we should see resource flows in approximate proportion to their use for consumption smoothing. To see this observation consider a simple sharing model of family linkages such as in [Townsend \(1994\)](#) in which the only smoothing mechanism is sharing. Two households are joined by marriage and transfer resources to help equalize marginal utility. To make things simple, suppose that they prefer equality (none of the conclusions is dependent on this assumption). Then at any time t the consumption of family A is equal to the consumption of family B which is the average of their incomes $c_t^A = c_t^B = (y_t^A + y_t^B)/2$. Now consider a population mass of such families drawing from the same stationary income distribution. Since there is no saving, the distribution of consumption and transfers is the same across the mass of families as it is over time so we can look at the cross-section to understand the distribution of transfers.

The frequency and size of transfers depends on the distribution of income. Consider if the joint distribution of incomes for each household pair is continuous. Then having equal incomes is a measure zero event and each household is either making or receiving a transfer almost surely. That implies that families with marriage connections are always transferring one way or the other: in the data we should see transfers either in or out from all households all of the time.

Perhaps more realistically, suppose families only initiate transfers if some bad event happens or income is below some threshold. A simple way to express this is to assume that each household has a probability p_L of having such a bad event and households have married their daughters well so the bad events are independent.⁴ Then with probability $p_L(1 - p_L)$ the family gets a transfer, and it makes a transfer to the other household with the same probability. The frequency of transfers in the cross-section is then that $p_L(1 - p_L)$ are transferring out and the same fraction are receiving transfers. The frequency of transfers in or out is in proportion to the frequency of shocks requiring transfers. Indeed, if shocks are infrequent then the frequency of any transfer approaches $2p_L$.

Yet such resources flows almost never take place between households that have a female mar-

⁴If consumption smoothing is an important reason for marriage then the definition of a good marriage is finding a family whose income is uncorrelated with yours. Perhaps even better is one that is negatively correlated, but that seems to be asking too much. Introducing covariance does not affect the conclusions unless the correlation is perfect in which case there are never any transfer, but marriage is also useless for consumption smoothing.

riage link. The India Human Development Survey (IHDS) asked a nationally representative survey of more than 41,000 households about transfers sent and received by non-residents from the household. Table 2 shows how these transfers are divided based on the relationship with the household sending or receiving. Across India, only 0.05% of households reported any transfer from or to a married daughter, sister or niece (these numbers are weighted to be nationally representative). Such transfers are so uncommon that it is difficult to say much about them other than they hardly ever take place: of the 41,000 households, only 21 report transfers sent by a married daughter sister or niece, and only two reported sending such a transfer. Perhaps there is some under reporting of transfers into the households as respondents forget transfers they received. Yet households reported receiving a transfer from a married son, brother, or nephew 26 times as often as from a married daughter, sister, or niece.

Without transfers, there can be no consumption smoothing across households. Either there are no shocks ($p_L = 0$) and so there is no reason to marry to help smooth, or marriage does not create links which are used for smoothing. Since no transfers take place between households linked by the marriage of a female, female marriage migration cannot be part of a consumption smoothing strategy in India.

5 A geographic search model of marriage

To parents of marriageable daughters “It is a truth universally accepted that a single man in a possession of a good fortune must be in want of a wife” as Jane Austen begins *Pride and Prejudice*. But where to find such eligible bachelors? This section develops a model of that search. The model is very similar to the models in the job search literature with variable effort.⁵ The key innovation is to allow effort to influence the geographic extent of the search while still allowing for the potential to find spouses in the village. The model can thus help understand both the frequency of migration and the distance conditional on migration. The central idea is that parents do not have perfect information about all spouses in the area and so cannot just choose the best one available. Instead,

⁵For a good introduction see [Cahuc and Zylberberg \(2004, chapter 3\)](#) or [Mortensen \(1986\)](#).

they must search for potential spouses, evaluate any potential spouses that they discover, and decide whether any particular spouse is good enough relative to what they can do by searching more. Since the search is geographical as well as temporal, they must also decide how widely to search, which then determines whether their daughter marries within the village, or moves outside and how far. Parents also face limitations that they must marry their daughter within the caste. While the model simplifies many parts of the decision, it makes a number of predictions that are supported by the data. I characterize the model as the parents' decision since that is the most consistent with the survey data on marriage choice, but the model is general enough to characterize the decisions of whoever makes the decisions.

Parents searching over an area a who live in a village with population P find potential spouses at rate $\lambda a + g(P)$. Living in a village generates potential spouses for free at rate $g(P)$ where $g'(P) > 0$, but parents have to decide how widely to search beyond the village. Searching area a costs $c(a)$ where $c(0) = 0$, $c'(a) > 0$, and $c''(a) > 0$ so that search gets more and more costly the further away from home. I further assume that searching just a small amount is very cheap $c'(0) = 0$. That ensures that some searching is always optimal which simplifies the analysis. It is also reasonable given that the spouses generated within the village do not require active search to assume that searching just beyond the village is low cost.

All spouses are not created equal, and not all daughters draw the same quality offers. First, only a fraction f of offers are kept. The rest are discarded out of hand because they are not in the right sub-caste, tribe, or religion. Second, spouses vary in quality according to whatever criteria the parents use to decide what makes a good spouse. For a daughter of quality q , potential spouses have qualities u drawn from a distribution $F(\cdot, q)$ where F may be the result of bargaining dependent on q . That is, on finding a potential spouse parents may bargain over things like dowry and u is the outcome of the bargain for the bride's parents. Being married to a spouse of quality u then produces a marriage with discounted utility value $W(u) = \int_0^\infty u e^{-rt} dt = u/r$ where r is the discount rate to the parents.

Parents must decide when to accept a spouse and arrange a marriage. To do this they must

weigh the benefits of accepting a given spouse or continuing to search for a better one. Their decision rule is thus characterized by the minimum quality spouse who would cause them to stop searching u^* . When $u \geq u^*$ they stop and otherwise they continue.

Since by definition u^* is the quality that makes parents just indifferent, then $V = W(u^*)$ where V is the discounted expected utility from having an unmarried daughter. It is possible to define V a different way as well. Parents get a possibly negative utility b in each instant from having an unmarried daughter. An unmarried daughter may transition into a married daughter, however, with a marriage of quality drawn from the distribution F truncated at u^* . Then the value of an unmarried daughter over the next instant dt :

$$V = \frac{1}{1 + rdt} \max_{a \geq 0} \left\{ \left((b - c(a))dt + \nu(a) \left(\int_{-\infty}^{u^*} V dF(u) + \int_{u^*}^{\infty} W(u) dF(u) \right) + (1 - \nu(a))V \right) \right\}$$

where $\nu(a) = f(\lambda a + g)$. The value of having V is composed of three parts: the value over the next instant of having an unmarried daughter and searching over area a ; the probability that a potential spouse will be discovered and the expected value from the offer which will either result in a marriage or be rejected; and the probability that no suitable spouse will appear. Rearranging and taking limits then results in a standard valuation equation from search theory:

$$rV = \max_{a \geq 0} \left\{ b - c(a) + f(\lambda a + g) \left[\int_{-\infty}^{\infty} \max\{0, W(u) - V\} dF(u) \right] \right\}$$

which is the the instantaneous return rV of having an unmarried daughter.

The optimal decision of the parents is then defined by two equations. Using $u^* = rV$, $W(u) = u/r$, and taking the first order condition of a , the optimal search is given by the (implicit) solution to:

$$u^* = b - c(a^*) + \frac{f}{r}(\lambda a^* + g(P))h(u^*) \quad (1)$$

$$c'(a^*) = \lambda \frac{f}{r} h(u^*) \quad (2)$$

where $h(u^*) = \int_{u^*}^{\infty} (u - u^*) dF(u)$.

With the solution u^* and a^* it is possible to define a number of other important relationships. The probability of marrying outside the village or the fraction of women marrying outside the village if all face the same circumstances is given by the likelihood of receiving an offer inside the village. Since the distribution of qualities is the same inside the village as outside, any potential spouse is equally likely to be accepted. Then the fraction who do not migrate is:

$$\omega = \frac{g(P)}{\lambda a^* + g(P)}.$$

Note that fraction f of offers that are acceptable does not appear since it affects both the potential spouses that are within the village and outside the village. Caste fragmentation affects marriage migration only through its effects on search

From the start of searching, the mean length of being unmarried is:

$$T = \frac{1}{f(\lambda a^* + g(P))(1 - F(u^*))}$$

where the first part is the frequency of finding potential spouses and the second is the probability of any spouse being accepted.

Conditional on accepting a spouse not from the village, the search area a^* defines how far away the daughter must migrate. The average distance from the center of a circle of radius r is $2/3r$, so the average distance that a migrating daughter must move, if search is conducted in a circle, is: $d = \frac{2}{3} \left(\frac{a}{\pi}\right)^{1/2}$. The search area of parents directly determines the distance of migration.

5.1 Model implications

With the implicit solution to the parents' problem, it is possible to define how distance, the quality of the marriage, and the likelihood of having to migrate vary with the parameters of the model, and so understand what drives marriage migration. The following table summarizes the relationships which take some work to derive but follow standard comparative statics.

Changes in model outcomes from an increase in each model parameter

Model parameter		Search Distance a^*	Spouse quality u^*	Frac. not migrate ω	Time to marriage T
Fraction of pop. marriagable	f	+	+	-	+/-
Freq. of spouses within village	$g(P)$	-	+	+	+/-
Value of an unmarried daughter	b	-	+	+	+

The most immediate and surprising result is that the caste fractionalization is not directly responsible for marriage migration or the distance of migration. A higher caste fragmentation implies that the fraction f of the population that is marriageable is lower. More and stricter caste divisions make searching more costly. Parents therefore reduce search and so are more likely to marry their daughters within the village. The intuition is that caste fractionalization affects both the population within the village and around the village, increasing the eligible population everywhere so tends to have a neutral effect on the fraction migrating except in the way it affects parents' search.

Caste fractionalization does have negative consequences for match quality. By discarding a large fraction of potentially spouses, many good ones are dropped and the average quality falls.

The frequency of potential spouses from within the village tends to reduce search since these potential spouses show up for free, but increase match quality since there are more potential spouses and so a higher chance of a better quality match. That suggests that areas which accept marriages between relatives will tend to have fewer migrations and migrate shorter distances when they do migrate. These matches may also be of higher quality.

The most important determinant of marriage migration is the value that parents put on having an unmarried daughter (b). If parents view having an unmarried daughter as acceptable, they will search less broadly, and so find fewer potential non-village spouses. Since the outside option is better, their daughters will stay unmarried longer, and have higher quality matches.

5.2 The determinants of marriage migration

This section presents some evidence comparing regions and micro-evidence across households to help understand the determinants of marriage migration. The predictions of the model are helpful for understanding the broad differences between regions, but between households within regions the relationships are more complex.

The model helps to explain the regional variation between the North and rest of India. As shown in table 1, in the North women are more likely to migrate, move farther when they do migrate, and marry younger (see figure 1) than in the rest of India. All three observations are consistent with placing a lower value on having an unmarried daughter. Indeed the Northern states do particularly badly in all forms of treatment of women. Women in the the North are less well educated, have more restrictions on their movement and autonomy, and are more likely to be the subject of violence. The model then links the basic regional differences in marriage to the regional differences in the treatment of women.

Similarly, the model suggests that being willing to marry within the village or to marry relatives should not just reduce the fraction who migrate but also the distance that those who do migrate must move. Again that seems to be the pattern comparing the North with the rest of India.

The model also provides a reason for the slightly negative relationship between caste fragmentation and marriage migration shown in figure 8. Caste fragmentation will tend to have a neutral effect on migration except through search distance. How much caste affects the search costs then determines how much it should reduce migration.

The evidence at the household level suggests that the relationships are complicated with different groups within villages practicing different types of marriage relationships and large differences between the North and the rest of India. Table 5 shows the results of several regressions at the household level using the NSS 64th round for employment/unemployment and limiting the analysis to rural women over 22. I break up the sample into the Northern states and the rest of India, and consider the effects of including state effects which remove state level variation. Given the endogeneity of all of the relationships, I view the regressions helping to understand the conditional

means, rather than estimates of causal relationships.

Women in both the north and the rest of India are more likely to have migrated if they do any form of non-domestic work such as working in a household enterprise or any wage labor. For those relatively few women who work outside the home, the effect is reversed: they are less likely to migrate. These results suggest that the labor value that women provide to the household has a complex relationship with migration.

The same complex relationship is evident considering education where different levels of education have different effects and regions differ. The omitted category is not-literate so all comparisons are to the women who are not literate. While being literate reduces marriage migration in the rest of India, almost all of the variation seems to be between states since the effect disappears when adding state effects. In the rest of India having a primary education makes women more likely to migrate, although has no effect in the North.

Women who live in households with higher consumption now are more likely to have migrated in the rest of India, but somewhat less likely to have migrated in the North. Allowing for state effects, consumption has no relationship with marriage migration in the North, but continues its negative relationship in the rest of India.

Finally, women within the caste system are more likely to migrate compared to being from a Scheduled Tribe. With the broad categories available it is not clear that there are major differences between Scheduled Castes, Other Backward Castes, and Other Castes in migration. Even within communities, caste seems to have little effect.

6 Conclusion

Marriage migration in India is the largest migration in the world—two thirds of India’s women have migrated or around 300 million women and millions more marry and migrate each year. The joint marriage and migration decision is the central event of young women’s lives. Yet this paper is the first to provide broad evidence to understand the determinants of marriage migration.

In examining marriage migration this paper considers and rejects three explanations for mar-

riage migration based on the available evidence. Marriage migration is not related to consumption smoothing strategies. It is not driven by imbalanced geographic sex ratios. Instead it seems to contribute to making the geographic distribution of women worse. Marriage migration does not seem to be closely related to caste.

To help explain the regional differences surrounding marriage migration, I introduce a geographic search model. The model puts the explanation for the extent and differences of marriage migration firmly on the value placed on women. For example, the model helps explain why women in the North migrate more, move farther when migrating, and marry younger. In the North the value placed on women is lower as judged by the higher rates of violence, lower education, and lower autonomy. When parents place a low value on their daughters, marriage migration will be frequent, distances large, and marriage will occur more quickly. In addition, the willingness of at least some areas to marry their daughters to family members widens the marriageable pool within the village and helps explain some of the differences as well. As [Dyson and Moore \(1983\)](#) suggested many of the differences in regional development in India come down to the treatment and value of women.

Yet examining the evidence at the household level, it is clear that the relationship of marriage migration with female autonomy is complex. Education has an ambiguous effect on whether any given woman has migrated, and while working outside the household seems to be associated with lower migration, doing any non-domestic work is associated with with higher migration.

Much more work is needed to understand marriage migration. In particular, while recent recent surveys have begun to collect information on migration, studying marriage migration has the same problems as understanding migration in general. We typically only observe people where they are now which makes inference about the migration decision difficult. That is exacerbated with marriage migration since the decision is typically made by the woman's parents, and so the circumstances surrounding their decision is at least as important as the characteristics of the woman or the household she has joined.

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Table 1: Marriage migration, female autonomy, and marriage customs

	All India	Northern states		Rest of India	
		Rural	Urban	Rural	Urban
Fraction women over 22	1.00	0.29	0.07	0.43	0.21
Fraction migrate for marriage	0.66	0.83	0.68	0.62	0.39
Fraction women over 22 illiterate	0.57	0.71	0.43	0.56	0.27
Fraction women migrate illiterate	0.52	0.71	0.39	0.54	0.27
Fraction do any non-domestic work	0.30	0.34	0.14	0.36	0.18
Fraction with any work outside home	0.07	0.07	0.05	0.07	0.09
Hours to natal home on marriage	3.42	3.48	4.81	2.91	3.87
Who chose your husband?					
Respondent herself	0.05	0.02	0.03	0.07	0.06
Respondent and parents	0.34	0.22	0.30	0.38	0.43
Parents alone	0.60	0.75	0.66	0.54	0.50
Other	0.01	0.00	0.00	0.01	0.01
How long had you known your husband before you married him?					
On wedding/gauna day	0.68	0.87	0.85	0.59	0.54
Less than a month	0.09	0.03	0.04	0.13	0.14
Less than a year	0.11	0.04	0.03	0.13	0.18
More than a year	0.04	0.03	0.04	0.04	0.06
Since childhood	0.08	0.03	0.05	0.11	0.08
In your community (jati) do people:					
Marry a daughter in her natal village?	0.48	0.30	0.48	0.56	0.57
Marry a daughter to her cousin?	0.38	0.16	0.25	0.49	0.47
Do you need permission to visit the health center?					
Yes	0.73	0.83	0.76	0.73	0.61
If yes, can you go alone?	0.66	0.44	0.66	0.74	0.83
Do you need permission to visit the home of relatives or friends in the neighborhood?					
Yes	0.73	0.79	0.73	0.72	0.69
If yes, can you go alone?	0.69	0.53	0.67	0.74	0.79
In your <i>community</i> is it usual for husbands to beat their wives if:					
She goes out without telling him?	0.39	0.50	0.32	0.38	0.29
Her natal family does not give expected gifts?	0.29	0.34	0.26	0.29	0.22
She neglects the house or children?	0.35	0.37	0.26	0.37	0.29
She doesn't cook food properly?	0.29	0.34	0.21	0.31	0.23

Notes: The first six rows are from the NSS 64 employment unemployment. The rest of the table is calculated from the IHDS. All calculations are survey weighted. The large northern states are: Punjab, Uttaranchal, Haryana, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, and Gujarat.

Table 2: Transfers between households in India

	Any transfer to or		Fraction of household consumption if transfer								
	from a non-resident		Sent by non-resident				Received by non-residents				
	Rural	Urban	Rural	N	Urban	N	Rural	N	Urban	N	
No non-resident transfers	89.73	94.39									
Husband	3.27	1.12	0.49	674	0.64	170	0.33	84	0.48	19	
Wife	0.05	0.25	0.68	9	0.32	16	0.30	6	0.27	27	
Father	0.18	0.46	0.31	39	0.22	57	0.21	7	0.11	21	
Mother	0.04	0.31	0.10	11	0.10	27	0.29	2	0.13	22	
Single male student	1.50	0.98	0.35	25	0.33	7	0.16	359	0.34	147	
Single female student	0.71	0.40	0.20	10	0.03	2	0.15	162	0.19	64	
Married son, brother, nephew	1.97	0.95	0.31	426	0.35	136	0.30	42	0.31	7	
Married daughter, sister, niece	0.05	0.06	0.54	12	0.26	9	0.08	1	0.10	1	
Single son, brother, nephew	2.06	0.75	0.33	422	0.39	102	0.27	59	0.29	14	
Single daughter, sister, niece	0.14	0.11	0.17	25	0.53	18	0.23	9	0.15	3	
Other relatives	0.30	0.22	0.37	54	0.32	24	0.19	20	0.66	8	

Notes: The first two columns show the fraction of households that had a transfer either to or from a non-resident husband, wife, . . . Rural and Urban are the sector of the household, not the migrant. Household consumption is the consumption of the surveyed household which sent or received money. Survey data from the India Human Development Survey (Desai, Vanneman, and National Council of Applied Economic Research, 2008). All calculations are survey weighted. N represents the number of households reporting that transfer from a total of 41,554 surveyed households.

Table 3: Village variance in fraction females under six

State	Vill. Pop.	Villages	Female _{≤6}		Percent move to equalize		Perc. mig. by age 25 2005
	(millions) 2001		(percent) 2001 2001-91	2001	2001-91		
India	742.30	593,622	48.28	-0.39	2.76	-0.17	79.0
Jammu & Kashmir	7.63	6,417	48.90		3.73		42.6
Himachal Pradesh	5.48	17,495	47.37	-1.33	5.78	0.47	86.4
Punjab	16.10	12,278	44.42	-2.35	3.19	0.14	84.8
Uttaranchal	6.31	15,761	47.85	-0.94	4.31	-1.04	92.4
Haryana	15.03	6,765	45.12	-1.61	2.35	0.10	89.9
Rajasthan	43.29	39,753	47.76	-0.12	2.75	-0.27	80.8
Uttar Pradesh	131.66	97,942	47.94	-0.15	2.55	-0.43	85.2
Bihar	74.15	39,020	48.56	-0.24	2.04	-0.37	78.7
Assam	23.22	25,124	49.16	-0.26	2.90	-0.15	42.3
West Bengal	57.72	37,945	49.05	-0.17	2.33	-0.15	66.9
Jharkhand	20.95	29,354	49.31	-0.33	3.13	-1.27	53.3
Orissa	31.29	47,529	48.86	-0.36	3.77	-0.11	82.1
Chhattisgarh	16.65	19,744	49.54	-0.16	3.16	-1.04	86.5
Madhya Pradesh	44.38	52,117	48.44	-0.11	3.16	0.03	83.3
Gujrat	31.74	18,066	47.53	-0.83	2.70	-0.04	66.1
Maharashtra	55.78	41,095	47.81	-0.98	2.86	0.03	70.4
Andhra Pradesh	55.40	26,613	49.05	-0.43	2.18	-0.07	63.2
Karnataka	34.89	27,481	48.69	-0.38	2.74	0.03	54.0
Kerala	23.57	1,364	49.01	0.07	0.88	0.00	53.8
Tamil Nadu	34.92	15,400	48.26	-0.35	2.65	-0.18	43.0

Notes: Villages and population are administrative units. The 2001 values are calculated from the village census. The 2005 percent migrate is from the 64th round NSS employment/unemployment for women in rural areas. The fraction move to equalize is the fraction of the female population (age ≥ 6) that would need to move in order to equalize the geographic distribution of the fraction female. The table excludes some of the smaller states.

Table 4: Village variance in fraction women

State	Village Variance percent fem ≤ 6		Percent Variance Structural		Village Variance percent fem. > 6		Predicted Variance percent fem. > 6	
	2001	2001-91	2001	2001-91	2001	1991	2001	1991
India	66.3	-3.0	5.1	-4.9	19.1	69.2	17.7	22.4
Jammu & Kashmir	67.5		21.8		19.1		23.3	
Himachal Pradesh	218.9	19.5	-0.8	-5.4	46.0	199.3	39.7	52.4
Punjab	51.9	-5.8	-2.4	-8.9	12.0	57.6	8.6	15.2
Uttaranchal	182.3	17.3	-1.2	-5.4	68.1	165.0	38.3	42.5
Haryana	29.2	1.2	7.0	3.9	11.2	28.0	8.7	9.4
Rajasthan	56.4	-10.8	3.0	-4.5	16.7	67.2	15.5	21.0
Uttar Pradesh	45.2	-5.9	6.9	-8.3	20.3	51.1	16.7	21.0
Bihar	37.1	-8.1	9.7	-13.8	11.3	45.2	12.0	19.7
Assam	72.5	6.1	7.6	0.1	15.5	66.4	18.2	19.5
West Bengal	51.6	-1.9	1.0	-7.4	9.4	53.5	10.6	15.7
Jharkhand	76.9	-11.8	5.1	-10.3	16.7	88.7	21.3	31.6
Orissa	99.3	-8.1	3.0	-2.9	18.5	107.4	22.3	27.9
Chhattisgarh	48.9	-1.6	6.3	-5.5	7.9	50.6	11.8	15.8
Madhya Pradesh	55.9	-4.7	2.7	-4.7	16.6	60.6	17.2	21.8
Gujrat	31.2	-2.7	13.2	-0.6	8.7	33.9	9.8	11.0
Maharastra	42.4	-2.5	5.8	-3.8	15.7	44.9	12.7	17.5
Andhra Pardesh	48.8	-1.7	4.7	-6.4	8.9	50.6	9.9	14.2
Karnataka	75.4	7.3	2.2	-2.9	12.3	68.1	15.8	17.3
Kerala	3.0	1.1	21.6	22.6	1.9	1.9	0.9	0.2
Tamil Nadu	31.2	-3.1	6.7	-10.3	5.1	34.3	5.9	10.6

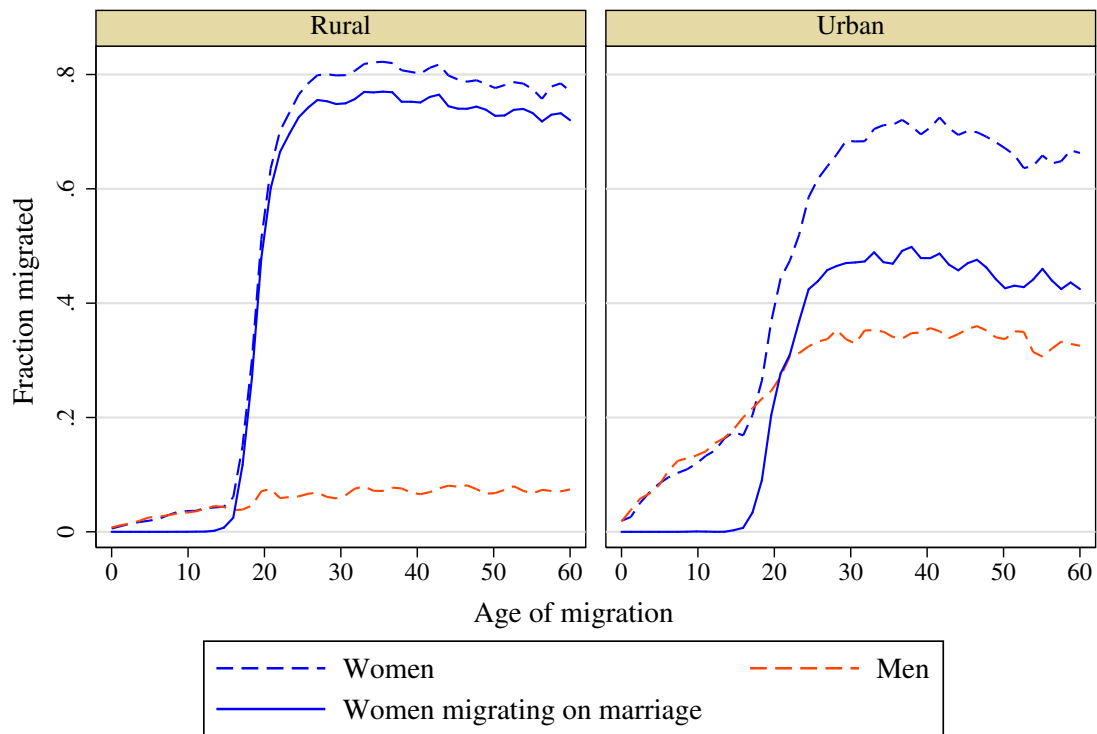
Notes: Villages and population are administrative units. The 2001 and 1991 values are calculated from the village census. The table excludes some of the smaller states.

Table 5: Marriage migration regressions

	Migrated for marriage			
Some non-domestic work	0.0576*** (0.00595)	0.0933*** (0.00924)	0.0402*** (0.00556)	0.0677*** (0.00895)
Some work outside home	-0.0405*** (0.0107)	-0.0818*** (0.0160)	-0.0276*** (0.0104)	-0.0811*** (0.0155)
Literate (below primary)	-0.0174* (0.00927)	-0.0314** (0.0125)	0.00946 (0.00916)	0.0177 (0.0116)
Primary	0.00584 (0.00842)	0.0467*** (0.0108)	-0.000650 (0.00798)	0.0656*** (0.0102)
Middle and above	-0.0533*** (0.00817)	0.0243** (0.0100)	-0.0440*** (0.00777)	0.0570*** (0.00962)
Log consumption	0.0323*** (0.00786)	-0.0926*** (0.00942)	-0.00740 (0.00791)	-0.0470*** (0.00941)
Scheduled Caste	0.0522*** (0.0122)	0.157*** (0.0176)	0.0235* (0.0123)	0.0842*** (0.0179)
Other Backward Castes	0.0253** (0.0116)	0.0915*** (0.0167)	0.0140 (0.0117)	0.0639*** (0.0170)
Other Castes	0.0405*** (0.0130)	0.183*** (0.0168)	0.0137 (0.0131)	0.0700*** (0.0170)
Observations	50,676	52,219	50,676	52,219
R-squared	0.011	0.026	0.095	0.129
State effects	NO	NO	Yes	Yes
Region	North	ROI	North	ROI

Notes: Data from the NSS 64th round employment/unemployment restricting to women over 22 in rural areas. Regressions use survey weights and structure. The North is Punjab, Uttaranchal, Haryana, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, and Gujarat; the ROI is the rest of India. The omitted groups are Illiterate, and Scheduled Tribes. Some non-domestic work is listing work in a household enterprise or outside the home as either the principle or subsidiary activity.

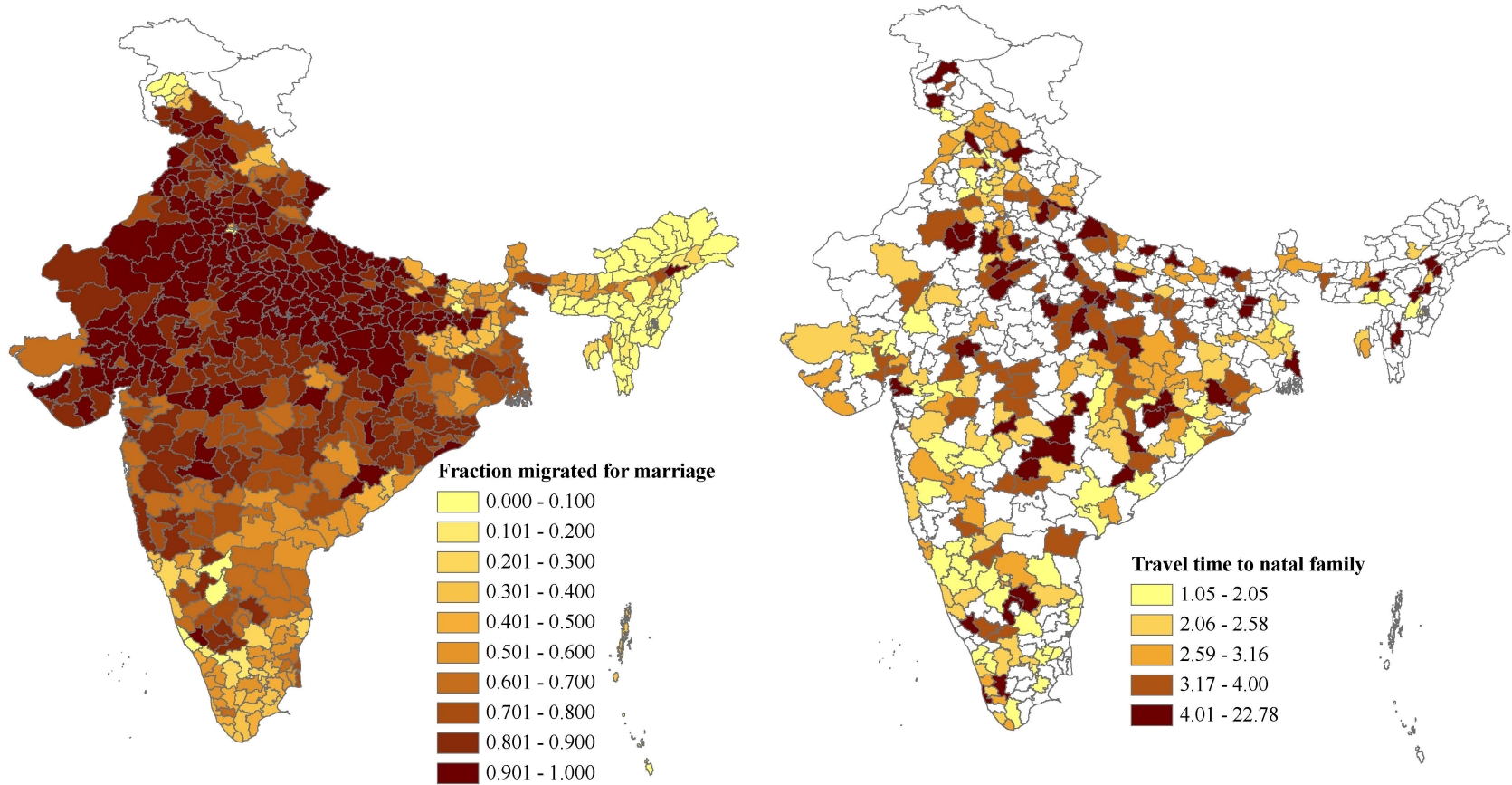
Figure 1: Migration by age and sex



Graphs by Sector

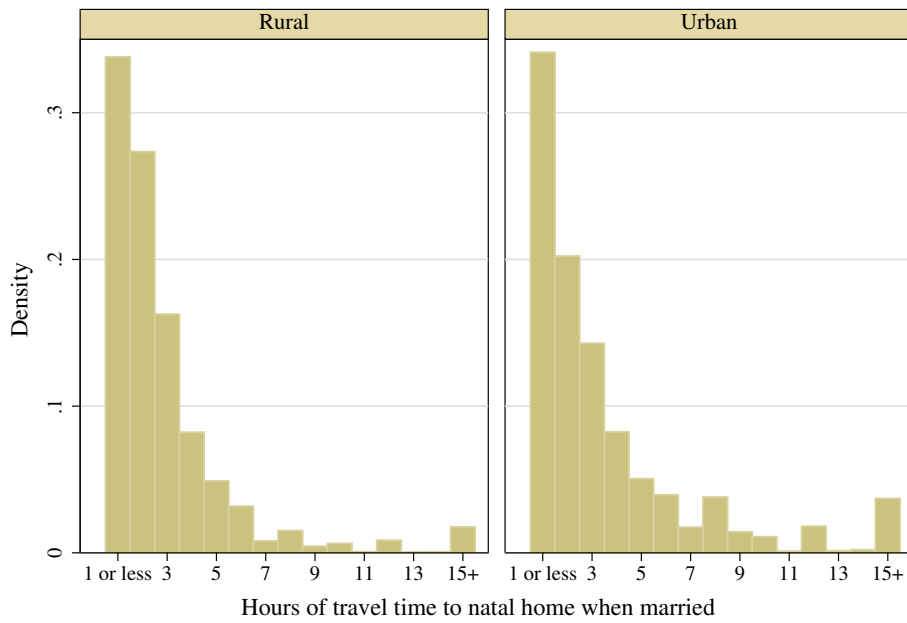
Notes: Shows the age of migration for men and women by sector. The sector is defined by the place of residence as of the survey. Weighted to be nationally representative by sector. Survey data from the 64th round of the NSS.

Figure 2: Marriage migration across India

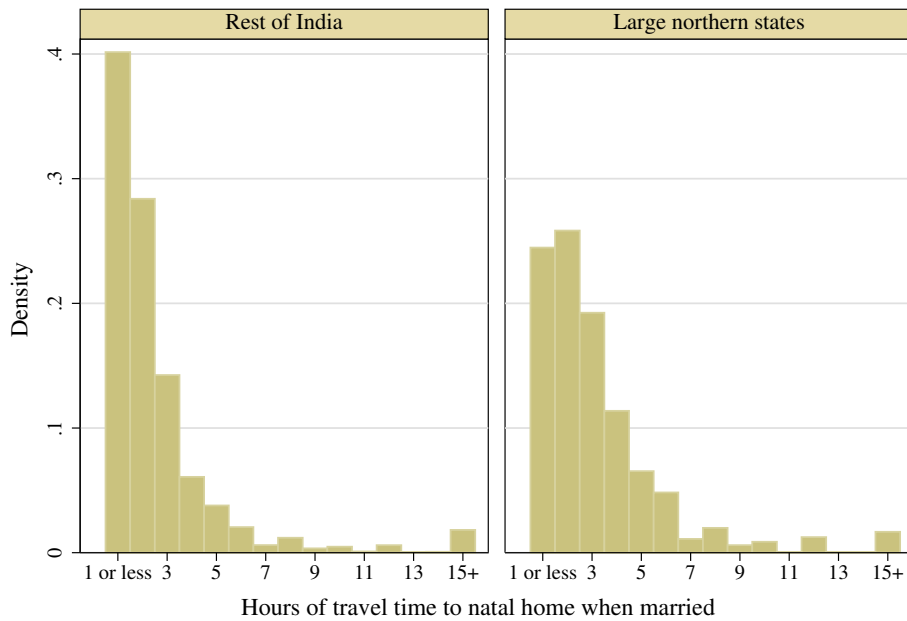


Notes: The left panel shows the fraction of women in rural areas over age 22 who have migrated for marriage by districts (2001 census districts) from the NSS 64th round (employment/unemployment) in 2007-2007. The right panel shows how far by number of hours to natal home on marriage, women move on migration from the IHDS in 2005. Less than one hours is recorded as one hour and the maximum in 99 hours.

Figure 3: Distribution of marriage migration time



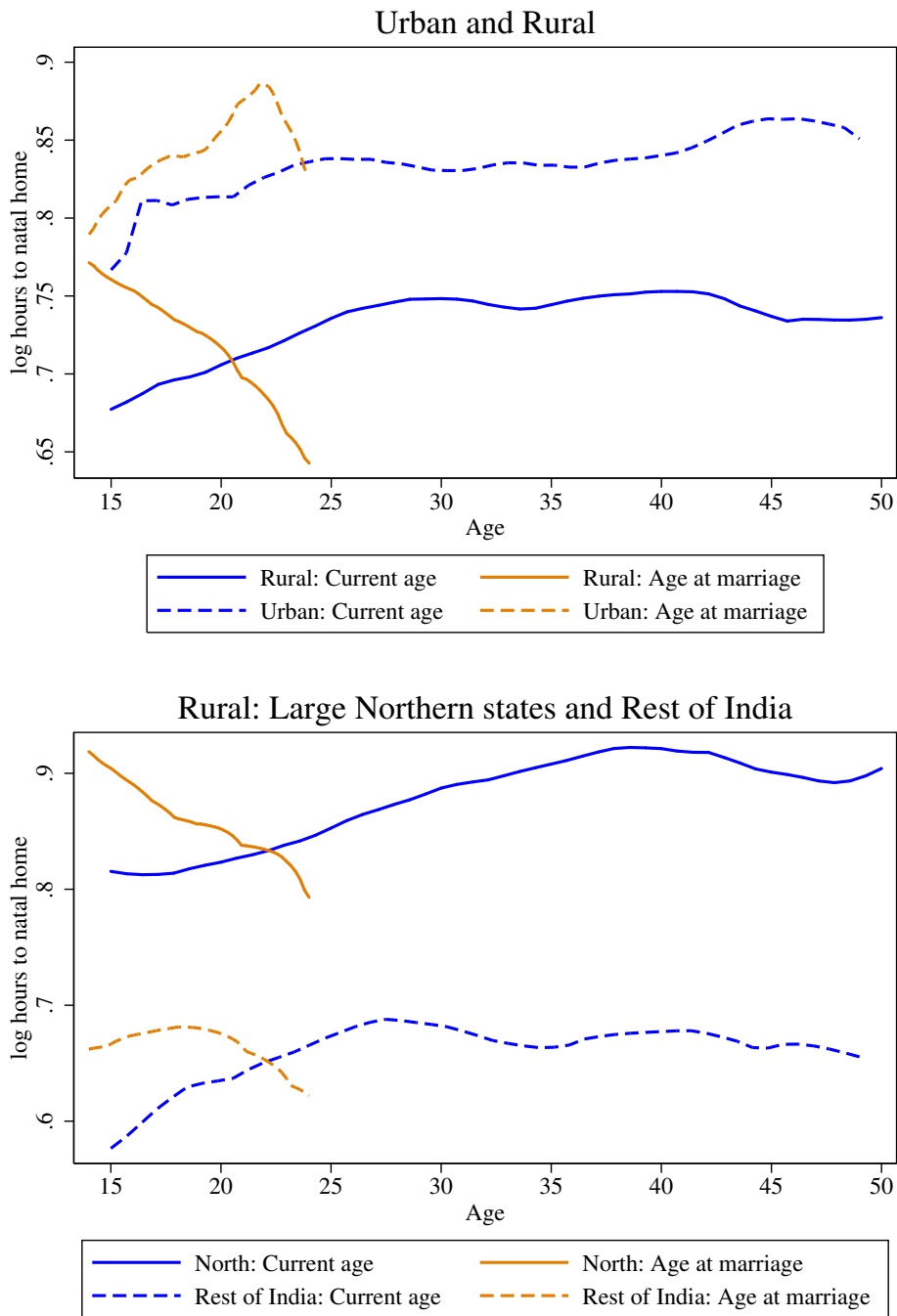
Graphs by sector



Graphs by Northern states

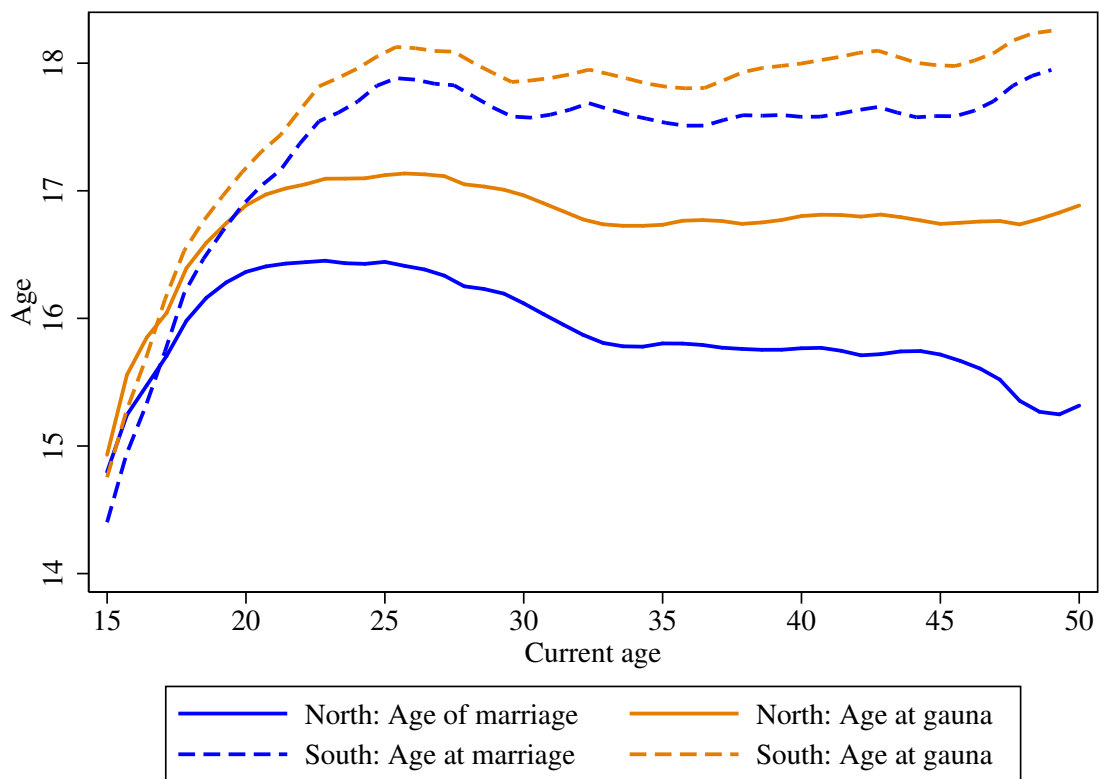
Notes: The top panel shows the distribution of travel time in hours from the birth family of rural and urban women when they marry, the bottom panel shows the distribution only for rural women. The survey records less than one hour as one so those who stay in their natal village are included as moving one or less. The large northern states are: Punjab, Uttaranchal, Haryana, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, and Gujarat. Survey weighted to be nationally representative by sector. Survey data from the IHDS.

Figure 4: Age and marriage migration distance



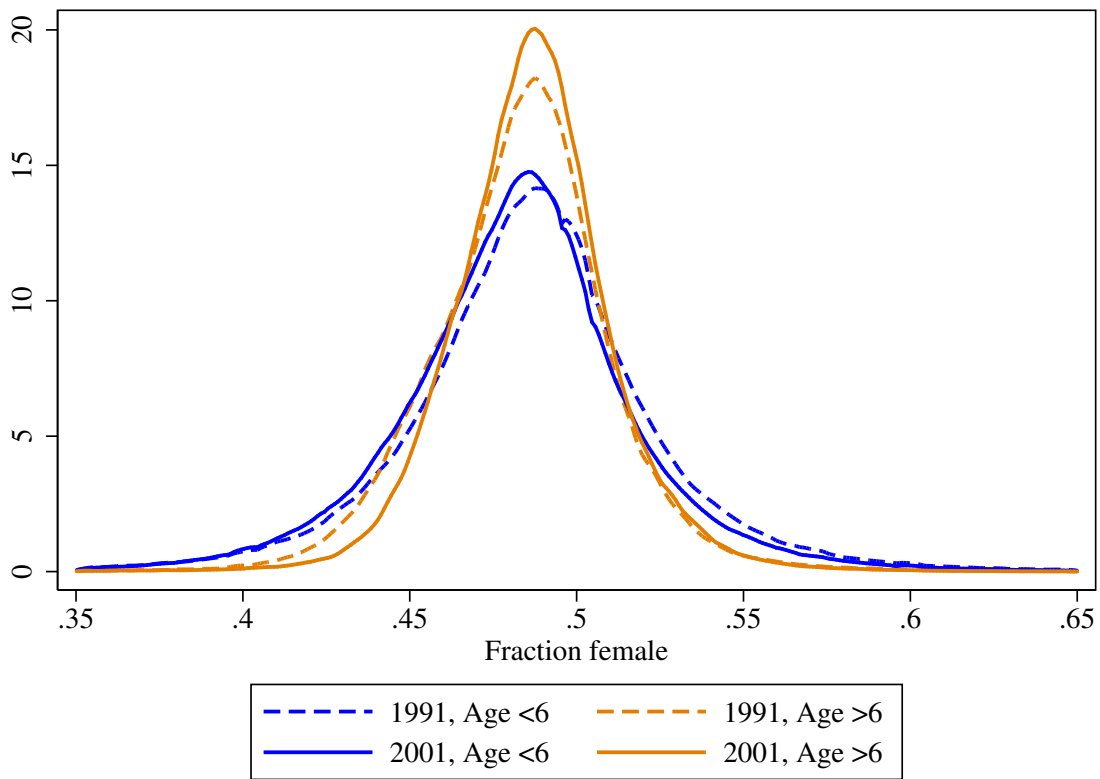
Notes: Shows relationship between age and travel time in hours from the birth family of rural women when they marry. Age is either current age from the survey or the age of marriage. Smoothed using a local polynomial. Survey data from the IHDS in 2005. The large Northern states are: Punjab, Uttaranchal, Haryana, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, and Gujarat.

Figure 5: Age of marriage and age of gauna in 2005



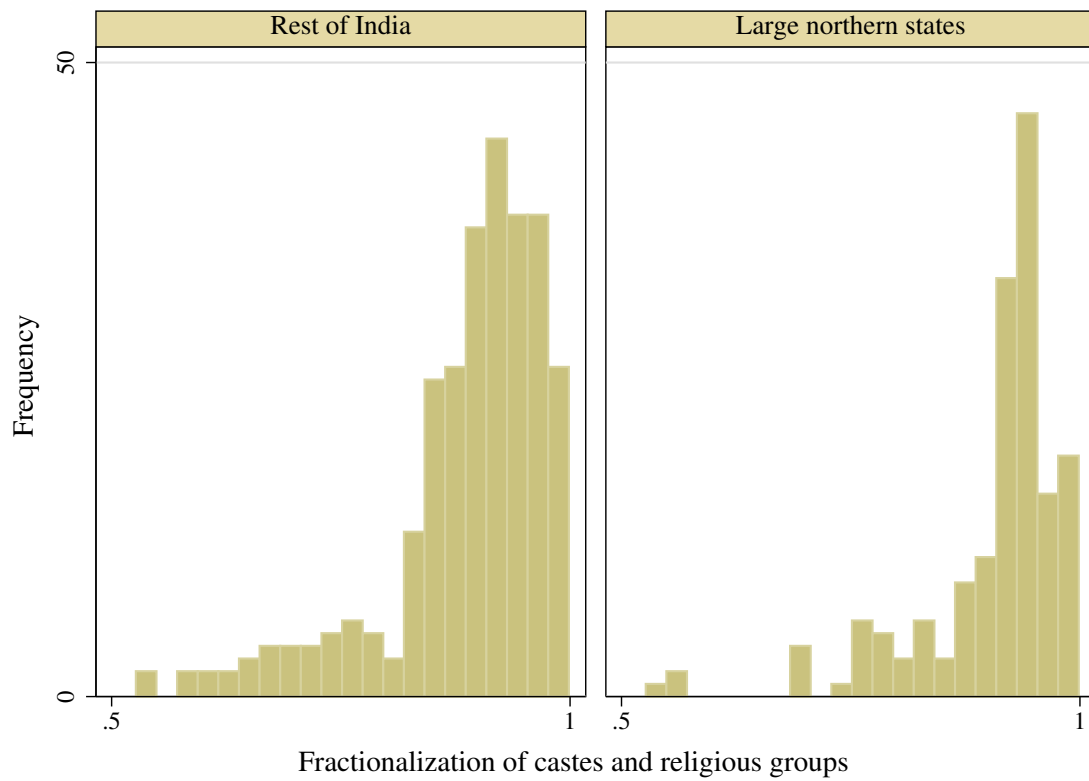
Notes: See figure 4 for the list of northern states. Data from the IHDS.

Figure 6: Geographic distribution of fraction women in village India 1991-2001



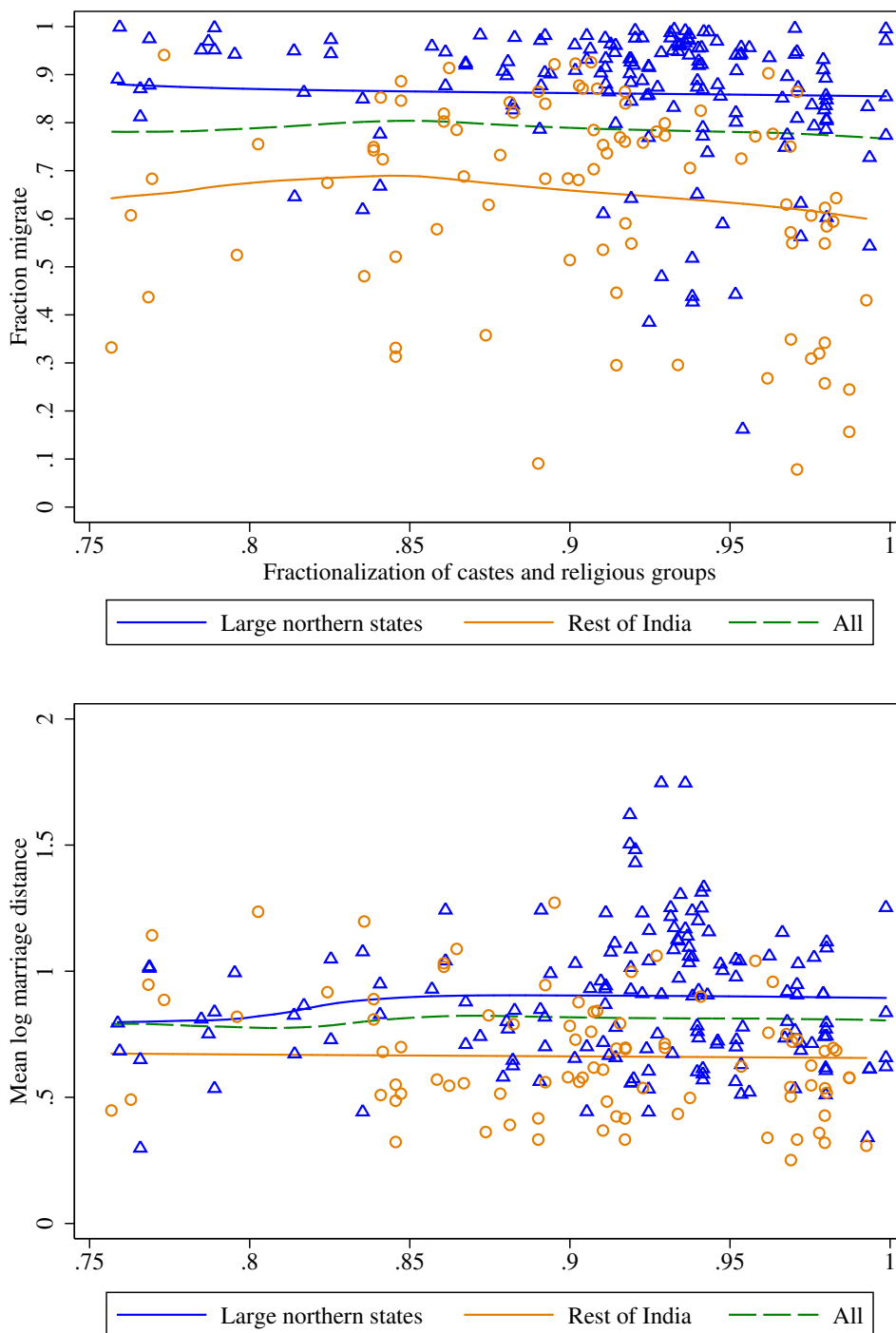
Notes: Uses India Village census from 1991 and 2001. The kernel density is weighted by total village population.

Figure 7: Caste and religious fractionalization in India



Notes: The fractionalization index is from [Banerjee and Somanathan \(2007\)](#) created from the 1931 census. See figure 4 for the list of northern states.

Figure 8: Marriage migration and caste fractionalization



Notes: Polynomial smoother. The fractionalization index is from [Banerjee and Somanathan \(2007\)](#) created from the 1931 census. Marriage distance is in hours from the IHDS. Not migrating is recorded as moving one hour or less. See [figure 4](#) for the list of northern states.