Escaping Patriarchy:
Women's Insularity and Gender Attitudes in Oman

Mohammed Al-Shafaee, Erica Field, Seema Jayachandran, Munir Squires*

August 29, 2026

Abstract

In many societies, a woman's social world is largely confined to her family. We examine how this insularity shapes cultural values by studying kin marriage in Oman, where more than a third of marriages are between first cousins. Using quasi-random variation in the availability of marriageable male cousins as an instrumental variable, we find that marrying a non-cousin transforms women's social environment, sharply reducing daily contact with parents and in-laws. Consistent with weaker vertical cultural transmission of traditional values, marrying a non-cousin leads to more gender-egalitarian attitudes (0.7 SD increase). Strikingly, this occurs alongside outcomes typically associated with reduced female empowerment: marrying a non-cousin increases child marriage by 20 percentage points, and decreases high school completion by the same amount. These results suggest that tight-knit family structures can perpetuate traditional values, highlighting social exposure as a distinct driver of cultural change.

1 Introduction

Traditional values thrive in closed social worlds. In many societies, women's lives are particularly circumscribed, with social circles limited primarily to family members through overlapping practices: marriage within extended family creates dense kinship networks, female seclusion limits contact with non-relatives, and women move directly from father's to husband's authority without establishing independent social connections. These practices maintain traditional values both by

*The authors are from Sultan Qaboos University (Al-Shafaee), Duke University (Field), Princeton (Jayachandran), and UBC (Squires). We thank Leon Karreman, Sulaiman Shukaili, and Johannes Stroebel for superb research assistance, and Sultan Qaboos University (SQU) for hosting the study. We are also grateful to Alan Bittles for feedback on our study design and for introducing us to scholars at SQU, and Mohammed Hassan for facilitating community entry in Nizwa. We thank several seminar participants and particularly Siwan Anderson, Pascaline Dupas, Thomas Fujiwara, and Nathan Nunn for valuable feedback on the manuscript. We thank the Harvard KSG Middle East Initiative, the Harvard Weatherhead Center for International Affairs, and the Stanford Center for International Development for funding. The project received IRB approval from Harvard University and SQU.

increasing contact with like-minded relatives and by raising the costs of disagreement with them, creating a self-reinforcing loop where norms foster insularity, which in turn shields those norms from challenge.

We examine how social insularity shapes women's cultural values, specifically those related to women's place in society. We study a setting where, despite dramatic educational gains for women, traditional gender attitudes persist. We argue this is in part due to exceptionally strong social ties within family networks. To identify how family ties influence attitudes, we use exogenous variation in whether a woman marries a first cousin (hereafter, cousin), in a setting where a third of marriages are between cousins.[1]

Using survey data from 1,538 women aged 25-50 in Oman, we show that women with fewer marriageable-age male cousins are more likely to marry a non-cousin, which we refer to as "out-marriage." We then show that out-marriage leads to a large reduction in the intensity of ties with kin, such as parents and in-laws. This disruption of traditional family networks leads to more liberal gender attitudes, even as it produces outcomes typically associated with reduced female empowerment: earlier marriages, less education, and matches with husbands who have less education and lower earnings. This counterintuitive pattern—more gender-equal attitudes alongside seemingly worse socioeconomic outcomes—points to the role of social insularity in maintaining traditional values independent of other factors commonly associated with female empowerment.

We argue that marriage patterns shape gender attitudes through social insularity and increased vertical cultural transmission. When a woman marries her cousin, she remains embedded in a dense, homogeneous kin network that limits exposure to alternative perspectives and increases the costs of disagreeing with her parents and in-laws. By contrast, out-marriage exposes a woman to broader social circles and, by loosening the overlap between her natal and marital families, weakens either family's power to enforce its norms.

The liberalizing effect of out-marriage on gender attitudes is potentially in tension with the economic functions that cousin marriage serves in this context. Cousin marriages facilitate trust and credible commitments between families, mitigate information asymmetries about potential spouses, and help preserve family resources and status, advantages that may be lost when marrying out (Do et al., 2013; Mobarak et al., 2019, 2013). These economic advantages may thus help explain the persistence of both cousin marriage and traditional gender norms.

To identify the causal effect of out-marrying, we exploit "supply-side" variation in how constrained families are in choosing cousin marriage for their daughter: Women differ in how many male cousins they have who are a few years older than them and, thus, most suitable to marry.

[1] Oman's cousin marriage rate is about 40% (Islam, 2012). The rate is similarly high across the broader region (Iqbal et al., 2022; Bittles and Black, 2010; Abbasi-Shavazi et al., 2008).

We start by presenting evidence on the strong relationship between the availability of marriageable male cousins and out-marriage. We find that, controlling for the number of equivalent female cousins, each additional male cousin of marriageable age reduces the probability of out-marriage by 5 percentage points. This relationship is specific to male cousins within the typical spousal age range (similar age or somewhat older) and does not extend to female cousins or male cousins too distant in age, suggesting we are capturing a direct marriage market effect, and not other characteristics of large extended families. We find evidence against various potential violations of the exclusion restriction, including differences in pre-marital socialization.

Using this instrument, we first examine how out-marriage affects women's social environments. We find that it transforms women's daily social interactions: out-marriage sharply reduces the likelihood of daily contact with parents, in-laws, and siblings. These changes are reinforced by geographic separation, with out-marriage reducing the likelihood of living within one kilometer of either parents or in-laws.

We then show that out-marriage leads women to hold more gender-egalitarian views. This effect is large: we find an increase of 0.7 standard deviations in our index of gender attitudes. We find the largest impacts on perceptions of women's capabilities as political leaders and businesspeople.

But while out-marriage leads to more gender-equal attitudes, it also leads to other outcomes typically associated with *lower* female empowerment. Notably, out-marriage leads to an increase in early marriage. The probability of being married by age 16 rises by 22 percentage points, which we argue happens because the trust and commitment between kin allow for longer engagement periods. Consistent with earlier marriage, we also find reduced schooling and earlier childbirth. Out-marriage reduces by 23 percentage points the likelihood of completing grade 12, and reduces age at first birth by 2 years. Despite these substantial differences in marriage timing, age at first childbirth, and schooling, we find that out-marriage has no effect on women's own employment, which remains low across groups.

These findings contribute to three literatures. The first is on the determinants of gender norms, where foundational work links economic development to shifting gender attitudes (for reviews, see Jayachandran, 2015; Duflo, 2012; Doepke et al., 2012). In this view, the expansion of women's education, labor-market opportunities, and legal and political rights gradually raises the economic returns to more egalitarian gender roles and increases women's capacity to pursue them. Complementary work emphasizes deep-rooted material and familial determinants, connecting contemporary gender attitudes to historical technologies, kinship systems, and family structures (Alesina et al., 2013; Alesina and Giuliano, 2014; Lowes, 2022; Ashraf et al., 2020). Our paper instead focuses on the contemporaneous role of family structure and social exposure. We show that social insularity, maintained by close-kin marriage, can offset the liberalizing effects of schooling and economic de-

velopment. Women from the same birth cohorts, facing the same broader social environment, hold different gender attitudes depending on whether they marry a cousin or not.

Second, our paper relates to models of cultural transmission, which distinguish vertical transmission within families from horizontal and oblique learning from peers and the wider society (Bisin and Verdier, 2001, 2011). These models imply that strong vertical transmission can sustain traditional gender attitudes despite broader social change (Giuliano, 2020). Empirically, vertical transmission of gender norms is well documented, from intergenerational links in gender-role views and labor supply to the persistence of country-of-origin norms among second-generation immigrants (e.g. Farré and Vella, 2013; Fernández et al., 2004; Fernández and Fogli, 2009; Alesina et al., 2013; Giuliano and Nunn, 2021; Dossi et al., 2021).[2] We provide causal evidence on the *intensity* of vertical transmission by using exogenous variation in out-marriage, which we show weakens vertical ties (decreases daily contact with parents and in-laws). Consistent with cultural-transmission models, looser vertical ties erode conservative gender norms: women pushed into out-marriage hold more gender-egalitarian views even though they marry earlier and complete less schooling.

Third, our research contributes to work on kinship intensity and close-kin marriage. An influential line of argument suggests that the decline of kinship groups (in part due to a prohibition on cousin marriage in the Middle Ages) was important in the rise of individualism, innovation, and broadening circles of cooperation in Europe (Henrich, 2020; Schulz et al., 2019). While elements of this argument have found support in other settings (e.g. Ghosh et al., 2023; Bahrami-Rad et al., 2022; Enke, 2019), direct evidence on the mechanisms by which tight kinship affects culture and psychology is absent. We contribute to this by documenting how a decline in cousin marriage leads to a sharp reduction in vertical cultural transmission. Our findings suggest that kin-based institutions sustain traditional gender norms by changing who women interact with and learn from.[3]

Our results suggest that expanding formal education and economic opportunities for women may have limited impact when they remain embedded in closed family networks. The persistence of traditional attitudes among educated women who marry cousins suggests that social isolation can play a central role. This mechanism likely extends beyond cousin marriage to other practices that limit women's social connections, such as veiling, restrictions on independent movement, and female seclusion. In contexts where traditional practices create dense, inward-looking family networks, interventions that expand women's social circles may matter more for shifting cultural values, even

[2]Complementary work documents horizontal and oblique channels operating through peers, teachers, and role models (e.g. Carlana, 2019; Bursztyn et al., 2017; Porter and Serra, 2020; Olivetti et al., 2020).

[3]Recent work shows that cousin marriage serves multiple economic functions: it can ease the burden of upfront marriage payments, either by financing them within the kin group or by replacing them with later bequests (Mobarak et al., 2013; Do et al., 2013), and limit the fragmentation of family property (Bahrami-Rad, 2021; Johow et al., 2019). These benefits help explain the persistence of the practice despite evidence of substantial health costs for offspring (Mobarak et al., 2019; Mete et al., 2020; Hwang et al., 2025).

in the presence of rising education levels and increased access to outside information.[4]

2 Conceptual Framework

The persistence of traditional gender attitudes despite broader modernization suggests a potential role for family network structures in shaping and maintaining cultural values. Anthropologist Germain Tillion, studying gender relations in the Mediterranean, hypothesized "a causal relationship between tribal endogamy (or rather, its degenerate form [first-cousin marriage]) and a particular debasement of the female condition" (Tillion, 1983, p. 28). Our conceptual framework similarly emphasizes how insular kin ties, particularly cousin marriage, can reinforce traditional gender norms.

Marriage choices are important in part because they determine network density and diversity. This is especially consequential for women in contexts like Oman, whose social spheres are often restricted primarily to family members, making the choice of marriage partner a primary determinant of their post-marital social environment (Eickelman, 1984).

When a woman marries her cousin, her husband's kin are also her own, creating overlapping family ties. These tight-knit networks tend to emphasize conformity and collective identity over individualism (Henrich, 2020; Edlund, 2018), creating environments where traditional gender norms can be particularly resistant to change. This may come from both: (1) restricted exposure to alternative perspectives beyond the kin group, and (2) increased capacity for norm enforcement within tight family networks.

The first channel involves social exposure and norm perception within the network. Dense, homogenous kin networks resulting from cousin marriage can create social echo chambers, limiting exposure to alternative perspectives and reinforcing existing norms through frequent interaction with like-minded relatives. Within such networks, the influence of elders may be particularly strong (Bates et al., 2004).[5] Conversely, out-marriage expands the family network beyond the natal kin group. This increases the potential for exposure to varied viewpoints and role models.[6]

The second channel operates through the social costs of norm deviation. The unified overlapping family network resulting from cousin marriage means conflict and disagreement risks jeopardizing all family relationships simultaneously as sanctions can be collectively imposed. In contrast, women who marry non-relatives bridge two distinct family networks. This separation reduces each family's leverage—sanctions from one side risk driving the couple toward the other—potentially lowering

[4]Indeed, Glennerster et al. (2026) show that unstructured mass media exposure can reinforce traditional norms rather than eroding them.

[5]The insular nature of kin networks can moreover lead individuals to overestimate adherence to tradition (Bursztyn et al., 2020). Such misperceptions would reinforce public conformity to perceived traditional norms.

[6]In practice, however, such network expansion is not guaranteed. In patrilocal settings, women may merely substitute their birth family's influence for equally insular in-law relationships. A key question then is whether out-marriage merely substitutes the influence of parents for that of in-laws, or whether it reduces their joint influence.

the cost of adopting non-traditional attitudes.

These two channels suggest out-marriage may weaken traditional gender norms and encourage more gender-equal attitudes across society. Cousin marriage, however, is sustained both by traditional gender norms themselves—parents who hold conservative views about women's roles are likelier to favor cousin matches for their sons and daughters—and by economic incentives that may benefit individual women. Because kin trust one another more, marriages arranged between cousins can involve less uncertainty about a prospective spouse and fewer concerns that an engagement will be broken. Dense kin networks may also reassure families about premarital behavior during a long engagement. Girls can therefore delay co-residence and childbirth and remain in school longer (Ambrus and Field, 2008).

Beyond marriage timing, there are at least three ways in which a woman in this setting may benefit from marrying a cousin. First, it means her husband's family are also her own blood relatives. Some women report that this engenders more considerate treatment from in-laws and greater room for accommodation in conflicts, since mistreating a daughter-in-law risks damaging relationships across the wider kin group (Hussain, 1999; Jacoby and Mansuri, 2010; Small et al., 2024).[7] The fact that bride price and other transfers circulate within the same extended family may further soften in-laws' demands and limit day-to-day resentment over marriage payments directed at the bride herself (Do et al., 2013; Mobarak et al., 2019; Bittles and Black, 2010; Campbell et al., 2024).[8]

Second, cousin marriage can raise the perceived returns to investing in girls. If marrying a cousin implies parents expect to remain closely tied to a married daughter and her children, her education may be viewed as an investment rather than a pure transfer to another family. In patrilineal settings where daughters share in the inheritance, as dictated in Islam, marrying a patrilateral cousin (that is, her father's brother's son) also keeps any inherited assets within the same lineage (Tillion, 1983; Johow et al., 2019; Bahrami-Rad, 2021), which can further strengthen parents' incentives to finance her schooling or provide her with assets. These transfers may partially compensate daughters for accepting a cousin marriage and redistribute some of the family-level gains from wealth consolidation back to the individual woman.[9]

[7]For example, one of the women interviewed in Hussain (1999) reported that "Consanguineous marriages are popular because relatives are more caring and considerate. The girl is more happy ... and in times of conflict usually the parents-in-law play a supportive role and try and reason with both parties." However many women interviewed in this study felt the reverse was true. One said: "If it is a match within the family then there is more room for accommodation. However, it is usually the daughter-in-law who makes the compromises, whereas a non-related daughter-in-law will not give such concessions to the in-laws."

[8]Marital transfers (mahr) flow from the husband's family to the bride in Oman.

[9]This logic parallels an anthropological literature linking female inheritance, patrilateral cousin marriage, and honor-based control. Tillion (1983), for example, argues that marrying a patrilateral cousin prevents wealth escape when daughters inherit. Similarly, Campbell et al. (2024) interpret honor killings as extreme enforcement devices that resolve parent–offspring conflict over wealth-preserving cousin marriage. Parents may similarly apply gentler economic means, investing more in children who accept a cousin marriage.

Third, if higher-status families are more likely to arrange cousin marriages for their sons (Eickelman, 1984), marrying a cousin may mean a woman has a better-educated, higher-earning husband. Historical and ethnographic work describe higher-status lineages using cousin marriage to preserve property and social standing (Johow et al., 2019; Meriwether, 1999). In these ways, cousin marriage may offer girls private benefits (later marriage, softer treatment by in-laws, greater parental investment, and higher-status husbands) while keeping them tied to insular kin networks.

These forces suggest a tradeoff for women. On the one hand, marriage outside traditional kin networks offers potential benefits of greater social openness: expanding networks, new social connections, and exposure to diverse perspectives and role models. On the other hand, cousin marriage provides greater trust, social cohesion, and economic security, and can package together later marriage, less contentious financial negotiations, more parental investment, and higher-status husbands. The educational differences we observe between cousin marriage and out-marriage may therefore reflect not only the mechanical effects of marriage timing but also strategic parental investment decisions when a cousin match is anticipated. Ex ante, it is ambiguous whether women who marry cousins or women who out-marry will be better off overall: out-marriage tends to expose them to more liberal gender attitudes, while cousin marriage may compensate for greater social insularity by offering a bundle of private material and relational benefits.

Finally, we note potential parallels with other persistent cultural practices. Female seclusion, as well as more extreme versions of veiling, may similarly preserve traditional values through social insularity. Together, these customs can shield traditional gender norms from external pressures despite modernization along other dimensions. This pattern aligns with our broader argument: insular social networks, whether shaped by marriage patterns or other cultural practices, can sustain conservative values.

3 Data and Empirical Strategy

3.1 Data and Variable Construction

Our research design seeks to estimate the causal effect of out-marriage on women's gender attitudes. To do so, we conducted a survey of women in the Dakhliya region of Oman. The survey was conducted in three villages in the wilayat (district) of Bid Bid in 2007 and five villages in the wilayat of Nizwa in 2009. Both are rural areas, shown on a map in Appendix Figure A.1.

The sampling frame comprised all women ages 25 to 50 in the eight selected villages. This sampling rule yielded 1,722 women of whom 1,637 agreed to be interviewed (95% response rate). Of these 1,637 respondents, we drop 33 due to missing data on key variables such as age, ever married, or marriage to a first cousin.

The survey asked respondents to enumerate all aunts and uncles and then all first cousins, including each cousin's age, sex, and survival until age 12. The reported total number of cousins ranged from 0 to 138. We omit respondents who report having zero cousins, as this is highly unlikely in a high-fertility country such as Oman and likely represents non-response. We also trim the top 1% of the distribution (those with more than 97 cousins), as the detailed information about cousins' ages is likely less accurate for respondents reporting such large numbers. These restrictions reduce our sample by 66 respondents to 1,538.

Our treatment variable, $OutMarriage_i$, is a binary indicator equal to 1 if a woman's first marriage was not to a first cousin, and 0 otherwise. This combines women married to relatives more distant than first cousins with those who marry non-relatives. We do this because our instrument generates variation in whether a woman marries a first cousin.[10] Under this definition we also code never-married women as part of the control group ($Outmarriage = 0$), on the grounds that they remain within their natal kin group and do not form the dual family ties central to our conceptualization of out-marriage's effect on social insularity (Wikan, 1991).[11] We discuss this further and show our results are robust to alternative definitions of the treatment variable in Section 4.4.

To address potential endogeneity in marriage choices, we construct an instrumental variable, $MarriageableCousins_i$, based on the availability of potential cousin-husbands, capturing a quasi-random "supply-side" determinant of whether someone marries a cousin. This approach builds on work by Mobarak et al. (2019), who uses cousin availability as an instrument to study health and economic outcomes of cousin marriage in South Asia.

Since spousal suitability is strongly age-dependent, we define $MarriageableCousins$ as a weighted sum of the respondent's relevant-age male cousins. The weights, $w(\cdot)$, reflect each cousin's suitability based on their age relative to the respondent. We derive these weights empirically from the observed distribution of husband-wife age differences in our sample, shown in Figure 1, which confirms that husbands are typically a few years older than their wives. Weights are calculated separately for each district using a smoothed density (see Appendix Figure A.3) and are normalized so that a cousin three years older than the respondent (the modal age gap) receives a weight of 1.

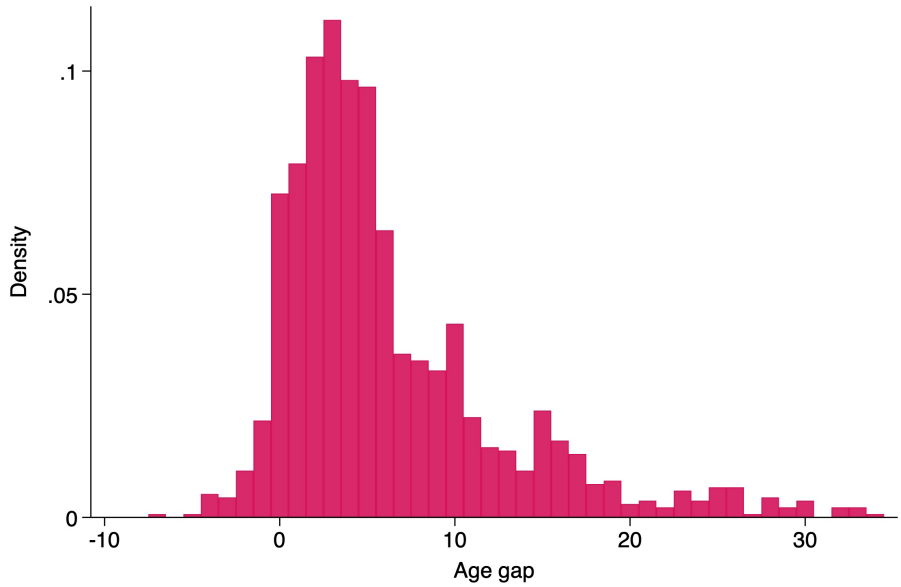
Formally, for each woman i, we calculate the instrument as:

$$MarriageableCousins_i = \sum_{j \in \mathcal{M}_i} w(AgeDiff_{ij}) \tag{1}$$

[10] Appendix Figure A.2 provides descriptive support for this decision. We show that women married to second or more distant cousins are significantly less likely to live near their parents than those married to a first cousin, and are more similar to women married to non-relatives. This suggests first-cousin marriages are substantially more insular than marriages between more distant relatives.

[11] Appendix Figure A.2 also provides support for this definition of our treatment variable, since never-married women are even more likely to live near their parents than women married to a first cousin.

Figure 1: Husband-wife age differences



Notes: Shows the distribution of husband's age minus wife's age.

where $\mathcal{M}_i$ is the set of male cousins of woman i who survived until age 12 (an age by which potential spouses are likely identified), and $AgeDiff_{ij}$ is the age difference between cousin j and woman i. The logic is that having fewer marriageable male cousins increases the likelihood that a woman will marry a non-cousin.

Our primary outcome is an index of gender attitudes, composed of four variables measured on 4-point Likert scales. The index consists of questions about women's role in society: (i) whether jobs should be allocated based on gender when scarce, (ii) whether women can be effective political leaders, (iii) whether women can succeed in running businesses, and (iv) whether university education is more important for a boy than for a girl (see Appendix B for exact wording). Higher values in our gender attitudes index represent more egalitarian (progressive) views toward gender roles. Following Anderson (2008), we construct our index as a weighted average of the standardized measures, giving more weight to variables containing more unique information.

In addition to our gender attitudes index, we collected data on outcomes related to family proximity and interaction patterns, marriage dynamics, and socioeconomic outcomes. Family contact variables include geographic proximity and frequency of contact with parents, in-laws, and siblings. Marriage-related variables capture timing (age at marriage, engagement duration), marriage quality, and husband characteristics. Fertility outcomes include age at first birth, number of children, and number of pregnancies. Socioeconomic outcomes include the respondent's employment status and years of education. These complementary measures help assess whether changes in gender

attitudes coincide with structural changes in family relationships and women's life circumstances. See Appendix B for variable construction and the wording of questions in the survey.

3.2 Sample Description and Summary Statistics

Figure 2 presents trends in female education, cousin marriage, and gender attitudes by birth year in our cross-sectional sample. Panel (a) reveals a dramatic increase in female educational attainment across birth cohorts, with average years of schooling rising from about 1 year for women born in 1960 to 11 years for those born in 1985. Meanwhile, Panel (b) shows that the rate of cousin marriage among women in our sample remains stable across these same birth cohorts, consistently around 30%.[12]

Panel (c) illustrates the persistence of traditional gender attitudes across birth cohorts. Baseline gender attitudes in our sample are notably conservative. For instance, almost all agree that men should have priority for jobs when scarce (89% agree) and that men make better political leaders than women (87% agree). Similarly, 63% agree that men are better suited for business. Views on education are somewhat more egalitarian, though a significant minority (26%) still believe university education is more important for boys. As the figure shows, these traditional attitudes have remained stable despite rising education levels. This persistence of traditional gender norms despite economic and educational progress suggests the presence of frictions that slows down cultural change.

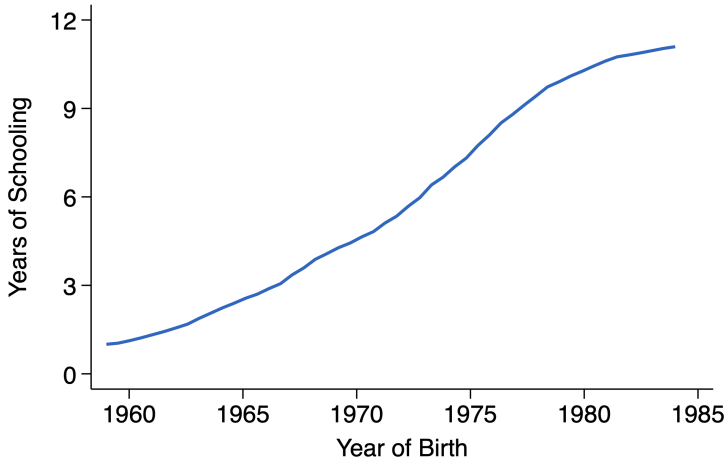
Table 1 presents summary statistics. Panel A shows balance variables, which are characteristics unlikely to be influenced by the choice of spouse: age, height, age of menarche, number of siblings, birth order, whether the respondent or her father has any schooling, and father's land ownership. Panel B presents cousin-related variables, including our key measure of marriageable cousins. On average, women in our sample have 33 total cousins, with 2.8 male cousins of marriageable age (weighted by typical spouse age difference) and a similar number of female cousins in the same age range.[13]

[12] As in the rest of the analysis, this figure reports the respondent's first marriage.

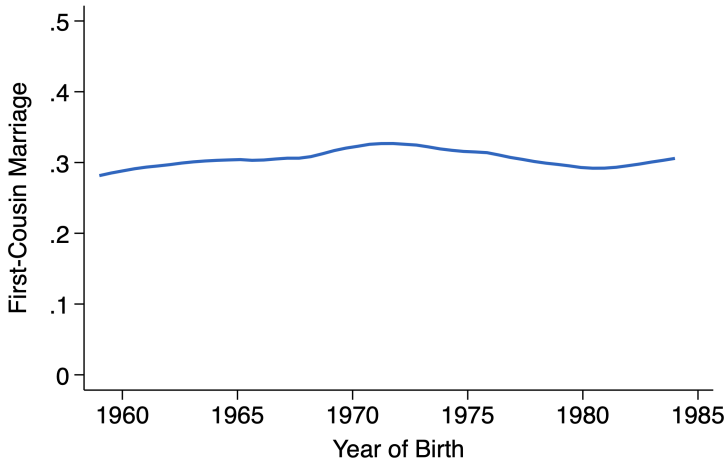
[13] Variation in sample sizes across variables in this table reflects both survey design choices (certain questions were asked only in the Nizwa survey round) and the applicability of specific questions (e.g., husband and in-law variables apply only to married respondents, age at first birth only applies to women who have given birth).

Figure 2: Trends in female education, cousin marriage, and gender attitudes across birth cohorts

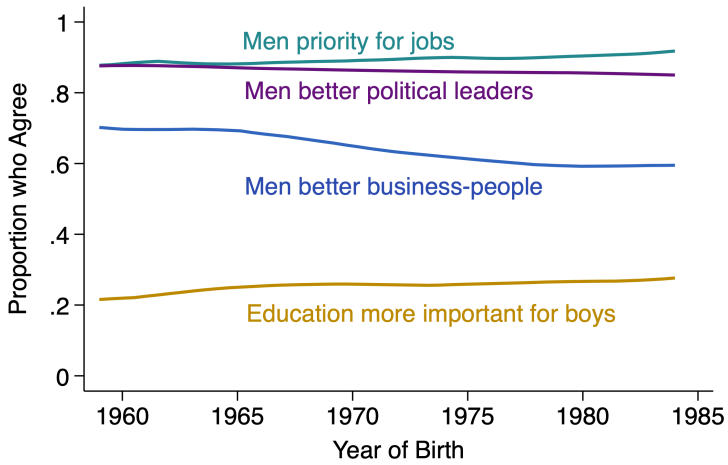
(a) Female schooling



(b) First-cousin marriage



(c) Gender attitudes



Notes: This figure shows trends by birth cohort based on raw cohort averages. Panel (a) shows the average years of schooling completed by women in each birth cohort. Panel (b) displays the proportion of women whose first marriage was to a first cousin. Panel (c) presents the proportion of women who agree with various statements about gender roles: that men should have priority for jobs, that men make better political leaders, that men are better businesspeople, and that education is more important for boys.

Table 1: Summary statistics

	Summary Statistics				
Variable	Mean	SD	Min	Max	Obs.
Panel A: Pre-marital characteristics (Balance vars)					
Age	33.58	6.88	25.00	50.00	1538
Height	154.63	6.81	100.00	185.00	1505
Age of menarche	13.44	1.42	9.00	22.00	1516
Brothers	4.16	2.29	0.00	14.00	1538
Sisters	4.06	2.41	0.00	14.00	1538
Birth order	3.57	2.24	1.00	13.00	1538
Any educ	0.82	0.38	0.00	1.00	1533
Father had any educ	0.21	0.41	0.00	1.00	1527
Father's land >5000 rials	0.37	0.48	0.00	1.00	1538
Panel B: Cousins (Instrument)					
Total cousins	32.70	19.41	1.00	97.00	1538
Total male cousins	16.64	10.10	0.00	53.00	1538
Total female cousins	16.06	10.33	0.00	55.00	1538
Male cousins 0-6 yrs older	2.65	2.78	0.00	19.00	1538
Male marriageable cousins	2.84	2.61	0.00	16.30	1538
Female marriageable cousins	2.65	2.64	0.00	18.70	1538
Panel C: Marriage					
Ever married	0.89	0.32	0.00	1.00	1538
Married to first cousin	0.27	0.44	0.00	1.00	1538
Married to second cousin	0.10	0.30	0.00	1.00	1538
Married to other relative	0.09	0.29	0.00	1.00	1538
Married to non-relative	0.42	0.49	0.00	1.00	1538
Out-married	0.61	0.49	0.00	1.00	1538
Age at marriage	17.52	4.54	9.00	35.00	1360
Married by age 16	0.50	0.50	0.00	1.00	1360
Engagement (yrs)	0.56	1.29	0.00	15.00	794
Panel D: Demographics					
Age at first birth	18.52	4.32	10.00	35.00	1276

Continued on next page

Table 1 – continued from previous page

	Summary Statistics				
Variable	Mean	SD	Min	Max	Obs.
No. of children	5.23	3.49	0.00	16.00	1538
Panel E: Family contact					
Less than 1km from parents	0.47	0.50	0.00	1.00	1298
See parents daily	0.50	0.50	0.00	1.00	707
Less than 1km from in-laws	0.37	0.48	0.00	1.00	1063
See in-laws daily	0.26	0.44	0.00	1.00	710
Panel F: Socioeconomic					
Employed	0.14	0.35	0.00	1.00	1527
Husband's income (log)	5.74	0.60	2.30	8.86	1027
Education (yrs)	7.33	5.26	0.00	16.00	1501
Completed grade 12	0.35	0.48	0.00	1.00	1501
Panel G: Trust					
Trust family	0.92	0.27	0.00	1.00	1483
Trust others	0.18	0.39	0.00	1.00	1477
Panel H: Gender Attitudes					
Job priority to men	2.09	0.57	0.00	3.00	1495
Disagree strongly	0.01	-	-	-	1495
Disagree	0.10	-	-	-	1495
Agree	0.69	-	-	-	1495
Agree strongly	0.20	-	-	-	1495
Men are better leaders	2.23	0.69	0.00	3.00	791
Disagree strongly	0.01	-	-	-	791
Disagree	0.13	-	-	-	791
Agree	0.50	-	-	-	791
Agree strongly	0.37	-	-	-	791
Men better at business	1.74	0.74	0.00	3.00	792
Disagree strongly	0.03	-	-	-	792
Disagree	0.34	-	-	-	792
Agree	0.49	-	-	-	792
Agree strongly	0.14	-	-	-	792

Continued on next page

Table 1 – continued from previous page

	Summary Statistics				
Variable	Mean	SD	Min	Max	Obs.
Priority in educ to males	1.07	0.82	0.00	3.00	791
Disagree strongly	0.25	-	-	-	791
Disagree	0.48	-	-	-	791
Agree	0.21	-	-	-	791
Agree strongly	0.05	-	-	-	791

Note: This table presents summary statistics for key variables and attitudes. The instrumental variable, "Male marriageable cousins," is the age-weighted count of respondents' male cousins (see Section 3.1 for details on weighting). The columns report the mean, standard deviation, minimum, maximum, and number of observations (N). Attitude variables in Panel H are coded 0-3, with higher values indicating stronger agreement with the statement; the table shows the mean and SD of these coded variables.

Panel C presents marriage-related statistics. Note that we keep never-married women in our sample, since the availability of male cousins could affect whether a woman marries at all. In our sample, 89% of women have been married. The distribution of marriage types reveals the prevalence of consanguineous unions: 27% married first cousins, 10% married second cousins, and 9% married other relatives, while 42% married non-relatives. Among those who have married, the average age at marriage is 17.5 years, with 50% married by age 16. The typical engagement period is about 7 months.

Panel D covers demographic outcomes, indicating that women in our sample have had 5.2 children and are on average 18.5 years old at first birth. Panel E presents geographic proximity and social interaction patterns which reveal the importance of extended family networks: 47% live within 1 km of their parents, and 50% see them daily. Similarly, 37% live within 1 km of their in-laws, while 26% see them daily. These patterns suggest significant integration into extended family networks. Panel F presents socioeconomic variables: only 14% of women are employed, highlighting the limited female labor force participation in this setting. The average years of education is 7.3, with 35% having completed grade 12. Panel G presents trust: 92% of respondents trust family members, compared with 18% who trust others. Panel H presents gender attitudes, as described above.

3.3 Empirical Strategy

Our empirical strategy aims to estimate the causal effects of marrying outside traditional family networks. The main relationship we seek to estimate is:

$$GenderAttitudes_i = \alpha + \beta OutMarriage_i + \varepsilon_i, \tag{2}$$

where $GenderAttitudes_i$ is our gender attitudes index for woman i, with higher values indicating more gender-equal views. $OutMarriage_i$ is our main explanatory variable, indicating marriage to someone other than a first cousin (never-married women are coded as 0).

Estimating equation 2 using OLS may lead to biased results due to omitted variables or reverse causality. Women who marry a non-cousin may differ systematically from those who do not in ways that also affect gender attitudes. To address this endogeneity concern, we employ an instrumental variables (IV) approach.

Our IV strategy relies on quasi-random variation in the availability of potential cousin-husbands. Our instrument, $MarriageableCousins_i$, is the number of marriageable-age male cousins, constructed as described in Section 3.1.[14] The first-stage regression models the likelihood of out-marriage as a function of the instrument and controls:

$$\begin{aligned} OutMarriage_i = \pi + \delta MarriageableCousins_i \\ + \lambda FemaleMarriageableAgeCousins_i + X_i\theta + u_i. \end{aligned} \tag{3}$$

The regression controls for $FemaleMarriageableAgeCousins_i$, the female equivalent of our instrument using the same age-weights. This is an important control variable: it purges variation across women in the size of their extended family and in their age relative to their cousins' ages, both of which might be systematically related to gender attitudes and other outcomes we examine.[15] We argue that, with the addition of this control, the instrument isolates quasi-random variation in the sex composition of similar-age cousins.

The vector of other controls X_i consists of birth order, number of brothers, number of sisters, age, age squared, and village fixed effects. We control for birth order because higher birth order women are younger, all else equal, so they tend to have more marriageable (i.e., older) male cousins. We control for number of brothers and number of sisters because, in addition to acting as another control for the family's fertility level, they are a measure of sex composition preferences.[16] We

[14] We show our results are robust to using a simple sum of male cousins 0 to 6 years older in section 4.4 after presenting our main results.

[15] A woman's age relative to her cousins' ages depends on her parents' and her own birth order, among other factors.

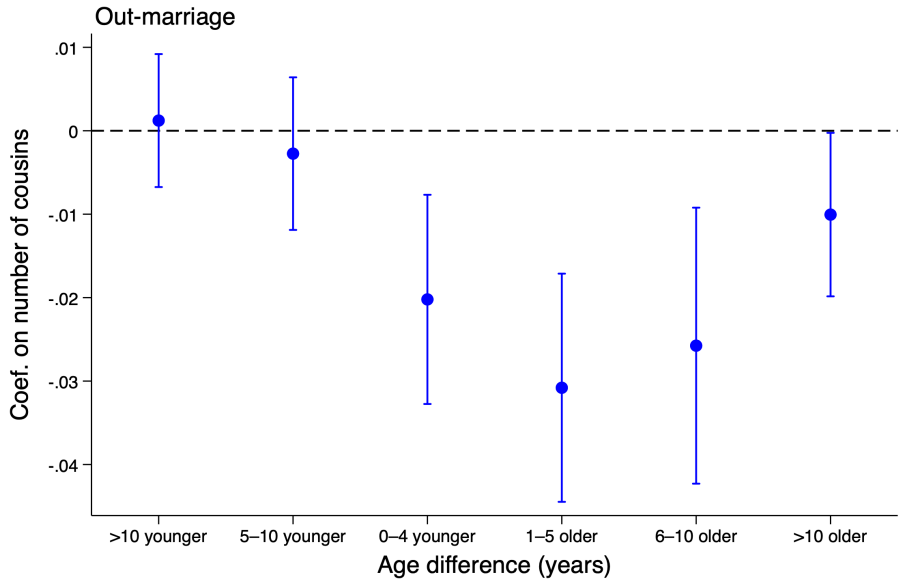
[16] Unlike in many parts of East Asia, South Asia, and the Caucasus, there seems to be limited sex selection in Oman and the Arab Gulf more generally (Chao et al., 2019). Thus, most variation in sex composition of siblings and cousins is naturally occurring variation. Consistent with this, the average number of male and female cousins are

include age and village fixed effects for precision.

3.3.1 First stage estimates

Figure 3 shows that the likelihood of marrying a non-cousin ($OutMarriage_i$) is indeed negatively correlated with the number of male cousins of marriageable age. This figure plots coefficients from a single regression of $OutMarriage_i$ on the number of male cousins in various age-difference bins relative to the respondent. The regression also includes the corresponding female cousin age bins as controls (coefficients for female bins not shown). If the instrument captures marriage market constraints, we expect a negative relationship (more cousins decrease out-marriage) for male cousins in the age range typical for husbands. Indeed, we find that the probability of out-marriage is most correlated with the number of male cousins 1-5 years older. One additional male cousin in this age bin reduces the likelihood of out-marriage by three percentage points. This magnitude declines for adjacent age bins, in line with the observed age differences documented in Figure 1. This pattern suggests that it is male cousins *of marriageable age* that matter for the likelihood of out-marriage, rather than simply having more (male) cousins.

Figure 3: First stage effect on out-marriage, by age bin



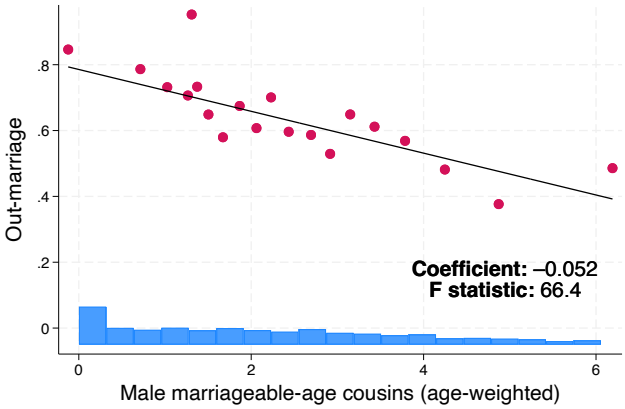
Notes: Figure shows OLS regression coefficients estimating the relationship between the number of male cousins in specific age bins (relative to the respondent) and the likelihood of out-marriage (indicator=1 if respondent's first marriage was not to a first cousin). Includes controls for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Whiskers indicate 95% confidence intervals based on robust standard errors.

Figure 4 graphically presents the first-stage relationship using the age-weighted instrument. The

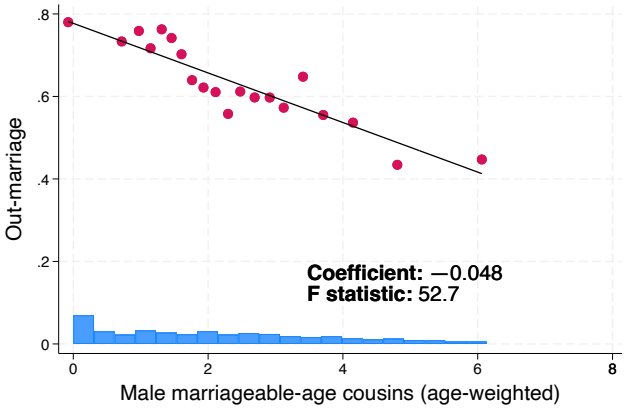
similar in our data.

Figure 4: First stage relationship and falsification test

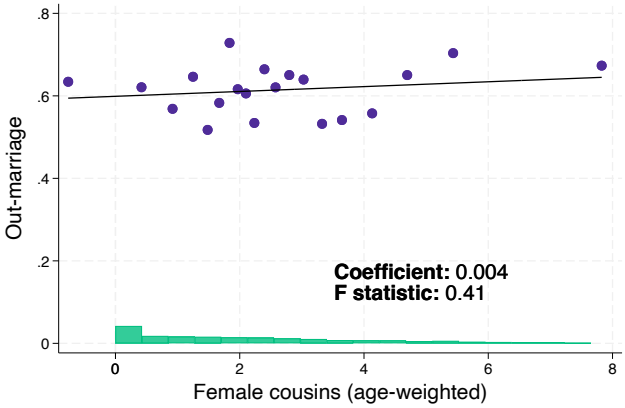
(a) First stage without controls



(b) First stage with controls



(c) Falsification: Female cousins



Notes: Figures show binned scatter plots (binscatters) of the relationship between the respective cousin counts and the likelihood of out-marriage (1 = not married to first cousin). "Marriageable male/female cousins" refers to the age-weighted count (see Table 1 notes). Histograms of the x-axis variable (cousin count) are shown below each plot. Panel (a) presents the relationship for marriageable male cousins controlling only for marriageable-age female cousins. Panel (b) adds controls for age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Panel (c) serves as a falsification test, showing the relationship with marriageable-age *female* cousins (with marriageable-age male cousins now entering as a control), using the same additional controls as Panel (b). Robust standard errors are used in all underlying regressions.

figure displays binned scatter plots showing the probability of out-marriage against the number of marriageable male cousins. Panel (a) shows the strong negative correlation controlling only for female cousins. Panel (b) shows that this relationship remains strong and statistically significant after including our controls (age, birth order, village fixed effects, and number of brothers and sisters), with each additional age-weighted marriageable male cousin reducing the probability of out-marriage by 4.8 percentage points.[17] The corresponding first-stage F-statistic is 53, above conventional thresholds for weak instruments. Further, Appendix Table A.1 shows that this strong first-stage relationship is robust to alternative specifications of the instrument (e.g., simple counts, inverse hyperbolic sine transformation).

3.3.2 Exogeneity and exclusion restriction assumptions

In addition to a strong first stage, the IV strategy relies on two assumptions. First, conditional on the controls, $MarriageableCousins$ is uncorrelated with unobserved determinants of gender attitudes (exogeneity, or as-good-as-random assignment). Second, $MarriageableCousins$ affects gender attitudes only through its effect on $OutMarriage$ (exclusion restriction).

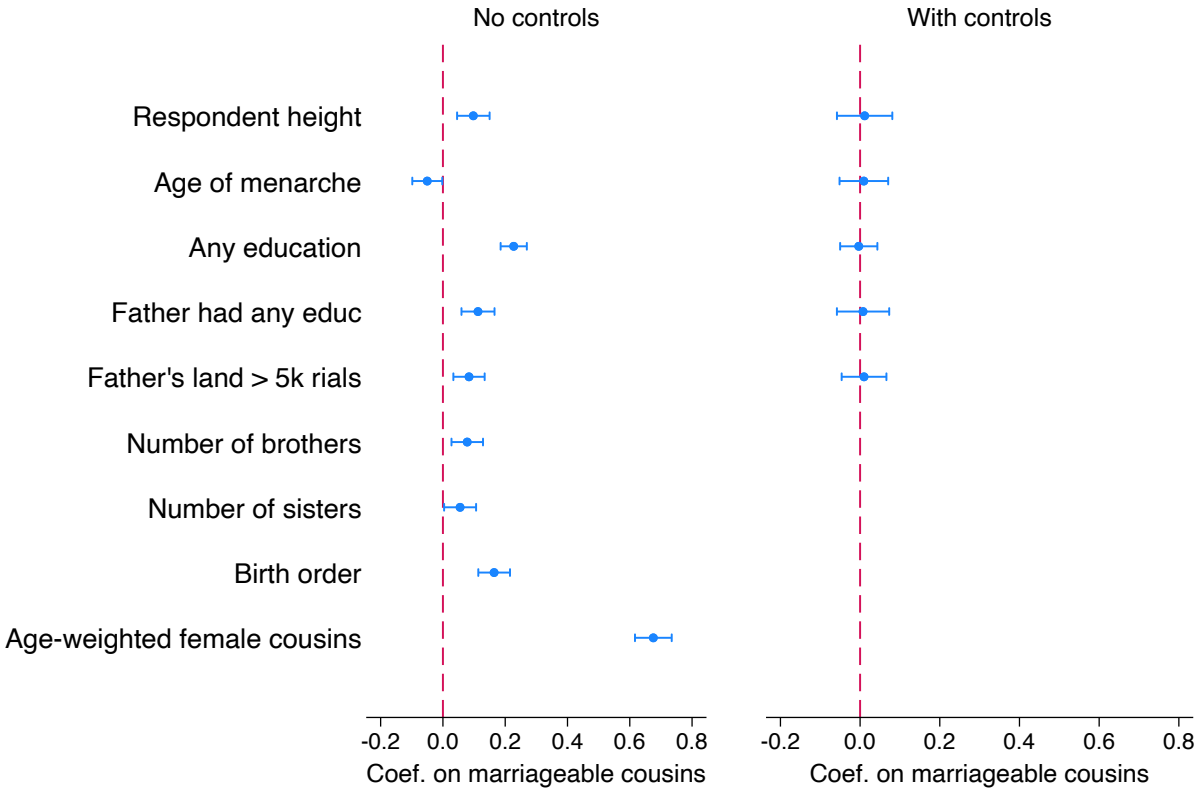
We provide two kinds of evidence for the exogeneity of the instrument. The first is balance on predetermined characteristics. Figure 5 shows that there is no significant relationship between $MarriageableCousins_i$ and predetermined family characteristics, such as father's education, conditional on the control variables. The comparison between the panels with and without controls highlights the importance of controlling for female cousins. The number of male and female cousins are highly correlated, reflecting that extended families vary in their fertility rates. Importantly, controlling for female "marriage-age" cousins removes the correlation between the instrument and family characteristics associated with higher fertility, such as wealth. Age-weighted female cousins absorbs the broader family characteristics that could confound the analysis, and the remaining variation in the instrument stems from quasi-random variation in sex composition. Consistent with this, the instrument is conditionally uncorrelated with these broader family characteristics.

The second piece of evidence supporting exogeneity of the instrument is a placebo test that we present in Section 4.2 but preview here. We regress gender attitudes on the age-weighted number of female cousins, controlling for male cousins and our standard controls. Female cousins share the family characteristics that could confound the instrument, but do not affect out-marriage (see Figure 4, Panel c). If those shared characteristics were driving the effect on gender attitudes, the female cousins variable would predict attitudes, but it does not (Figure 7, Panel b).

Furthermore, the specificity of how cousins affect marriage patterns supports the exogeneity

[17] Appendix Table A.2 decomposes the first-stage relationship into two mutually exclusive out-marriage components. An additional marriageable cousin reduces the probability of marrying a non-relative by 3.5 percentage points and the probability of marrying a second cousin by 1.3 percentage point.

Figure 5: Correlation between the instrument and other characteristics



Notes: Figure plots coefficients from OLS regressions of pre-determined respondent and father characteristics on the instrumental variable (age-weighted number of marriageable male cousins). Robust standard errors are used in all regressions. Whiskers indicate 95% confidence intervals. Controls consist of marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters.

assumption. Only marriageable-age male cousins predict out-marriage (Figures 3). If the instrument reflected general family size or network density, we would expect male cousins outside the marriageable age range to have similar effects on out-marriage. In addition, female cousins do not predict out-marriage once male cousins are controlled for (Figure 4, Panel c). And an additional male cousin of a given type raises marriage to that type specifically (Appendix Table A.3). A confounder like wealth or family size would move out-marriage broadly, not along these specific margins, so this specificity makes it unlikely that the first stage reflects family characteristics rather than the availability of specific matches. As additional evidence, Appendix Table A.3 examines the effect of the availability of specific types of male cousins (e.g., father's brother's son, mother's sister's son) on the likelihood of marrying that exact type of cousin. It shows that an additional male cousin of a specific type significantly increases the probability of marrying a cousin of that type, with little spillover effect on the probability of marrying other types of cousins. This precise mapping supports the claim that the instrument isolates variation in specific potential matches, not broader familial characteristics.

We next turn to the exclusion restriction, which requires that exogenously having fewer male cousins a few years older than her affects a woman's attitudes only because it increases her likelihood of out-marrying. We lay out a few different potential threats to the exclusion restriction. First, conditional on marrying a cousin, having more marriageable-age cousins may affect *which* cousin a woman marries. That is, rather than just altering whether or not a woman marries a cousin (extensive margin), the instrument affects the set of potential cousin-husbands, and hence potentially the 'quality' of her husband (intensive margin). This would violate the exclusion restriction since our IV assumes all changes in outcomes that come from variation in the instrument comes from variation in $OutMarriage_i$.

A second potential violation of the exclusion restriction is if a reduction in cousin availability shifts women from marrying a first cousin to never marrying rather than leading her to out-marry. This would be problematic since our instrument might then affect our outcomes through a channel other than changing the value of $OutMarriage_i$, which in this case would remain equal to zero.[18]

A third potential violation is if cousin availability affects women through some channel other than whether or whom they marry. Knowing a daughter has no marriageable cousins may lead her parents to raise her differently. Figure 5 shows no relationship between $MarriageableCousins_i$ and the respondent's height, age of menarche, or whether she has any education, which are childhood outcomes that would respond to differential parental investment. However, other forms of differen-

[18]We show in Section 4.4 that our results are nearly identical if we use 'not married to a first cousin' as our treatment, rather than out-marriage. Doing so more cleanly links our instrument to the treatment variable: Fewer marriageable-age cousins pushes women away from marrying a first cousin, which could then lead them to either marry a non-cousin or to never-marry.

tial upbringing are harder to rule out, such as her parents trying harder or less hard to inculcate traditional values. Similar-age male cousins could also have been a woman's childhood playmates, shaping her attitudes early on, and they remain part of her kin network after marriage, so they could affect her attitudes regardless of whom she marries.

We address each of these concerns in Section 4.4, presenting additional empirical tests whose results validate our approach.

3.3.3 Interpretation of the LATE

The IV strategy estimates a local average treatment effect (LATE). The LATE captures the causal effect of out-marriage on gender attitudes specifically for the subpopulation of compliers—those women whose decision whether to marry a cousin is influenced by how many marriageable male cousins they have. These are women who would marry a first cousin if male cousins of a suitable age gap are available, but otherwise would out-marry.

Consider a simplified case in which the instrument is binary: a woman has either limited or plentiful marriageable cousins. An always-taker is a woman who (or, more accurately, whose family) *prefers* out-marriage to cousin marriage. She will out-marry even when marriageable cousins are plentiful. A never-taker is someone who would marry a cousin even if marriageable-age cousins are scarce, for example by marrying a cousin who is 5 years younger than her or 15 years older.

In the context we study, cousin marriage is common and many families' first choice for their children, all else equal. Thus, the compliers are a quite typical population: They are families who favor cousin marriage but not at all costs.

The framework of LATE is also helpful for laying out how out-marriage changes the husband's "type." An analogous supply-side constraint to cousin marriage affects men's marital choices too. When women out-marry, sometimes their husband was compelled to do so because of a dearth of marriageable female cousins, so he is a complier. However, other times he will be an always-taker, someone with an explicit preference for out-marriage. Meanwhile, when women marry a cousin, their husbands are either compliers or never-takers. Thus, out-marriage entails marrying a husband and having in-laws with less adherence to the practice of cousin marriage, on average.

Families with a weaker preference for cousin-marriage might differ in many ways. For example, it seems plausible that people who hold one traditional view are more likely to hold another one, so always-taker families might be more gender-progressive. However, in our context, the opposite seems to hold, likely because cousin marriage is more common among wealthier families and wealthier families are more gender-progressive, on average.[19] Regardless, the broader point is that

[19]The OLS relationship between out-marriage and women's gender attitudes is zero (see section 4.4), suggesting that, endogenously, less progressive families sort into out-marriage. We did not collect data on husbands' attitudes, but it seems likely that a similar selection process happens on the husband's side of the marriage market. We also

part of the causal effect of out-marriage on gender attitudes (and other outcomes) that we estimate is due to out-marriage changing the composition of husbands.

4 Results

We estimate the impacts of out-marriage (marrying someone other than a first cousin) using the IV specification described in Section 3.3, with the number of marriageable male cousins as our instrument. We first examine how out-marriage affects women's contact with and geographic proximity to parents and in-laws, then turn to gender attitudes, age at marriage, and related outcomes.

4.1 Effect of Out-Marriage on Family Contact and Proximity

Figure 6 shows the effect of out-marriage on geographic proximity to and daily interactions with family. Marrying a non-cousin significantly reduces women's contact with their parents and in-laws and, suggestively, with their siblings.

Out-marriage reduces the likelihood of living within 1 km of parents by 23 percentage points and reduces the likelihood of living within 1 km of in-laws by 19 percentage points. This physical distancing extends beyond immediate proximity: out-marriage increases the probability of living more than 50 kilometers from parents by 13 percentage points (Appendix Figure A.4).

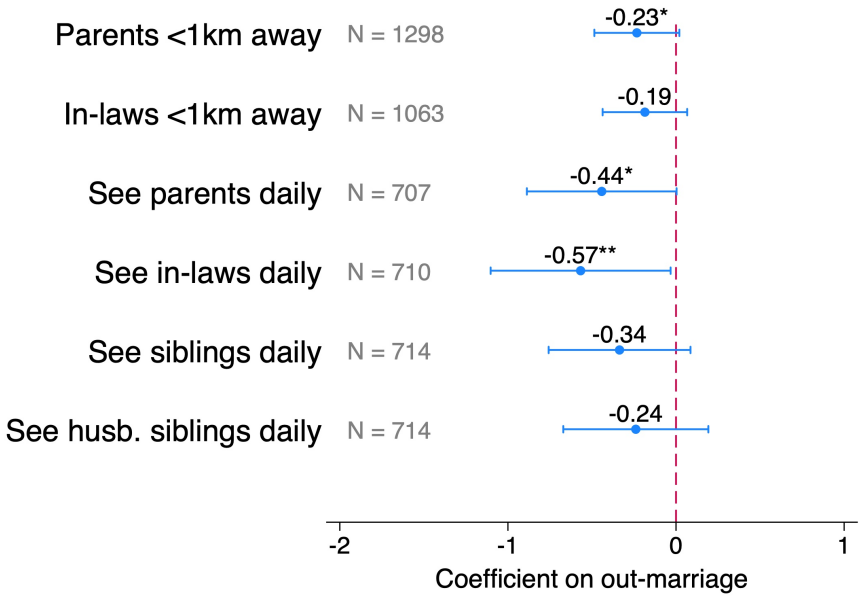
Family interaction also decreases. Out-marriage reduces the likelihood of seeing parents daily by 44 percentage points, in-laws by 57 percentage points, and siblings by 34 percentage points. These effects are larger than the proximity changes alone would predict, indicating that the decline in contact is not driven entirely by co-residence.

Note that if residence were strictly patrilocal, a woman would live near her husband's family regardless of whether he were a cousin. That out-marriage reduces proximity and contact with in-laws implies either that husbands of out-marrying women were themselves less likely to be living near their parents before the marriage, or that the couple is more likely to move away from his family after marriage. Either way, out-marriage reduces women's ties to both sides of the kin network rather than simply substituting parental influence with in-law influence.

Women's proximity to and frequent interaction with parents and in-laws allow vertical cultural transmission to be sustained. As they weaken, and women's dense kin networks give way to more dispersed arrangements, women are likely exposed to more diverse views. Moreover, by virtue of being less embedded in their kin network, they are also freer to adopt the alternative perspectives.

show that out-marriage and family income are negatively correlated.

Figure 6: Effect of out-marriage on family contact



Notes: Figure shows instrumental variable (2SLS) estimates of the effect of out-marriage (1 = not married to first cousin) on various measures of family contact and proximity (listed on y-axis). Out-marriage is instrumented using the age-weighted count of marriageable male cousins. All specifications include controls for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Sample size (N) for each outcome shown on left; differences primarily reflect variables asked only in specific survey rounds or applicable only to married women. Bars represent 95% confidence intervals based on robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.2 Effect of Out-Marriage on Gender Attitudes

Figure 7 presents our main results on gender attitudes. Panel A shows the reduced form relationship between our instrument (marriageable male cousins) and the gender attitudes index in a binned scatter plot: women with fewer marriageable male cousins, and thus a higher likelihood of out-marriage, hold more gender-equal attitudes. Panel B presents the falsification test using female cousins previewed in section 3.3.2. The absence of a correlation between age-weighted female cousins and gender attitudes is reassuring that our results are not driven by family size or other cousin-related confounders.

Panel C of Figure 7 presents the IV estimates. Out-marriage increases our index of egalitarian gender attitudes by 0.7 standard deviations. That leaving traditional family networks leads women to develop more egalitarian views about gender roles is consistent with the reduced social insularity documented above: less exposure to the dense, homogenous network of extended kin makes it easier to adopt less traditional views.

Panel C of Figure 7 shows results for each component of the gender attitudes index. The largest effect is on perceptions of women's capabilities: support for women as political leaders and as businesspeople increases by about 0.8 standard deviations. The effect on support for gender equality in job opportunities is positive (0.2 standard deviations) but not statistically significant. Out-marriage has no detectable effect on views about educational equality, where baseline attitudes are already relatively liberal (only 26% agree that university education is more important for boys). This is consistent with out-marriage moderating the most conservative components of the index rather than pushing women toward uniformly progressive views.

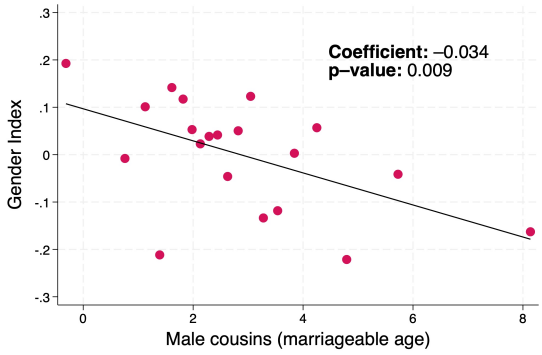
While reduced contact with extended family likely explains much of the attitude change, the type of husband a woman marries may also play a role. Women who out-marry have husbands who themselves did not marry a cousin, some of whom presumably hold less traditional views than men who prefer cousin marriage. Out-married husbands are also typically lower-earning and less-educated (see Section 4.3), and women may form views about men's leadership and business capabilities partly from observing their own husbands.

Either could constitute a second pathway through which out-marriage affects women's views. To gauge the importance of these channels, Section 4.4 adds controls for observable husband characteristics and finds that the estimated effect of out-marriage on gender attitudes remains large (about 0.5 standard deviations). We also show that income is positively correlated with more gender-equal attitudes but negatively correlated with out-marriage, suggesting that out-marriage may instead be selecting for men with more conservative gender attitudes.

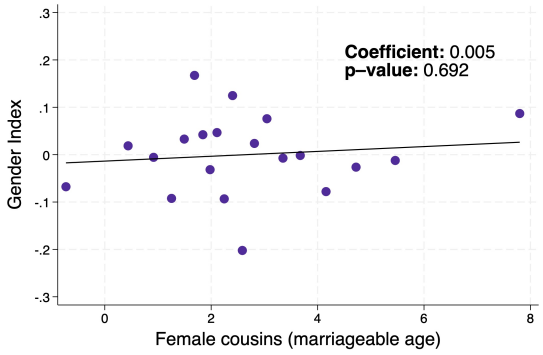
Our analysis shows that out-marriage increases gender-equal attitudes. These findings hold across various specification checks and alternative approaches, as detailed in Section 4.4.

Figure 7: Effect of out-marriage on gender attitudes

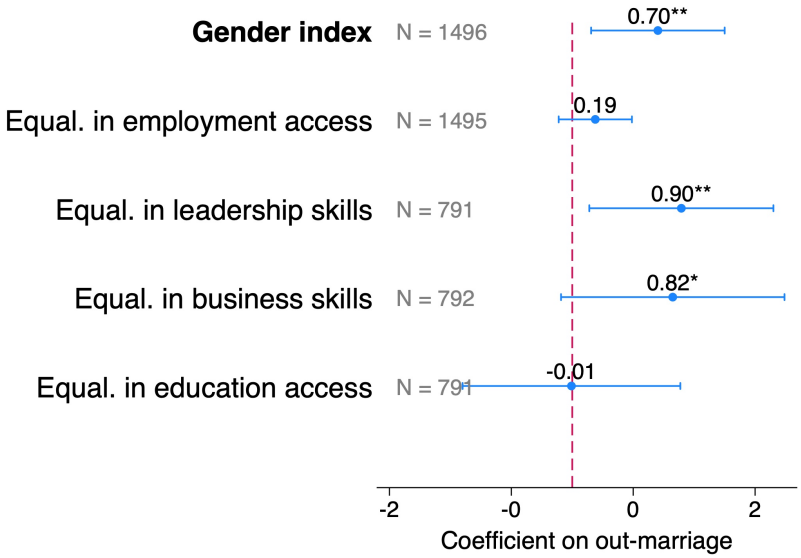
(a) Reduced form



(b) Falsification reduced form

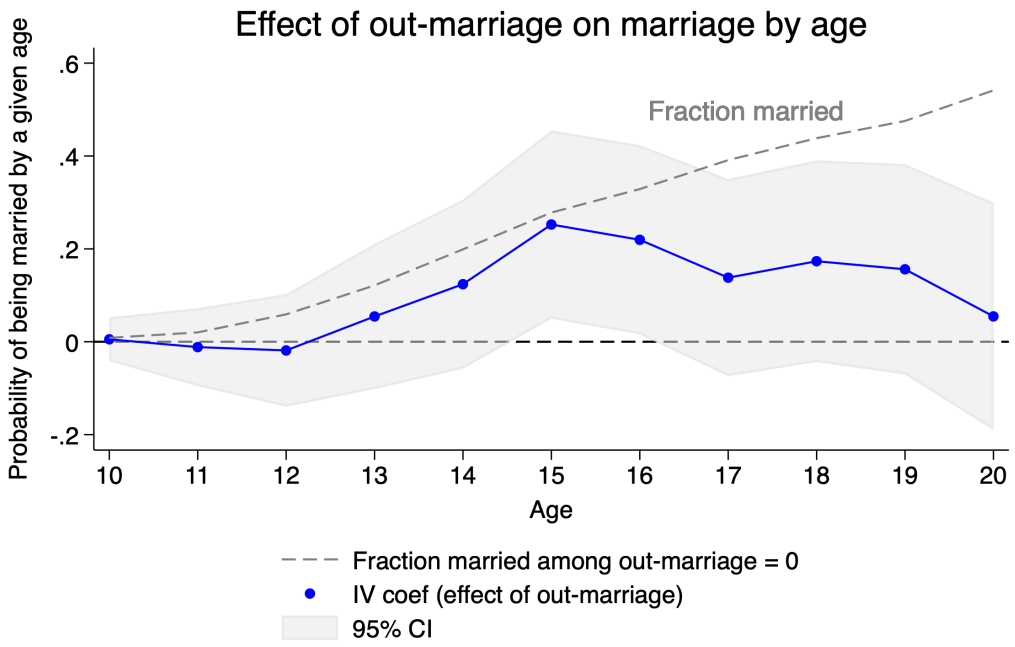


(c) IV coefficients



Notes: Panel (a) shows the reduced form relationship (binned scatter plot) between the number of age-weighted marriageable male cousins (instrument) and the standardized gender attitudes index, controlling for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Panel (b) presents a falsification test using marriageable-age *female* cousins as the main regressor (with marriageable-age male cousins now entering as a control), with the same non-cousin controls as Panel (a). Panel (c) displays instrumental variable (2SLS) coefficients for the effect of out-marriage (1 = not married to first cousin) on the standardized gender attitudes index and its standardized components. Out-marriage is instrumented using the age-weighted count of marriageable male cousins; controls match Panel (a). Higher values indicate more gender-equal attitudes. All regressions use robust standard errors. Bars/shading in Panel (c) represent 95% confidence intervals. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Figure 8: Out-marriage increases early marriage



Notes: Figure plots the estimated causal effect of out-marriage (1 = not married to first cousin) on the probability of being married by a given age (blue dotted line, with 95% confidence interval shown by the shaded area). The grey dashed line shows the baseline cumulative fraction married by that age for women in the sample who married first cousins. Effects are estimated using separate 2SLS regressions for an indicator variable for being married by each specific age from 10 to 20. The endogenous variable (out-marriage) is instrumented using the age-weighted count of marriageable male cousins. All specifications include controls for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Confidence intervals are based on robust standard errors.

4.3 Effect of Out-Marriage on Marriage Timing, Education, and Husband Characteristics

This section examines the effects of out-marriage on outcomes commonly associated with women's status: marriage timing, education, and economic well-being via husband characteristics. Strikingly, we show that the liberalizing effect of out-marriage on gender attitudes coexists with effects on these other dimensions that are typically associated with *reduced* female empowerment.

Table 2 (Panel A) shows that out-marriage leads to a 22 percentage point increase in the probability of being married by age 16. Figure 8 plots the estimated effect of out-marriage on the cumulative probability of being married by each age from 10 to 20 and shows the baseline fraction married by each age. The estimated effect is near zero through age 12, becomes large at age 14, remains so through age 19, and then declines.

The nearly identical reductions in engagement length (1.24 years) and age at marriage (1.24 years) in Panel A of Table 2 imply that out-marriage leads to earlier marriage chiefly by shortening

Table 2: Effect of out-marriage on marriage timing and socioeconomic outcomes

	Coefficient	SE	N
Panel A: Marriage and Fertility			
Married by 16	0.218**	(0.108)	1,360
Age at marriage	-1.240	(1.061)	1,360
Length of engagement (years)	-1.244*	(0.742)	794
Age at first birth	-2.396**	(1.178)	1,276
Panel B: Education and Employment			
Completed grade 12	-0.227*	(0.126)	1,501
Years of education	-1.468	(1.072)	1,501
Woman employed	-0.044	(0.110)	1,527
Panel C: Husband Quality			
Husband education (years)	-1.918	(1.199)	1,336
Husband completed 12th grade	-0.140	(0.130)	1,336
Husband's log income	-0.369**	(0.176)	1,027
Husband-wife age gap $<$ 10 years	-0.157	(0.100)	1,355
Panel D: Marriage Satisfaction			
Argues with husband	0.227	(0.298)	717
Can make purchases	-0.043	(0.179)	668
Satisfied with life	0.089	(0.437)	789
Divorced	-0.036	(0.073)	675
Husband has co-wives	0.206	(0.139)	717

Notes: Table presents instrumental variable (2SLS) estimates of the effect of out-marriage (indicator=1 if first marriage was not to a first cousin) on outcomes listed in rows/panels. The endogenous variable (out-marriage) is instrumented using the age-weighted count of marriageable male cousins. Robust standard errors are shown in parentheses. All specifications control for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

engagements, not by changing the age at engagement. The shorter engagements may reflect lower trust outside kin networks, as discussed in Section 2. Out-marriage also reduces age at first birth by 2.4 years, a concerning finding given the low mean age at first birth in our sample (18.5 years) and the known risks of adolescent pregnancy (Ardington et al., 2015).

Earlier marriage also affects women's human capital. Out-marriage leads to a 23 percentage point reduction in the likelihood of completing grade 12 (Panel B of Table 2). The estimated effect on total years of education is also negative (-0.9 years) but not statistically significant.[20] Despite these educational consequences, we find no effect of out-marriage on women's employment (the point estimate is close to zero and precisely estimated), which is low regardless of marriage type.

The economic status of husbands that women marry also worsens when they out-marry. Out-marriage leads women to match with husbands who have approximately 2 fewer years of education and earn approximately 40 percent less (Panel C of Table 2). These substantial differences in husband quality suggest that women who marry non-relatives typically match with lower socio-economic status men. This pattern is consistent with ethnographic evidence from Oman and neighboring regions, where cousin marriage is portrayed as a strategy to maintain family status and is especially favored by wealthier families (Eickelman, 1984).

Despite these differences in marriage timing, education, and husband quality, we find no significant effects of out-marriage on our measures of marriage satisfaction (Panel D of Table 2). This is worth noting because when a woman marries a cousin, her in-laws are also her own blood relatives, which could in principle generate more goodwill, better treatment in conflicts, and a more supportive marital environment (see Section 2). In practice, we find no evidence of changes in the frequency of arguments with the husband, ability to make independent purchases, life satisfaction, divorce, or the probability that the husband has co-wives. Out-marriage alters many aspects of women's lives and socioeconomic outcomes but does not appear to change these dimensions of marital relationship quality.

The pattern across these results is clear: out-marriage leads women to hold more gender-equal attitudes despite experiencing earlier marriage, obtaining less education, and having poorer, less educated husbands. This supports the idea that the change in gender norms comes from the reduction in social insularity rather than from schooling or improved socioeconomic status.

4.4 Robustness and Threats to Identification

Our finding that marrying outside traditional family networks leads to more gender-equal attitudes holds across various specification checks and alternative variable definitions. Table A.4 presents

[20] These effects may also reflect the strategic parental investment channel discussed in Section 2, not only the mechanical consequence of earlier marriage.

our main results alongside several robustness checks and OLS estimates for comparison.

Exclusion Restriction: Cousin Match Quality. A potential concern with our IV strategy is that the availability of marriageable male cousins could affect outcomes through two distinct channels: the probability of marrying outside the family (the "extensive margin") and the choice set among potential cousin-husbands (the "intensive margin"). This intensive margin effect could threaten our identification strategy if having more marriageable cousins affects match quality, conditional on marrying a cousin, which would violate the exclusion restriction.

To address this concern, we test for robustness in two ways. First, we construct an "extensive margin" version of our instrument by restricting the sample to women who have at most 2 marriageable cousins. This approach, shown in Panel D of Table A.4, shifts focus towards the binary decision of whether to marry outside the family. That is, the variation induced by this instrument is more heavily weighted towards the extensive margin. While this restriction reduces our sample size considerably and weakens the first stage F-statistic to 14.5, the point estimate (0.92 standard deviations) remains close to the baseline though imprecisely estimated ($p = 0.11$). As further evidence, we note that the log-like inverse hyperbolic sine (IHS) transformation of the instrument (Panel B of Table A.4) similarly places more weight on the first few cousins relative to later ones, and provides results consistent with our baseline estimate.

Second, we examine whether observable differences between husbands contribute to the estimated effect of out-marriage. Husbands of women who marry non-cousins may differ in education, income, or views and may influence their wives' attitudes. We therefore add controls for husbands' education and income to the main specification. These are "bad controls" in the sense that they are outcomes affected by our treatment, but their inclusion helps distinguish between two competing mechanisms: (1) social network changes from out-marriage, versus (2) differences in husband characteristics directly influencing women's views. As shown in Table A.5, the estimated effect of out-marriage remains large at 0.5 standard deviations and is statistically significant at the 10% level.

The results across these two approaches support our interpretation that the estimated effects come from having to marry outside traditional family networks rather than from the specifics of which cousin one might marry. This is consistent with our broader argument that leaving closed family networks, rather than specific match characteristics, leads to more gender-equal attitudes. We cannot, however, rule out some contribution from intensive margin effects.

Exclusion Restriction: Never-Married. A potential concern regarding the IV exclusion restriction is that the instrument (cousin availability) might affect outcomes not only through the woman's type of marriage partner (out-marriage) but also through whether she marries at all. That is, if a reduction in available cousins causes some women to shift from marrying a first cousin to *never*

marrying, the instrument affects their attitudes through a channel other than out-marriage versus cousin marriage. Since our sample includes never-married women (approximately 11% of our sample), this pathway represents a potential violation.

We address this concern in two steps. First, we examine whether cousin availability affects the probability of ever marrying. Second, we assess how sensitive our results are to alternative assumptions about how never-married women compare to those who marry cousins versus non-cousins. On the first dimension, we reassuringly find that our instrument has a small and statistically insignificant effect on the probability of ever marrying (coefficient = -0.004; robust standard error = 0.004).

On the second dimension, the concern is how never-marrying affects women in our sample relative to the other two options: marrying a cousin and marrying a non-cousin. Our baseline approach effectively treats never marrying as more similar to marrying a cousin. This is reasonable if never-married women remain within their birth family's sphere of influence, experiencing social insularity similar to women who marry cousins. In this patriarchal context, where women often remain under the guardianship of male relatives if unmarried, this seems plausible (Wikan, 1991). However, it could instead be that not marrying leads to lower insularity if unmarried women gain some independence from their natal family.

Given this ambiguity, we assess the sensitivity of our findings by redefining the endogenous treatment variable. Instead of 'out-marriage', we use an indicator for marrying a first cousin, which places never-married women in the same category as those who marry a non-cousin. We then re-estimate the IV effect of marrying a cousin on our main outcome, the gender attitudes index. The results of this alternative specification confirm our main findings (see Appendix Table A.4, Panel F). We continue to find a statistically significant effect of marriage type on gender attitudes, with coefficients that are qualitatively and quantitatively similar (though opposite in sign, as expected) to our baseline estimates using out-marriage as the treatment. This similarity suggests that our core conclusions are not driven by any effect of the instrument operating through the never-married pathway.

Exclusion Restriction: Pre-Marital Effects. An additional threat to our identification strategy is that the number of marriageable cousins might affect gender attitudes through pre-marital channels. This could happen if the availability of male cousins shapes women's gender attitudes through childhood socialization (e.g., via mixed-gender play, or cousins policing each other's behavior). Similarly, parents might anticipate their daughter's marriage prospects based on cousin availability and adjust socialization practices accordingly (e.g., emphasizing values suitable for an expected cousin or non-cousin marriage). If the instrument's effect is mostly through these pre-marital channels, we would expect its impact to be largely determined at the time of marriage and remain

relatively constant (or even attenuate) throughout the duration of the marriage. In contrast, if the effect works through post-marital social exposure mechanisms (as our conceptual framework suggests) we would expect the effect to strengthen over time as women spend more years embedded in either the insular environment of cousin marriage or the more diverse social networks associated with out-marriage.

We test this by examining how the effect varies with the duration of marriage. However, age at marriage is endogenous to the availability of marriageable cousins, so in practice we report heterogeneity by respondent age, a measure of potential years of marriage.

To investigate how the effect evolves post-marriage, we estimate the following reduced-form regression, interacting our instrument with respondent age:

$$\begin{aligned} GenderAttitudes_i = \beta_0 &+ \beta_1 MarriageableCousins_i + \beta_2 Age_i \\ &+ \beta_3 (MarriageableCousins_i \times Age_i) \\ &+ \lambda FemaleMarriageableAgeCousins_i + X_i\gamma + u_i \end{aligned} \tag{4}$$

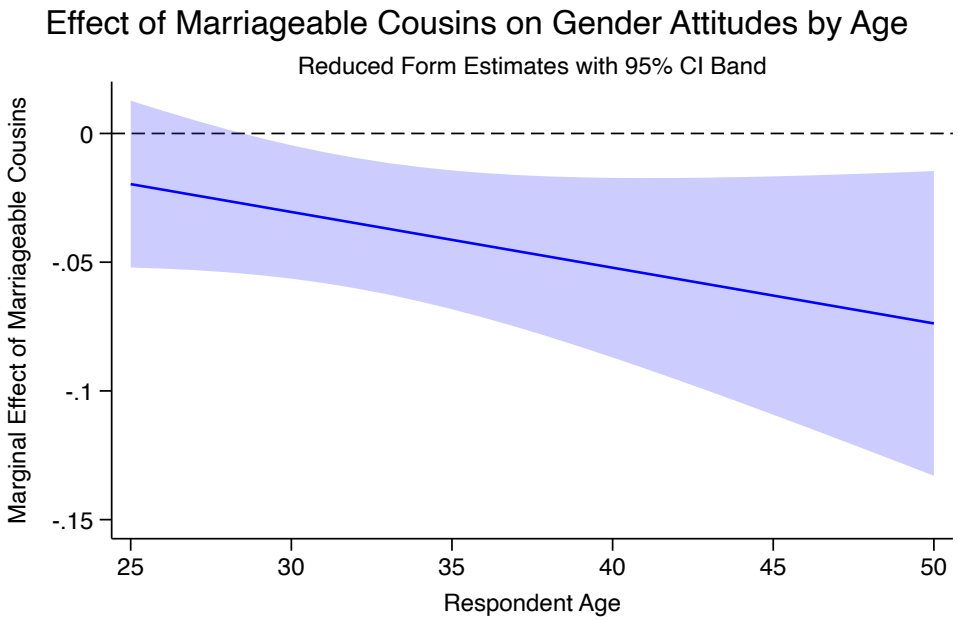
with all variables as defined in section 3.3. The coefficient β_3 captures the linear change in the instrument's effect per year of age. The marginal effect of the instrument at a given age is $\beta_1 + \beta_3 Age_i$.

Figure 9 plots this estimated marginal effect of marriageable cousins on the gender attitudes index across the sample age range (25-50). While adding the interaction term reduces statistical power, the pattern suggests that effects strengthen over time. The magnitude of the effect more than triples from age 25 to age 50, increasing from around -0.02 to -0.08. Although the 95% confidence bands are wide, this increase in effect size with age is consistent with a mechanism that builds up post-marriage rather than one determined entirely pre-marriage (which would instead produce a flat or declining profile). This suggests that the instrument's effect operates primarily through post-marriage channels, such as family interaction and social exposure.

OLS versus IV Estimates. The OLS and IV estimates differ considerably. As shown in Panel E of Table A.4, OLS estimates of the effect of cousin marriage on the gender attitudes index are close to zero and not statistically significant. This contrasts with our IV estimates, which indicate a large positive effect of out-marriage, suggesting selection into who marries within versus outside the family.

We find evidence consistent with the attenuation in OLS estimates being driven by selection patterns of who chooses to marry a first cousin or not. In our data, richer families simultaneously hold more gender-equal attitudes *and* practice more cousin marriage, as illustrated in Figure A.5. This creates a positive correlation that obscures the causal relationship in OLS estimates. Using

Figure 9: Reduced form effect of marriageable cousins on gender attitudes, by age



Notes: Figure plots the estimated marginal effect of marriageable male cousins (age-weighted instrument) on the standardized gender attitudes index by respondent age, derived from the OLS interaction model in Equation 4. The line represents the point estimate ($\beta_1 + \beta_3 Age$), and the shaded area indicates the 95% confidence interval band based on robust standard errors. Controls include marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters.

quasi-random variation in marriageable cousin availability, our instrumental variable approach isolates the causal effect from these confounding background characteristics. This selection pattern aligns with ethnographic evidence from Oman that wealthy, high-status families particularly value cousin marriage as a strategy to preserve family resources and status (Eickelman, 1984).

Alternative Instrument Specifications. Finally, we explore the robustness of our results to alternative specifications of this instrument, focusing here on the stability of the estimated effect of out-marriage on gender attitudes.

Table A.4 presents results using three different instrument specifications. Panel A shows the baseline using an age-weighted measure of male cousins, which is our baseline specification. Panel B applies the inverse hyperbolic sine transformation as a pseudo-logarithmic function that captures the intuition that the effect of an additional cousin on marriage outcomes should be decreasing in the number of cousins already available. Panel C uses a simpler count of male cousins zero to six years older than the respondent to ensure results are not driven by the specific weighting scheme. Across these specifications, the estimated effect of out-marriage on the gender attitudes index remains stable and statistically significant. The point estimates range narrowly from 0.60 to 0.72 standard deviations (Panels A and B significant at 5%; Panel C at 10%). First-stage F-statistics remain reassuring (52 for baseline, 61 for IHS, 50 for simple count). This suggests our findings are not sensitive to the specific functional form chosen for the instrument.[21]

5 Conclusion

Traditional family structures, particularly cousin marriage, help maintain conservative gender attitudes in Oman. Using quasi-random variation in the availability of marriageable male cousins, we show that women pushed into out-marriage develop more gender-equal attitudes, a shift of about 0.7 standard deviations on our index. This change appears to operate primarily through shifts in social network structure: out-marriage reduces daily contact with parents and in-laws and weakens vertical ties within the extended family.

It is not clear that out-marriage is advantageous for individual women. It leads to outcomes typically viewed as worse: earlier marriage, less schooling, and lower household income, as well as matches with less-educated, lower-earning husbands. This points to a tension between aggregate progress on female equality through reductions in social insularity, and individual well-being of

[21] We also consider the coefficient of inbreeding (F) as a continuous alternative to the binary out-marriage indicator: $F = 0.0625$ for first cousins, $F = 0.0156$ for second cousins, and $F = 0$ for non-relatives, normalized so that a one-unit change corresponds to a shift from non-relative to first-cousin marriage. Unlike the binary indicator, F does not collapse second cousins and non-relatives into the same category. Appendix Table A.1, column (5) shows the instrument strongly predicts F (first-stage F-statistic: 54). Appendix Table A.6 reports the corresponding IV estimates, which are consistent with our baseline findings.

women. Weaker ties to kin may foster cultural change while exposing women to early marriage and reduced educational opportunities.

Demographic change may naturally disrupt these marriage patterns. Fertility decline in Oman and similar societies will reduce the number of cousins available as potential spouses, increasing the share of women with few or no marriageable-age cousins. Our results suggest that a fertility decline from 9 to 3 children per woman (roughly the change Oman has undergone since the early 1980s) would reduce cousin marriage enough to raise women's gender-egalitarian attitudes by approximately 0.1 standard deviations.[22] Such shifts in kinship structure can thus erode social insularity and weaken vertical cultural transmission, with consequences for the evolution of gender norms.

Our results also suggest education and economic opportunity may have weaker effects on gender attitudes when women's daily interactions remain concentrated within conservative kin networks. Interventions that create regular contact outside the kin group, such as women's groups or community organizations, could complement these policies. Exposure to alternative viewpoints about gender roles (Jensen and Oster, 2009; Dhar et al., 2022) may be most effective when paired with such changes in everyday social interaction.

Dense family networks provide insurance, trust, and cooperation but also limit exposure to less traditional norms. How marriage patterns shape these networks offers a potential explanation for the uneven change in gender attitudes across societies.

[22] A factor-of-three reduction in fertility shrinks the number of marriageable male cousins by roughly $(1/3)^2 = 1/9$: each parent has one-third as many siblings, and each aunt or uncle has one-third as many children. Starting from the sample mean of 2.84 age-weighted marriageable male cousins (Table 1), the long-run mean falls to about 0.3, a decline of roughly 2.5 cousins. At the reduced-form slope of -0.034 on the gender attitudes index (Panel A of Figure 7), this corresponds to a shift of about 0.09 standard deviations. The full $(1/3)^2$ scaling requires both the grandparents' and parents' generations to complete the transition. Women born before 1970 in our sample, who have largely completed fertility, report 8.6 children on average; Oman's total fertility rate is currently about 2.5 (World Bank, 2024).

References

Abbasi-Shavazi, MJ, P. McDonald, and M. Hosseini-Chavoshi (2008) "Modernization or Cultural Maintenance: The Practice of Consanguineous Marriage in Iran," *Journal of Biosocial Science*, 40 (6), 911–933.

Alesina, Alberto and Paola Giuliano (2014) "Family ties," in *Handbook of economic growth*, 2, 177–215: Elsevier.

Alesina, Alberto, Paola Giuliano, and Nathan Nunn (2013) "On the origins of gender roles: Women and the plough," *The quarterly journal of economics*, 128 (2), 469–530.

Ambrus, A. and E. Field (2008) "Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh," *Journal of Political Economy*, 116 (5), 881–930.

Anderson, Michael L (2008) "Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," *Journal of the American Statistical Association*, 103 (484), 1481–1495.

Ardington, Cally, Alicia Menendez, and Tinofa Mutevedzi (2015) "Early Childbearing, Human Capital Attainment, and Mortality Risk: Evidence from a Longitudinal Demographic Surveillance Area in Rural KwaZulu-Natal, South Africa," *Economic Development and Cultural Change*, 63 (2), 281–317, 10.1086/678983, Publisher: The University of Chicago Press.

Ashraf, Nava, Natalie Bau, Nathan Nunn, and Alessandra Voena (2020) "Bride Price and Female Education," *Journal of Political Economy*, 128 (2), 591–641, 10.1086/704572, Publisher: The University of Chicago Press.

Bahrami-Rad, Duman (2021) "Keeping it in the family: Female inheritance, inmarriage, and the status of women," *Journal of Development Economics*, 153, 102714.

Bahrami-Rad, Duman, Jonathan Beauchamp, Joseph Henrich, and Jonathan Schulz (2022) "Kin-Based Institutions and Economic Development," August, 10.2139/ssrn.4200629.

Bates, Robert H., Avner Greif, and Smita Singh (2004) "The political economy of kinship societies," *Politics from Anarchy to Democracy: Rational Choice in Political Science*, 66, Publisher: Stanford University Press.

Bisin, Alberto and Thierry Verdier (2001) "The Economics of Cultural Transmission and the Dynamics of Preferences," *Journal of Economic Theory*, 97 (2), 298–319, 10.1006/jeth.2000.2678.

——— (2011) "Chapter 9 - The Economics of Cultural Transmission and Socialization," in Benhabib, Jess, Alberto Bisin, and Matthew O. Jackson eds. *Handbook of Social Economics*, 1, 339–416: North-Holland, 10.1016/B978-0-444-53187-2.00009-7.

Bittles, Alan H and Michael L Black (2010) "Consanguinity, human evolution, and complex diseases," *Proceedings of the National Academy of Sciences*, 107, 1779–1786.

Bursztyn, Leonardo, Thomas Fujiwara, and Amanda Pallais (2017) "'Acting Wife': Marriage Market Incentives and Labor Market Investments," *American Economic Review*, 107 (11), 3288–3319, 10.1257/aer.20170029.

Bursztyn, Leonardo, Alessandra L. González, and David Yanagizawa-Drott (2020) "Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia," *American Economic Review*, 110 (10), 2997–3029, 10.1257/aer.20180975.

Campbell, Olympia L. K., Cecilia Padilla-Iglesias, Grégory Fiorio, and Ruth Mace (2024) "Genetic markers of cousin marriage and honour cultures," *Evolution and Human Behavior*, 45 (6), 106636, 10.1016/j.evolhumbehav.2024.106636.

Carlana, Michela (2019) "Implicit Stereotypes: Evidence from Teachers' Gender Bias*," *The Quarterly Journal of Economics*, 134 (3), 1163–1224, 10.1093/qje/qjz008.

Chao, Fengqing, Patrick Gerland, Alex R. Cook, and Leontine Alkema (2019) "Systematic assessment of the sex ratio at birth for all countries and estimation of national imbalances and regional reference levels," *Proceedings of the National Academy of Sciences of the United States of America*, 116 (19), 9303–9311, 10.1073/pnas.1812593116.

Dhar, Diva, Tarun Jain, and Seema Jayachandran (2022) "Reshaping Adolescents' Gender Attitudes: Evidence from a School-Based Experiment in India," *American Economic Review*, 112 (3), 899–927, 10.1257/aer.20201112.

Do, Quy-Toan, Sriya Iyer, and Shareen Joshi (2013) "The economics of consanguineous marriages," *Review of Economics and Statistics*, 95 (3), 904–918.

Doepke, Matthias, Michèle Tertilt, and Alessandra Voena (2012) "The Economics and Politics of Women's Rights," *Annual Review of Economics*, 4 (Volume 4, 2012), 339–372, 10.1146/annurev-economics-061109-080201.

Dossi, Gaia, David Figlio, Paola Giuliano, and Paola Sapienza (2021) "Born in the family: Preferences for boys and the gender gap in math," *Journal of Economic Behavior & Organization*, 183, 175–188, 10.1016/j.jebo.2020.12.012.

Duflo, Esther (2012) "Women Empowerment and Economic Development," *Journal of Economic Literature*, 50 (4), 1051–1079, 10.1257/jel.50.4.1051.

Edlund, Lena (2018) "Cousin marriage is not choice: Muslim marriage and underdevelopment," *AEA Papers and Proceedings*, 108, 353–57.

Eickelman, Christine (1984) *Women and community in Oman*: NYU Press.

Enke, Benjamin (2019) "Kinship, cooperation, and the evolution of moral systems," *The Quarterly Journal of Economics*, 134 (2), 953–1019.

Farré, Lídia and Francis Vella (2013) "The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labour Force Participation," *Economica*, 80 (318), 219–247, 10.1111/ecca.12008, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/ecca.12008.

Fernández, Raquel and Alessandra Fogli (2009) "Culture: An empirical investigation of beliefs, work, and fertility," *American economic journal: Macroeconomics*, 1 (1), 146–177.

Fernández, Raquel, Alessandra Fogli, and Claudia Olivetti (2004) "Mothers and Sons: Preference Formation and Female Labor Force Dynamics*," *The Quarterly Journal of Economics*, 119 (4), 1249–1299, 10.1162/0033553042476224.

Ghosh, Arkadev, Sam Il Myoung Hwang, and Munir Squires (2023) "Economic Consequences of Kinship: Evidence From U.S. Bans on Cousin Marriage," *The Quarterly Journal of Economics*, 138 (4), 2559–2606.

Giuliano, Paola (2020) "Gender and culture," *Oxford Review of Economic Policy*, 36 (4), 944–961, 10.1093/oxrep/graa044.

Giuliano, Paola and Nathan Nunn (2021) "Understanding cultural persistence and change," *The Review of Economic Studies*, 88 (4), 1541–1581.

Glennerster, Rachel, Joanna Murray, and Victor Pouliquen (2026) "Mass Media and Contraception Use: An Experimental Test of Modernization Theory in Burkina Faso," Document de Travail DT/2026-02, DIAL.

Henrich, Joseph (2020) *The WEIRDest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous*: Farrar, Straus and Giroux.

Hussain, R. (1999) "Community Perceptions of Reasons for Preference for Consanguineous Marriages in Pakistan," *Journal of Biosocial Science*, 31, 449–461.

Hwang, Sam Il Myoung, Deaglan Jakob, and Munir Squires (2025) "Health Effects of Cousin Marriage: Evidence from US Genealogical Records," *American Economic Review: Insights*, 7 (3), 396–410, 10.1257/aeri.20230544.

Iqbal, Sarosh, Rubeena Zakar, Florian Fischer, and Muhammad Zakria Zakar (2022) "Consanguineous marriages and their association with women's reproductive health and fertility behavior in Pakistan: secondary data analysis from Demographic and Health Surveys, 1990–2018," *BMC Women's Health*, 22 (1), 118, 10.1186/s12905-022-01704-2.

Islam, M Mazharul (2012) "The practice of consanguineous marriage in Oman: prevalence, trends and determinants," *Journal of biosocial science*, 44 (5), 571–594.

Jacoby, Hanan G. and Ghazala Mansuri (2010) "Watta Satta: Bride Exchange and Women's Welfare in Rural Pakistan," *American Economic Review*, 100 (4), 1804–25.

Jayachandran, Seema (2015) "The Roots of Gender Inequality in Developing Countries," *Annual Review of Economics*, 7 (1), 63–88, 10.1146/annurev-economics-080614-115404.

Jensen, Robert and Emily Oster (2009) "The power of TV: Cable television and women's status in India," *Quarterly Journal of Economics*, 124 (3), 1057–1094.

Johow, Johannes, Kai P Willführ, and Eckart Voland (2019) "High consanguinity promotes intergenerational wealth concentration in socioeconomically privileged Krummhörn families of the 18th and 19th centuries," *Evolution and Human Behavior*, 40 (2), 204–213, Publisher: Elsevier.

Lowes, Sara (2022) "Kinship Structure and the Family: Evidence from the Matrilineal Belt," September, 10.3386/w30509.

Meriwether, Margaret L. (1999) *The Kin Who Count: Family and Society in Ottoman Aleppo, 1770-1840*: University of Texas Press, Google-Books-ID: iFtq9TcWzjkC.

Mete, Cem, Laurent Bossavie, John Giles, and Harold Alderman (2020) "Is consanguinity an impediment to child development?" *Population Studies*, 74 (2), 139–159, Publisher: Routledge.

Mobarak, A Mushfiq, Theresa Chaudhry, Julia Brown et al. (2019) "Estimating the health and socioeconomic effects of cousin marriage in South Asia," *Journal of Biosocial Science*, 51 (3), 418–435, Publisher: Cambridge University Press.

Mobarak, Ahmed Mushfiq, Randall Kuhn, and Christina Peters (2013) "Consanguinity and other marriage market effects of a wealth shock in Bangladesh," *Demography*, 50 (5), 1845–1871.

Olivetti, Claudia, Eleonora Patacchini, and Yves Zenou (2020) "Mothers, Peers, and Gender-Role Identity," *Journal of the European Economic Association*, 18 (1), 266–301, 10.1093/jeea/jvy050.

Porter, Catherine and Danila Serra (2020) "Gender Differences in the Choice of Major: The Importance of Female Role Models," *American Economic Journal: Applied Economics*, 12 (3), 226–254, 10.1257/app.20180426.

Schulz, Jonathan F, Duman Bahrami-Rad, Jonathan P Beauchamp, and Joseph Henrich (2019) "The Church, intensive kinship, and global psychological variation," *Science*, 366 (6466), Publisher: American Association for the Advancement of Science.

Small, Neil, Rifat Razaq, Vishal Sharma, Alice Cunningham, Zuneera Khurshid, and Shahid Islam (2024) "Changing patterns in marriage choice and related health risk in the Pakistani heritage community in Bradford UK: a qualitative study," *Wellcome Open Research*, 9, 690, 10.12688/wellcomeopenres.23338.3.

Tillion, Germaine (1983) *The Republic of Cousins: Women's Oppression in Mediterranean Society*, London: Al Saqi Books, Originally published as *Le Harem et les cousins* in 1966 by Seuil.

Wikan, Unni (1991) *Behind the Veil in Arabia: Women in Oman*, Chicago, IL: University of Chicago Press, `https://press.uchicago.edu/ucp/books/book/chicago/B/bo3613908.html`.

World Bank (2024) "Fertility rate, total (births per woman) – Oman," `https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=OM`, World Development Indicators. Accessed: 2026-05-25.

A Appendix: Supplementary Tables and Figures

Table A.1: First stage using the baseline instrument and alternatives

Number of age-weighted cousins:	*(baseline)*	0-6 years older	IHS	0-2, trimmed	*(baseline)*
	Outcome: Out-marriage				Outcome: F
Male cousins	-0.048***	-0.039***	-0.153***	-0.107***	0.050***
	(0.007)	(0.006)	(0.019)	(0.028)	(0.007)
Female cousins	0.006	0.003	0.017	0.018	-0.006
	(0.006)	(0.006)	(0.019)	(0.013)	(0.007)
Observations	1538	1538	1538	713	1372
F-stat on instrument	52.67	44.78	62.30	14.45	54.39
Controls	Yes	Yes	Yes	Yes	Yes

Notes: This table presents first-stage regression results for the likelihood of marrying a cousin. In columns (1)–(4), the dependent variable is out-marriage (an indicator equal to 1 if a woman did not marry a first cousin). Key independent variables include: Male Cousins (baseline), the age-weighted count of male cousins; Male Cousins (0-6 years older), the count of male cousins 0–6 years older; Male Cousins (IHS), the inverse hyperbolic sine of the age-weighted count; and Male Cousins (0-2, trimmed), the age-weighted count trimmed to 2 cousins. Female cousin counts enter as controls in all specifications. All regressions control for age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Robust standard errors are in parentheses. F-statistics for instruments are shown below each regression. Column (5) uses the coefficient of inbreeding (F) as the dependent variable: a continuous analogue that assigns $F = 0.0625$ for first-cousin marriages, $F = 0.0156$ for second-cousin marriages, $F \approx 0.008$ for other relatives (approximated as second cousins once removed), and $F = 0$ for non-relatives. F is normalized by 0.0625 so that first cousins equal 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.2: Breakdown of first stage: Non-relatives vs. other relatives

	Total	Components of out-marriage	
	Out-marriage	Married a non-relative	Married a second cousin or other relative
Male cousins	-0.048***	-0.035***	-0.013***
	(0.007)	(0.006)	(0.005)
Observations	1538	1538	1538
Controls	Yes	Yes	Yes

Notes: Column 1 presents the first-stage regression of out-marriage on the instrument. Columns 2 and 3 decompose out-marriage into two mutually exclusive components: marriage to a non-relative and marriage to a second cousin or other relative. These two indicators sum to the out-marriage indicator, so their coefficients sum to the coefficient in column 1. "Male cousins" is the age-weighted count of marriageable male cousins, the instrument used in the main analysis. All regressions control for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.3: First stage by type of cousin

	Married to son of:			
	Mother's sister	Mother's brother	Father's sister	Father's brother
Number of corresponding cousins	0.048***	0.045***	0.040***	0.073***
	(0.009)	(0.010)	(0.009)	(0.012)
Number of other cousins	0.004	-0.002	-0.002	-0.000
	(0.004)	(0.003)	(0.003)	(0.005)
Observations	1538	1538	1538	1538
F-stat on instrument	29.63	21.87	18.53	39.18

Notes: This table presents first-stage regression results for the cousin-type marriage analysis. Controls for the number of female cousins of the two types separately. F-stat is based on a test of the relevant number of cousins. Number of cousins is age-weighted. All regressions also control for age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Robust standard errors are in parentheses. F-statistics for instruments are shown below each regression. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.4: Baseline IV, alternative IV, and OLS results for gender attitudes

	Dependent Variable				
	Gender attitudes index	Job priority to men	Men better leaders	Men better in business	Boys' education priority
Panel A: Male Cousins (Age-Weighted), baseline					
Out-marriage	0.703**	0.189	0.895**	0.825*	-0.006
	(0.280)	(0.153)	(0.385)	(0.468)	(0.456)
Observations	1496	1495	791	792	791
F-stat on instrument	51.9	51.8	16.8	16.9	16.8
Controls	Yes	Yes	Yes	Yes	Yes
Panel B: Male Cousins (IHS)					
Out-marriage	0.715**	0.248	0.629*	0.707	0.325
	(0.279)	(0.155)	(0.373)	(0.439)	(0.439)
Observations	1496	1495	791	792	791
F-stat on instrument	60.5	60.5	17.9	17.9	17.9
Controls	Yes	Yes	Yes	Yes	Yes
Panel C: Male Cousins (0-6 years older)					
Out-marriage	0.596*	0.069	0.690	1.168**	0.437
	(0.305)	(0.160)	(0.454)	(0.581)	(0.533)
Observations	1496	1495	791	792	791
F-stat on instrument	49.5	49.4	11.6	11.7	11.6
Controls	Yes	Yes	Yes	Yes	Yes
Panel D: Male Cousins (0-2, trimmed), extensive margin					
Out-marriage	0.922	0.119	0.495	0.838	0.158
	(0.578)	(0.292)	(0.538)	(0.588)	(0.534)
Observations	687	687	349	349	349
F-stat on instrument	14.8	14.8	8.9	8.9	8.9
Controls	Yes	Yes	Yes	Yes	Yes
Panel E: OLS					
Out-marriage	-0.031	-0.043	0.023	-0.066	0.106*
	(0.053)	(0.029)	(0.053)	(0.055)	(0.063)
Observations	1496	1495	791	792	791
Controls	Yes	Yes	Yes	Yes	Yes
Panel F: Alternative Treatment (Not Married to First Cousin)					
Not married to first cousin	0.769**	0.207	0.973**	0.898*	-0.007
	(0.313)	(0.168)	(0.437)	(0.518)	(0.495)
Observations	1496	1495	791	792	791
F-stat on instrument	44.7	44.6	14.1	14.2	14.1
Controls	Yes	Yes	Yes	Yes	Yes

Notes: This table presents instrumental variable (IV) estimates of the effect of cousin marriage on gender attitudes. Each row represents a separate regression, with the dependent variable listed in the first column. The Gender attitudes index is constructed following Anderson (2008) using the four component measures shown in subsequent rows. All dependent variables are standardized to have mean zero and standard deviation one in the control group. The treatment variable, 'Out-marriage', is instrumented with the number of marriageable male cousins, weighted by age difference. All regressions control for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Robust standard errors are reported in parentheses. The First stage F-stat column reports the Kleibergen-Paap rk Wald F statistic. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.5: Effect of out-marriage on gender attitudes, controlling for husband characteristics

Outcome:	Gender attitudes index			
Out-marriage	0.703**	0.555**	0.496*	0.541**
	(0.280)	(0.261)	(0.263)	(0.265)
Husband education (yrs)		0.018**		-0.002
		(0.007)		(0.010)
Husband income (log)			0.217***	0.225***
			(0.057)	(0.068)
Observations	1496	1301	993	973
F-stat on instrument	51.85	53.48	46.99	46.96

Notes: This table presents IV estimates of the effect of out-marriage on gender attitudes, controlling for husband's years of education (column 2), husband's income (column 3), both (column 4), or without husband-quality controls (column 1). All specifications also control for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Robust standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.6: Effect of coefficient of inbreeding on gender attitudes

	Gender attitudes index	Job priority to men	Men better leaders	Men better in business	Boys' education priority
Coefficient of inbreeding (F)	-0.473*	-0.067	-0.859**	-0.806*	0.248
	(0.270)	(0.152)	(0.399)	(0.481)	(0.454)
Observations	1335	1334	714	715	714
F-stat on instrument	54.7	54.7	17.4	17.4	17.4
Controls	Yes	Yes	Yes	Yes	Yes

Notes: This table presents instrumental variable (IV) estimates of the effect of cousin marriage on gender attitudes, using the coefficient of inbreeding (F) as a continuous endogenous regressor. F is a standard measure of genetic relatedness: $F = 0.0625$ for first cousins, $F = 0.0156$ for second cousins, and $F = 0$ for non-relatives. We divide F by 0.0625 so the normalized measure equals 0 for marriage to a non-relative and 1 for first-cousin marriage. Second-cousin marriage retains an intermediate value rather than being grouped with non-relative marriage. The value for other relatives ($F \approx 0.008$, approximately second cousins once removed) is an approximation. The Gender attitudes index is constructed following Anderson (2008) using the four component measures shown in subsequent columns. All dependent variables are standardized to have mean zero and standard deviation one in the control group. F is instrumented with the age-weighted count of marriageable male cousins. All regressions control for marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Robust standard errors are in parentheses. The F-stat row reports the Kleibergen-Paap rk Wald F statistic. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Figure A.1: Map of Bid Bid and Nizwa, Oman

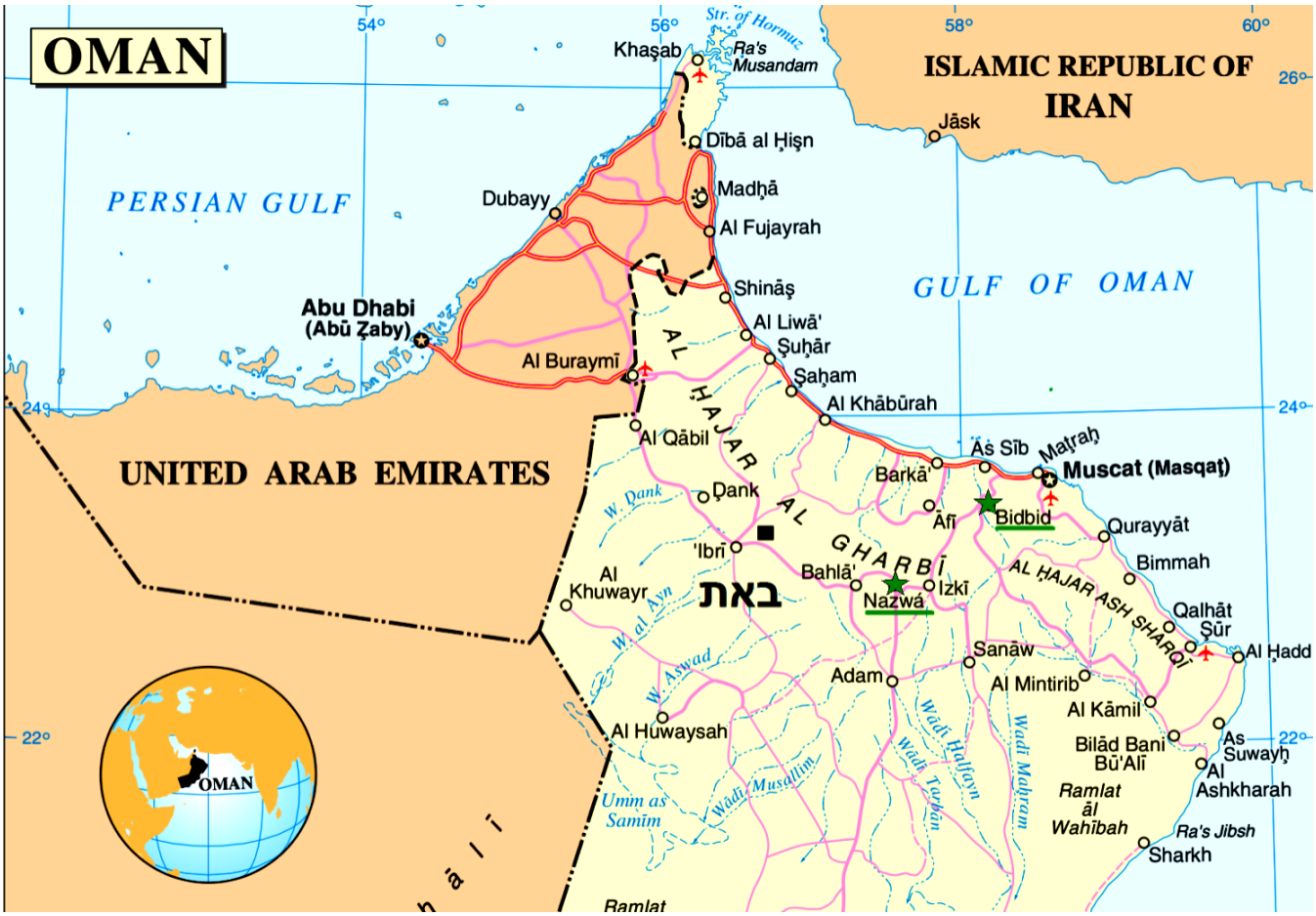
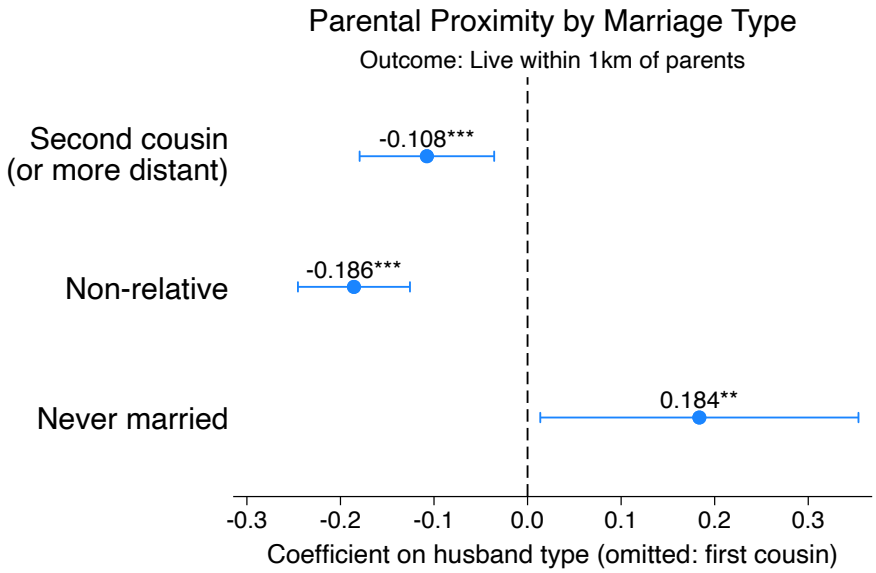
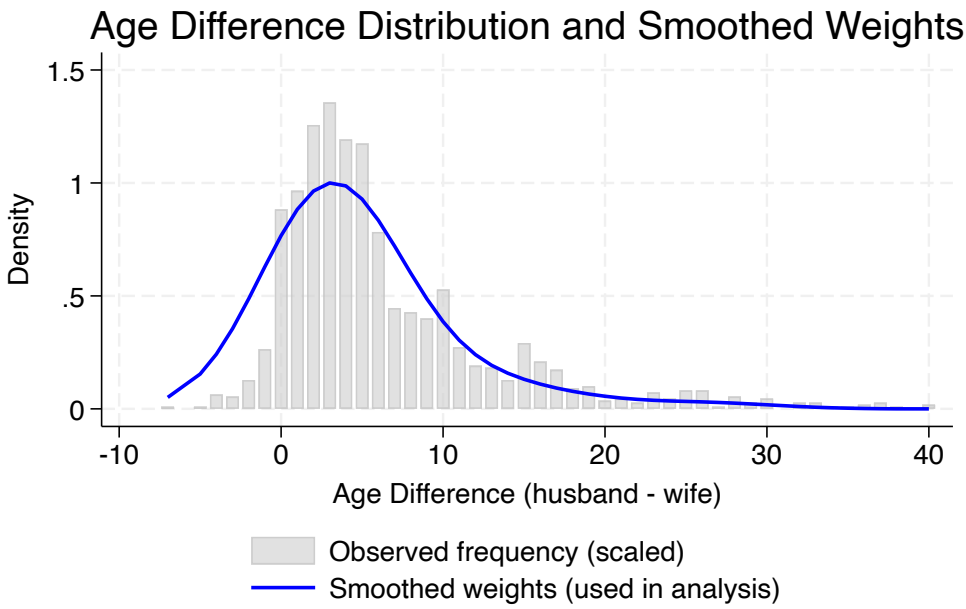


Figure A.2: Parental proximity by marriage type



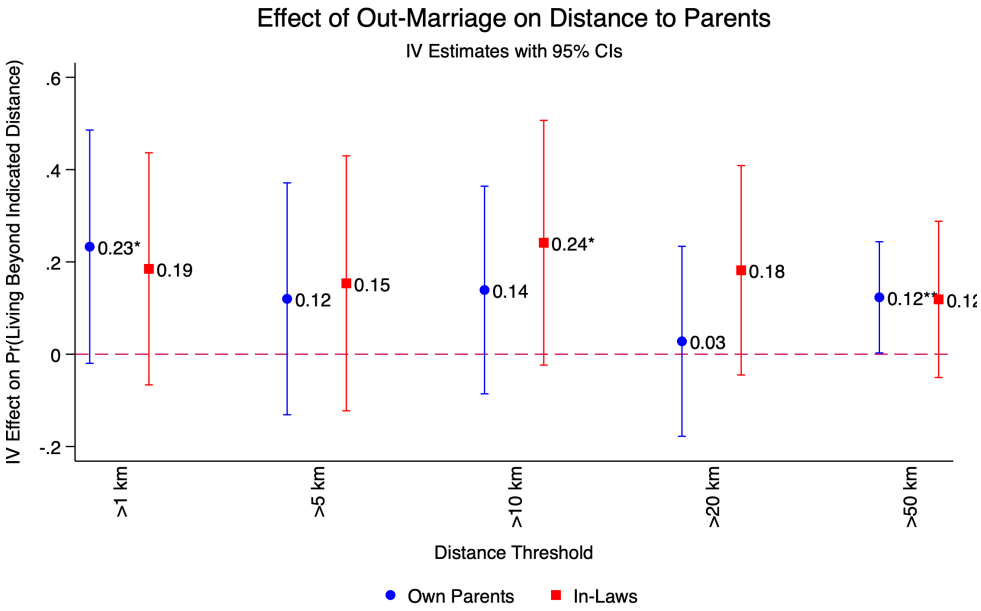
Notes: Figure plots OLS coefficients from a regression of an indicator for living within 1 km of parents on marriage-type indicators. First-cousin marriage is the omitted reference category. Controls include age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Whiskers indicate 95% confidence intervals based on robust standard errors.

Figure A.3: Smoothed density of husband-wife age differences used for weighting cousins



Notes: Figure plots the smoothed kernel density of husband-wife age differences in the sample, used to construct the age weights for marriageable cousins (see Section 3.1). Weights are normalized so that a cousin three years older than the respondent (the modal gap) receives a weight of 1.

Figure A.4: Effect of out-marriage on distance to parents and in-laws, by distance threshold



Notes: Figure plots the IV coefficient of out-marriage on the probability of living beyond the indicated distance threshold from parents' and in-laws' residence. Estimates are derived from separate 2SLS regressions for each threshold and parent type, instrumenting out-marriage with the age-weighted number of marriageable male cousins. Controls include marriageable-age female cousins, age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. Bars represent 95% confidence intervals based on robust standard errors. Sample includes women aged 25-50.

Figure A.5: Selection patterns in out-marriage and gender attitudes by husband's income

(a) Out-marriage by household income

(b) Gender attitudes by household income

Notes: Figure shows binned scatter plots of: (a) the relationship between husband's monthly income (in USD, x-axis) and the likelihood of out-marriage (not marrying a first cousin, y-axis); and (b) the relationship between husband's monthly income (in USD, x-axis) and the standardized gender attitudes index (y-axis). Income was originally measured in Omani Rials (OR) and converted to USD using the exchange rate of 1 OR = 2.59 USD. Higher values on the attitudes index represent more gender-equal views. Both panels include controls for age (quadratic), village fixed effects, birth order, number of brothers, and number of sisters. These relationships help explain the difference between OLS and IV estimates: women from higher-income families are both less likely to out-marry (panel a) and hold more gender-equal attitudes (panel b). This selection pattern helps explain why OLS estimates understate the true liberalizing effect of out-marriage on gender attitudes.

B Appendix: Survey Questions

This appendix lists the survey questions used to construct the key variables in the paper.

Core Variables: Treatment, Instrument, and Controls

Treatment Variable (Out-Marriage)

- *Construction:* Binary indicator coded as 1 if respondent's first marriage was not to a first cousin, and 0 otherwise (including never-married women, who are coded as 0).
- *Survey question:* "What is your relationship with this spouse [first marriage]?" Response options included: Double first cousin, First cousin mother's side, First cousin father's side, Second cousin, Other relative, Not a relative same tribe, Not a relative different tribe.
- *Coding:* 'OutMarriage'=1 if relationship is Second cousin or more distant; 'OutMarriage'=0 if relationship is First cousin or if respondent never married (derived from marital status question).

Instrumental Variables (Cousin Availability)

- *Construction:* Based on detailed enumeration of respondent's aunts, uncles, and their children (cousins) in the survey's family roster sections. Required respondent to recall each aunt/uncle's survival and number of children surviving past age 12, and then for each cousin: name, sex, and age relative to the respondent.
- *Age-Weighted Marriageable Cousins:* Calculated from the cousin roster by summing male cousins surviving to age 12, weighted by age difference according to the scheme described in Section 3.1 and Appendix Figure A.3.
- *Female Marriageable Cousins (Age-Weighted):* Calculated similarly, using female cousins surviving to age 12.
- *Total Cousins:* Sum of all cousins listed in the roster surviving past age 12.

Control Variables

- *Age:* "How old are you in years?" (Used for Respondent's Age and Age squared in analyses).
- *Birth Order:* Derived from the sibling roster section, based on the respondent's position relative to listed siblings.
- *Village Fixed Effects:* Based on survey location code recorded on the cover page.

Outcome Variables

Gender Attitudes Index Components

Four-point Likert-scale responses (Agree strongly, Agree, Disagree, Disagree strongly) to:

- "When jobs are scarce, men should have more right to a job than women."
- "On the whole, men make better political leaders than women do."
- "A university education is more important for a boy than a girl."
- "On the whole, men make better businesspeople than women do."

Note: Variables were recoded so higher values indicate more gender egalitarian attitudes for index construction, as described in Section 3.1.

Proximity and Contact with Family

- *Geographic proximity:* "Distance from [your/your husband's] parents' residence in kms (currently or at age of death)" (Used to create 'Less than 1km from parents/in-laws' indicators).
- *Social contact:* Indicator variables for 'Seeing parents daily,' 'Seeing in-laws daily,' and 'Seeing siblings daily' were derived from questions asking about frequency of contact with each family member type.

Marriage Timing and Fertility

- *Age at Marriage:* "How old were you at the time of your first marriage?"
- *Early Marriage:* 'Married by 16' indicator derived from Age at Marriage ≤ 16.
- *Engagement Length:* Calculated as Age at Marriage minus Age when arranged.
- *Fertility:* "How many times have you been pregnant (in your first marriage)?" ('Pregnancies').
- *Children:* "If yes [to live birth], how many live births (in 1st marriage)?" (Used for 'Number of Children').
- *Age at First Birth:* Derived from the age of the first child listed in the fertility history.

Respondent's Education and Employment

- *Education Level:* "What is your level of education? (Highest class completed)" ('Respondent's Education (yrs)').
- *Secondary Completion:* 'Completed grade 12' indicator derived from Highest class completed ≥ 12.
- *Employment Status:* "Are you currently working for pay?" ('Respondent's Employment').

Husband Characteristics

- *Education:* "What was your husband's level of education at the time of [first] marriage?" ('Husband's Education (yrs)').
- *Secondary Completion:* 'Husband completed 12th grade' indicator derived from Husband's Education ≥ 12.
- *Income:* "What is your husband's personal income per month from work?" ('Husband's Income'). Log transformation applied in analysis.
- *Family Employment:* "Does your husband work with his father-in-law (your father), or did he ever in the past?" ('Husb. works w/ your father').

Marriage Quality

- *Marital Conflict:* "How often do you and your husband have arguments over decisions such as household purchases or your children's activities?" (Response scale: Often, Regularly, Sometimes, Almost never). ('Argues with husband').
- *Financial Autonomy:* "Does or did your husband mind if you make large purchases for the household without his permission?" (Response options: Yes, No). ('Can make purchases').
- *Life Satisfaction:* "All things considered, how satisfied are you with your life as a whole these days?" (Response scale: 1=Completely dissatisfied to 5=Completely satisfied). ('Satisfied with life').
- *Marital Status:* "What is the current status of this [first] marriage?" Used to create 'Divorced' indicator.
- *Polygamy:* "Does or did your husband have any co-wives at any time during the [first] marriage?" (Response options: Yes, No). ('Husband has co-wives').

Descriptive and Balance Check Variables

Marriage Types

- *Marital Status:* "Current marital status" (Used with marriage history to determine 'Ever Married').
- *Relationship to Spouse:* "What is your relationship with this spouse [first marriage]?" (Used to create indicators for 'Married to First Cousin,' 'Married to Second Cousin,' 'Married to Other Relative,' and 'Married to Non-relative').

Pre-marital Characteristics (Respondent)

- *Physical Characteristics:* "Respondent's approximate height in centimeters" ('Height').
- *Development:* "At what age did you begin menstruation?" ('Age of menarche').
- *Education Access:* 'Any educ' indicator derived from "What is your level of education?" $>$ 0.

Parental/Family Background

- *Sibling Composition:* 'Brothers' and 'Sisters' counts derived from sibling roster section.
- *Paternal Education:* "What is [or was] your father's level of education? (Highest class completed)" ('Father had any educ' derived from response > 0).
- *Paternal Wealth:* "What is (or was if deceased) the approximate value of your father's land holdings?" ('Father's land $>$ 5000 rials' derived from responses).