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

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

July 2025

**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 environments: it reduces the likelihood of living within one kilometer of parents and in-laws by about 20 percentage points and daily contact with them by 40 percentage points. Consistent with reduced kin exposure, women who out-marry develop more gender-egalitarian attitudes (0.6 SD increase). Strikingly, this occurs alongside outcomes typically associated with reduced female empowerment: out-marriage increases child marriage and decreases high school completion by about 20 percentage points each. These results reveal how tight-knit family structures can perpetuate traditional values independently of, and even despite, conventional markers of development, 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

*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 SQU for hosting the study. We are grateful to seminar participants at the University of Washington, Vancouver School of Economics, and Princeton University for helpful comments and suggestions. We particularly thank Siwan Anderson, Pascaline Dupas, Thomas Fujiwara, and Nathan Nunn for valuable feedback. We thank the Harvard KSG Middle East Initiative, the Harvard Weatherhead Center for International Affairs, and the Stanford Center for International Development for funding.

establishing independent social connections. These practices maintain traditional values both by 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 — by studying cousin marriage in Oman. This setting presents a compelling empirical puzzle: despite dramatic educational gains, both cousin marriage rates and traditional gender attitudes have remained remarkably stable.[1]

Family networks in rural Oman provide exceptionally strong social ties that may explain this stability. Half of women see their parents daily, nearly half live within one kilometer of their parents, and a third maintain similar proximity to their in-laws.[2] These dense kinship networks create conditions where traditional values can remain entrenched despite broader societal changes. To identify how such networks influence attitudes, we exploit quasi-random variation in the availability of marriageable male cousins, creating a natural experiment in marriage patterns: women with fewer marriageable-age male cousins are systematically more likely to marry outside their family networks, which we refer to as "out-marriage."

Using survey data from 1,538 women aged 25-50, we find that out-marriage substantially reconfigures women's social worlds by reducing daily contact with parents, in-laws, and siblings. 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—highlights the powerful role of social insularity in maintaining traditional values independently of other factors commonly associated with female empowerment.

We argue that marriage patterns shape gender attitudes through social insularity. 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 norm deviation, as sanctions from one part of the integrated family network threaten relationships with all relatives simultaneously. By contrast, out-marriage may connect women to more diverse social circles, and creates a dual family structure that moderates enforcement by providing alternative sources of support. Importantly, this is potentially in tension with the economic functions that cousin marriage serves in this context. Consanguineous marriages facilitate trust and credible commitments between families, mitigate information asymmetries about potential spouses, and help preserve family resources and status,

[1] Roughly 40% of marriages in Oman are between first cousins (Islam, 2012), similar to persistently high rates across the broader region (Iqbal et al., 2022; Bittles and Black, 2010; Abbasi-Shavazi et al., 2008).

[2] See Section 3 for more on these statistics.

advantages that may be lost when marrying out (Do et al., 2013; Mobarak et al., 2019, 2013). These economic advantages may help explain the persistence of both cousin marriage and traditional gender norms, and provide the context for our empirical analysis of marriage patterns.

Our first stage results demonstrate a strong relationship between the availability of marriageable male cousins and out-marriage. Having one additional male cousin of marriageable age reduces the probability of out-marriage by five 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 extended families. Further, this relationship persists across various specifications, addressing potential identification concerns such as effects through the probability of ever marrying or pre-marital socialization. Multiple robustness checks, including falsification tests, support the validity of our approach.

Using this instrument, we first examine how out-marriage affects women's social environments. We find that marrying outside the family substantially transforms women's daily social interactions: out-marriage reduces the likelihood of daily contact with parents and in-laws by about 40 percentage points. This reduced contact extends to siblings as well, with out-marriage leading to approximately 30 percentage point reduction in daily sibling interaction. These changes are reinforced by geographic separation, as out-marriage reduces the likelihood of living within one kilometer of parents, and of in-laws, by about 20 percentage points. Out-marriage fundamentally restructures social networks of the women we study away from daily interaction with extended family.

Does the reduction in social insularity from out-marriage affect gender attitudes? We find that out-marriage leads to more gender-egalitarian views: an increase of 0.6 standard deviations in our index of gender attitudes. The effect operates across multiple dimensions of gender beliefs, with substantial impacts on perceptions of women's capabilities as political leaders and businesspeople, both increasing by about 0.7 standard deviations.

Strikingly, our second key finding reveals that this shift toward gender-equal attitudes coexists with outcomes typically associated with reduced female empowerment. Marrying out increases child marriage: the probability of being married by age 16 goes up 22 percentage points, in part due to substantially shorter engagement periods. Without the trust inherent in kin networks, earlier marriages likely function as a commitment mechanism in the absence of strong family ties. Out-marriage also interrupts education, making women 21 percentage points less likely to complete grade 12. The consequences extend to childbearing, with out-marriage resulting in first births occurring 2.2 years earlier. Further, out-marriage leads women to match with husbands who have approximately 2 fewer years of education and earn about 40 percent less than cousin-husbands,

reflecting the tendency of higher-status families to prefer cousin marriage. Despite these substantial differences in husband quality and marriage timing, we find that out-marriage has no effect on women's own employment, which remains low across groups.

That more gender-equal attitudes emerge despite earlier marriage, less education, and lower socioeconomic status highlights the crucial role of social exposure in shaping cultural values. While a large literature emphasizes economic development and education as drivers of changing gender norms (Duflo, 2012; Fernández, 2013), our results suggest that everyday social interactions within family networks can have independent and powerful effects on women's attitudes. In societies where cousin marriage is common, these marriage patterns create closed networks that can effectively resist external influences, even as formal schooling expands. When daily social contact remains concentrated within conservative family networks, these networks can reinterpret and filter outside influences through a traditional lens, helping explain the persistence of traditional attitudes despite modernization along other dimensions.

These findings contribute to three literatures. First, we advance the understanding of cultural persistence and the determinants of gender norms (e.g., Fernández, 2011; Giuliano and Nunn, 2021). While foundational work highlights the roles of agricultural practices (Alesina et al., 2013), education (Goldin, 2006), and economic development (Duflo, 2012; Jayachandran, 2015), our causal estimates reveal a powerful, independent role for social structure in shaping contemporary gender attitudes. We show that social insularity, maintained by marriage patterns, can dominate factors like schooling, providing a mechanism through which traditional gender norms resist change even as societies modernize. This finding informs models of cultural transmission (Bisin and Verdier, 2001) by demonstrating how the structure of social interaction networks critically mediates the adoption of new attitudes.

Second, our research contributes to the growing economic literature on kinship intensity. Previous work has approached this topic from several angles: economists have examined how cousin marriage restricts women's autonomy and reinforces patriarchal control (Edlund, 2018; Bahrami-Rad, 2021), analyzed broader economic consequences of intensive kinship systems (Ghosh et al., 2023; Bahrami-Rad et al., 2022), and established causal links between cousin marriage and health outcomes (Hwang et al., 2025; Mobarak et al., 2019; Mete et al., 2020). We advance this literature by identifying an important mechanism: marriage patterns create network structures that directly shape gender attitudes. Our findings reveal that kinship network insularity can override other modernizing forces—even substantial educational expansion—explaining why gender norms remain resistant to change in many contexts despite development along other dimensions.

This contribution also provides empirical validation for theories in the economics of social networks (Jackson, 2011; Acemoglu et al., 2010). By comparing kin marriage to out-marriage, we

demonstrate that altering an individual's position in the social network leads to significant changes in individual attitudes. Our findings underscore how network structure drives belief formation and cultural change, with implications for other practices that constrain women's social networks.

These findings have important implications for cultural change in traditional societies. While policymakers often focus on expanding formal education and economic opportunities for women, our results suggest these interventions may have limited impact when women remain embedded in closed family networks. The persistence of traditional attitudes among educated women who marry cousins highlights how social isolation can trump formal institutions. This mechanism likely extends beyond cousin marriage to other practices that limit women's social connections, from practices like female seclusion and veiling to restrictions on independent movement. In contexts where traditional practices create dense, overlapping family networks, interventions that expand women's social circles may be crucial for shifting cultural values, even in the presence of rising education levels and increased access to outside information.

## 2 Conceptual Framework

The persistence of traditional gender attitudes despite broader modernization suggests a potentially important role for family network structures in shaping and maintaining cultural values. Early anthropological work hypothesized these connections — Tillion (1983) postulated "a causal relationship between tribal endogamy (or rather, its degenerate form [first-cousin marriage]) and a particular debasement of the female condition" (p. 28). Our conceptual framework similarly emphasizes how marriage patterns, particularly the choice between marrying kin or non-relatives, can influence women's gender attitudes through changes in social interaction. In our framework, changes in social interaction patterns are central, but economic considerations also shape marriage choices and their consequences.

Marriage choices are important in part because they determine network density and diversity. This is especially consequential for women in contexts like Oman and much of the broader region, 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). In such settings, marrying a cousin reinforces existing dense kinship networks where in-laws are also blood relatives, often fostering geographic proximity and frequent interaction within a homogenous group (Tillion, 1983; Khuri, 1970; Ghosh et al., 2023). Out-marriage, in contrast, connects a woman to a new family network, reducing the network density characteristic of kin marriage and diversifying social ties (Henrich, 2020).

When a woman marries her cousin, her husband's family is also her own blood kin, creating

overlapping networks that systematically reinforce traditional values. The clan-based structures associated with cousin marriage systems 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 reinforcement operates through two distinct pathways: (1) restricted exposure to alternative perspectives beyond the kin group, and (2) heightened capacity for norm enforcement within integrated 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, characterized by high kinship intensity, the influence of elders and the vertical transmission of norms may be particularly strong (Henrich, 2020). While education or media may liberalize youthful private views, the insular nature of kin networks can lead individuals to overestimate adherence to tradition (Bursztyn et al., 2020). Such misperceptions reinforce public conformity to perceived traditional norms. Conversely, out-marriage, by definition, expands the social circle beyond the immediate kin group. This increases the potential for exposure to varied viewpoints and role models. 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. Rather than assuming network diversification from marriage type alone, our empirical strategy captures actual family interaction frequency and proximity.

The second channel operates through the social costs of norm deviation. When a woman marries her cousin, she joins a unified, overlapping family network where norm enforcement is particularly powerful. Deviating from expectations risks jeopardizing all family relationships simultaneously, as monitoring is intense and sanctions can be collectively imposed. In contrast, women who marry non-relatives bridge two distinct family networks, providing social buffering as the dual family structure offers alternative support sources. This separation reduces each family's leverage—sanctions from one side risk driving the couple toward the other—potentially lowering the costs for adopting non-traditional attitudes (Tillion, 1983; Coleman, 1988).

These social dynamics suggest out-marriage can promote gender-equal attitudes. This is also a setting where powerful economic incentives maintain cousin marriage. In our sample, 92% of respondents report trusting family members while only 18% trust non-relatives, creating significant advantages for marriage within extended family. This trust enables cousin marriage to serve valuable functions: it allows for credible commitments without large up-front marriage payments (Do et al., 2013; Mobarak et al., 2019), provides informal credit access (Mobarak et al., 2013), prevents property fragmentation (Holy, 1989; Johow et al., 2019), and facilitates collective action through

aligned incentives (Henrich, 2020).

Out-marriage, while potentially expanding social horizons, occurs without these trust advantages. Women marrying outside kin networks face information asymmetries regarding their reputation, creating incentives for earlier marriage, as younger brides are less vulnerable to doubts about their chastity. Additionally, cousin marriage is often more prevalent among high-status families preserving wealth and social position (Johow et al., 2019; Meriwether, 1999), suggesting the pool of available men for out-marriage may be of lower socioeconomic status.

These forces highlight a fundamental tradeoff. 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. On the other hand, cousin marriage provides grater trust, social cohesion, and economic security through resource preservation. If in this setting cousin marriage facilitates later marriage and hence more schooling (Ambrus and Field, 2008), cousin marriage may even lead to *more* liberal attitudes despite greater insularity.

Finally, we note potential parallels with other persistent cultural practices that similarly preserve traditional values through social insularity. Female seclusion, like cousin marriage, can function both as a mechanism for enforcing gender norms and as a signal of social status (Munshi and Singh, 2024). By limiting women's interactions with non-kin males, such practices reinforce traditional perspectives, enhance social monitoring, and raise the cost of norm violations. This isolation may contribute to a self-reinforcing cycle that sustains the conservative norms it was designed to protect.

These cultural practices often persist because they serve rational functions within their social context. Veiling, for instance, may enable women to access economic opportunities while maintaining their reputation in conservative settings (Carvalho, 2013), creating a culturally acceptable pathway to limited forms of public participation. Similarly, female seclusion can protect family honor while simultaneously marking high social status. Together, these customs shield traditional gender norms from external pressures, helping explain their persistence despite modernization along other dimensions. This pattern aligns with our broader argument: social network structures, whether shaped by marriage patterns or other cultural practices, can sustain conservative values independently of education or economic progress.

# 3 Data and Empirical Strategy

## 3.1 Survey Data and Variable Construction

Our research design seeks to estimate the causal effect of consanguineous marriage on women's gender attitudes. We focus on first-cousin marriage and use an instrumental variables approach in which the instrument is based on the number of marriageable cousins available to the woman.

To implement this strategy, we conducted a survey of women in the Dakhliya region of Oman, collecting detailed information about their extended families, particularly their cousins. 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.

Our treatment variable, $\text{OutMarriage}_i$, is a binary indicator equaling 1 if a woman's first marriage was to a non-first cousin, and 0 otherwise. We include never-married women in the control group (coded as 0), as 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). We discuss whether this classification introduces an exclusion restriction concern in Section 4.4.

To address potential endogeneity in marriage choices, we construct an instrumental variable, $\text{MarriageableCousins}_i$, 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.

Recognizing that spousal suitability is strongly age-dependent, this variable is defined as a weighted sum of the respondent's male cousins. The weights, $w(\cdot)$, reflect each cousin's suitability based on their age difference 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. The specific 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.

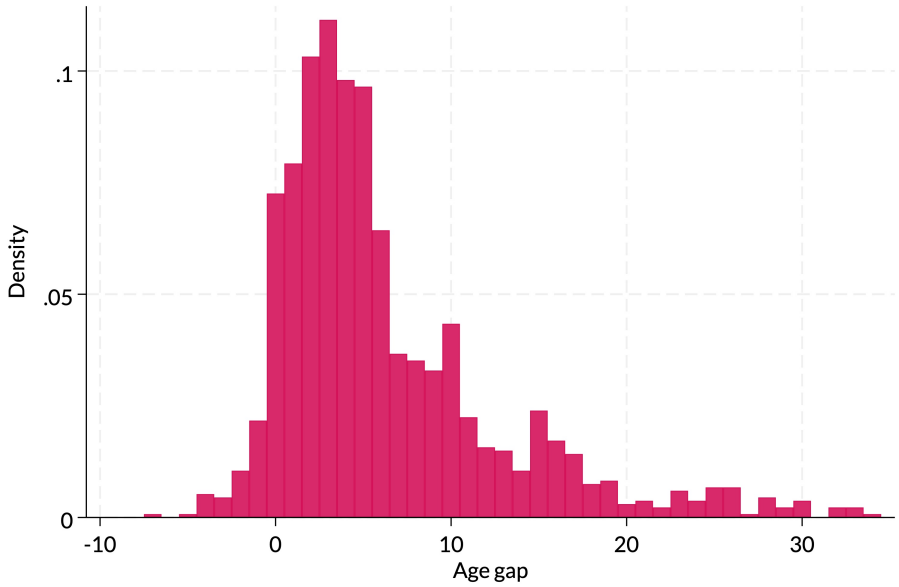
Formally, for each woman $i$, we calculate the instrument as:

$$\text{MarriageableCousins}_i = \sum_{j \in \mathcal{M}_i} w(\text{AgeDiff}_{ij}) \tag{1}$$

where $\mathcal{M}_i$ is the set of male cousins of woman $i$ who survived until age 12 (the age by which potential spouses are likely identified), and $\text{AgeDiff}_{ij}$ 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 outside her extended family network, exposing her to more diverse social influences.

Our primary outcome is an index of gender attitudes, composed of four variables measured on 4-point Likert scales. The index incorporates questions about women's role in society: whether jobs should be allocated based on gender when scarce, whether women can be effective political leaders, whether women can succeed in running businesses, and whether university education is more important for a boy than for a girl (see Appendix B for exact wording). A higher value on the

Figure 1: Husband-wife age differences




*Notes:* Shows the distribution of husband's age minus wife's age. This figure only includes non-cousin marriages.

index represents more progressive, egalitarian views toward gender roles. We construct a variance-weighted index following Anderson (2008), which creates a weighted average of the standardized measures, giving more weight to variables containing more unique information.

In addition to our primary gender attitudes index, we collected data on several other outcomes to characterize family proximity and interaction patterns, marriage dynamics, and socioeconomic outcomes. Family contact variables include geographic proximity to parents and in-laws, and frequency of contact with family members. 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.

### 3.2 Sample Description and Summary Statistics

The sampling frame comprised all women between ages 25 and 50 in the selected villages. In Bid Bid, this sampling rule yielded 876 women of whom 780 agreed to be interviewed (89% response rate); in Nizwa, 846 of the 857 women agreed to be interviewed (99% response rate). Of these 1637 respondents, we drop 34 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.

Figure 2 presents trends in female education, cousin marriage, and gender attitudes by birth year in our cross-sectional sample. Panel (a) reveals a substantial increase in female educational attainment across birth cohorts, with average years of schooling rising from less than 1 year for women born in 1960 to approximately 11 years for those born in 1985. This dramatic educational expansion coincided with Oman's economic development following the oil boom of the 1970s. Meanwhile, Panel (b) shows that the rate of cousin marriage among women in our sample remains remarkably stable across these same birth cohorts, consistently around 30%.[3]

Panel (c) illustrates the persistence of traditional gender attitudes across birth cohorts. Baseline gender attitudes in our sample are notably conservative. For instance, a vast majority believe 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 remarkably stable despite rising education levels. This context of traditional gender norms that have persisted despite economic and educational progress underscores the significance of identifying factors, such as marriage patterns, that might induce shifts towards more gender-equal attitudes.

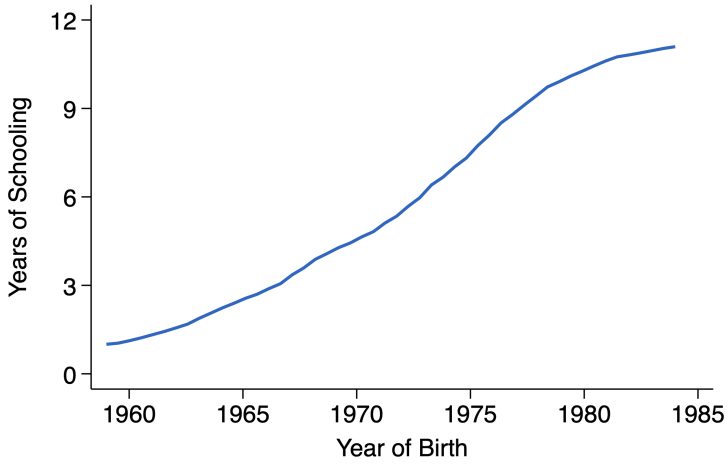
Table 1 presents the summary statistics for our key variables. Panel A shows balance variables, which are characteristics unlikely to be influenced by the choice of spouse: age, height, age of menarche, number of siblings, birth order, whether the respondent or her father has any schooling, and father's 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 2.2 male cousins of marriageable age (weighted by typical spouse age difference) and a similar number of female cousins in the same age range.[4]

[3] As in the rest of the analysis, this figure relates to the respondent's first marriage.

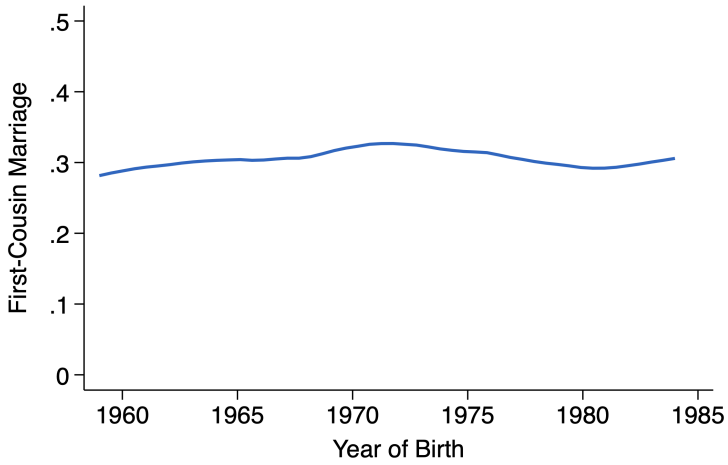
[4] Variation in sample sizes across variables in this table reflects both survey design choices (certain questions were asked only in the Nizwa survey round) and the applicability of specific questions (e.g., husband and in-law variables apply only to married respondents, age at first birth only applies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

Figure 2: Trends in Female Education, Cousin Marriage, and Gender Attitudes by Birth Cohort

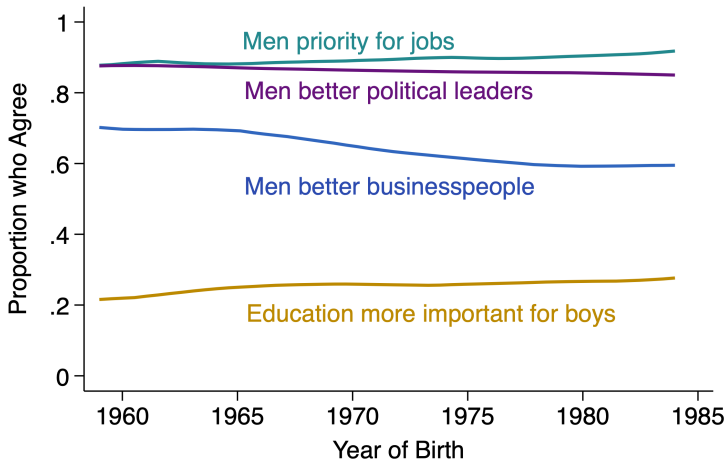
(a) Female schooling




(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 and Gender Attitudes

| | Summary Statistics | | | | | Relation with instrument (Marriageable cousins) | |
|---|---|---|---|---|---|---|---|
| Variable | Mean | SD | Min | Max | Obs. | Reg. Coef. | Reg. SE |
| *Panel A: Pre-marital characteristics (Balance vars)* | | | | | | | |
| Age | 33.58 | 6.88 | 25.00 | 50.00 | 1538 | (control) | (-) |
| Height | 154.63 | 6.81 | 100.00 | 185.00 | 1505 | 0.047 | (0.115) |
| Age of menarche | 13.44 | 1.42 | 9.00 | 22.00 | 1516 | 0.010 | (0.022) |
| Brothers | 4.16 | 2.29 | 0.00 | 14.00 | 1538 | -0.079** | (0.039) |
| Sisters | 4.06 | 2.41 | 0.00 | 14.00 | 1538 | -0.081** | (0.040) |
| Birth order | 3.57 | 2.24 | 1.00 | 13.00 | 1538 | (control) | (-) |
| Any educ | 0.82 | 0.38 | 0.00 | 1.00 | 1533 | -0.004 | (0.004) |
| Father had any educ | 0.21 | 0.41 | 0.00 | 1.00 | 1527 | 0.001 | (0.007) |
| Father's land >5000 rials | 0.37 | 0.48 | 0.00 | 1.00 | 1538 | 0.001 | (0.007) |
| *Panel B: Cousins (Instrument)* | | | | | | | |
| Total cousins | 32.70 | 19.41 | 1.00 | 97.00 | 1538 | 3.049*** | (0.240) |
| Male cousins 0-6 yrs older | 2.03 | 1.56 | 0.00 | 4.00 | 1538 | 0.584*** | (0.025) |
| Male marriageable-age cousins | 2.18 | 1.63 | 0.00 | 5.00 | 1538 | 0.690*** | (0.023) |
| Female marriageable-age cousins | 2.24 | 2.15 | 0.00 | 15.48 | 1538 | (control) | (-) |
| *Panel C: Marriage* | | | | | | | |
| Ever married | 0.89 | 0.32 | 0.00 | 1.00 | 1538 | -0.006 | (0.006) |
| Married to first cousin | 0.27 | 0.44 | 0.00 | 1.00 | 1538 | 0.059*** | (0.008) |
| Married to second cousin | 0.10 | 0.30 | 0.00 | 1.00 | 1538 | -0.016*** | (0.004) |
| Married to other relative | 0.09 | 0.29 | 0.00 | 1.00 | 1538 | -0.003 | (0.005) |
| Married to non-relative | 0.42 | 0.49 | 0.00 | 1.00 | 1538 | -0.045*** | (0.008) |
| Age at marriage | 17.52 | 4.54 | 9.00 | 35.00 | 1360 | 0.096 | (0.072) |
| Married by 16 | 0.44 | 0.50 | 0.00 | 1.00 | 1538 | -0.014** | (0.006) |
| Engagement (yrs) | 0.56 | 1.29 | 0.00 | 15.00 | 794 | 0.069** | (0.030) |
| *Panel D: Demographics* | | | | | | | |
| Age at first birth | 18.52 | 4.32 | 10.00 | 35.00 | 1276 | 0.161** | (0.076) |
| No. of children | 5.23 | 3.49 | 0.00 | 16.00 | 1538 | -0.039 | (0.038) |
| Pregnancies | 5.65 | 3.74 | 0.00 | 19.00 | 1383 | -0.008 | (0.049) |
| Less than 1km from parents | 0.47 | 0.50 | 0.00 | 1.00 | 1298 | 0.015* | (0.009) |
| See parents daily | 0.50 | 0.50 | 0.00 | 1.00 | 707 | 0.025** | (0.012) |
| Less than 1km from in-laws | 0.37 | 0.48 | 0.00 | 1.00 | 1063 | 0.015* | (0.009) |
| See in-laws daily | 0.26 | 0.44 | 0.00 | 1.00 | 710 | 0.030** | (0.012) |
| *Panel E: Socioeconomic* | | | | | | | |

Continued on next page

**Table 1 – continued from previous page**

| | Summary Statistics | | | | | Relation with instrument (Marriageable cousins) | |
|---|---|---|---|---|---|---|---|
| Variable | Mean | SD | Min | Max | Obs. | Reg. Coef. | Reg. SE |
| Employed | 0.14 | 0.35 | 0.00 | 1.00 | 1527 | 0.000 | (0.007) |
| Husband's income (log) | 5.74 | 0.60 | 2.30 | 8.86 | 1027 | 0.029** | (0.012) |
| Husb. works w/ your father | 0.02 | 0.14 | 0.00 | 1.00 | 713 | 0.005 | (0.004) |
| Education (yrs) | 7.33 | 5.26 | 0.00 | 16.00 | 1501 | 0.059 | (0.063) |
| Completed grade 12 | 0.35 | 0.48 | 0.00 | 1.00 | 1501 | 0.013* | (0.008) |
| *Panel F: Gender Attitudes* | | | | | | | |
| Job priority to men | 2.09 | 0.57 | 0.00 | 3.00 | 1495 | 0.012 | (0.009) |
| 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 | 0.041** | (0.016) |
| 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 | 0.037** | (0.018) |
| Disagree strongly | 0.03 | - | - | - | 792 | - | - |
| Disagree | 0.34 | - | - | - | 792 | - | - |
| Agree | 0.49 | - | - | - | 792 | - | - |
| Agree strongly | 0.14 | - | - | - | 792 | - | - |
| Priority in educ to males | 1.07 | 0.82 | 0.00 | 3.00 | 791 | -0.001 | (0.021) |
| Disagree strongly | 0.25 | - | - | - | 791 | - | - |
| Disagree | 0.48 | - | - | - | 791 | - | - |
| Agree | 0.21 | - | - | - | 791 | - | - |
| Agree strongly | 0.05 | - | - | - | 791 | - | - |

*Notes:* This table presents summary statistics and the relationship with the instrumental variable for key variables and attitudes. The instrumental variable, "Male marriageable-age cousins," is the age-weighted count of respondent's male cousins (see Section 3.1 for details on weighting). The first five columns show summary statistics: mean, standard deviation, minimum, maximum, and number of observations (N). The last two columns present the coefficient and robust standard error from separate OLS regressions of each variable on the instrument, controlling for age (quadratic), village fixed effects, birth order, and the number of age-weighted female marriageable-age cousins. Attitude variables in Panel F are coded 0-3, with higher values indicating more gender-equal views; the table shows the mean and SD of these coded variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Panel C presents marriage-related statistics. Our sample includes all women aged 25-50, regardless of marital status, since the availability of male cousins could affect whether a woman ever marries. 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 44% married by age 16. The typical engagement period is 0.6 years (about 7 months).

Panel D covers demographic outcomes, indicating that women in our sample have had 5.2 children, have had 5.7 pregnancies, and are on average 18.5 years old at first birth. Geographic proximity and social interaction patterns reveal the importance of extended family networks: 47% of women 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 E 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 F presents gender attitudes, as described above.

The last two columns, labeled "Relation with instrument," show the association between each variable and our instrumental variable (the number of male marriageable-age cousins), based on a regression that controls for female marriageable-age cousins, age, age squared, number of siblings, birth order, and village fixed effects. We discuss the implications of these correlations for our empirical strategy in Section 3.3.

### 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:

$$\text{GenderAttitudes}_i = \alpha + \beta \cdot \text{OutMarriage}_i + X_i \cdot \gamma + \varepsilon_i, \tag{2}$$

where $\text{GenderAttitudes}_i$ is our gender attitudes index for woman $i$, with higher values indicating more gender-equal views. $\text{OutMarriage}_i$ is our main explanatory variable, indicating marriage to someone other than a first cousin, and $X_i$ is a vector of control variables including the woman's age and other relevant individual characteristics.

However, 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 our outcomes of interest. 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, $\text{MarriageableCousins}_i$, is the number of marriageable-age male cousins, constructed as described in Section 3.1.[5] The first-stage regression models the likelihood of out-marriage as a function of the instrument and controls:

$$\begin{aligned}\text{OutMarriage}_i = \alpha + \delta \cdot \text{MarriageableCousins}_i \\ + \lambda \cdot \text{FemaleMarriageableAgeCousins}_i + X_i \cdot \gamma + u_i\end{aligned} \tag{3}$$

where $\text{FemaleMarriageableAgeCousins}_i$ is the female equivalent of $\text{MarriageableCousins}_i$, using the same weights for the age distribution. We use this to isolate quasi-random variation in the instrument.[6] This ensures that our instrument captures the effect of having fewer marriageable cousins, rather than simply having fewer cousins in general. The vector of controls $X_i$ consists of age, age squared, birth order, and village fixed effects.

For $\text{MarriageableCousins}_i$ to be a valid instrument, it must be sufficiently correlated with the likelihood of marrying outside the family ($\text{OutMarriage}_i$). Figure 3 provides non-parametric evidence detailing the instrument's mechanism. This figure plots coefficients from regressions of $\text{OutMarriage}_i$ on the number of male cousins in various age-difference bins relative to the respondent. If the instrument captures marriage market constraints, we expect a negative relationship (more cousins decrease out-marriage) primarily for male cousins in the age range typical for husbands. Indeed, the pattern of coefficients in the figure is consistent with the marriage market interpretation.

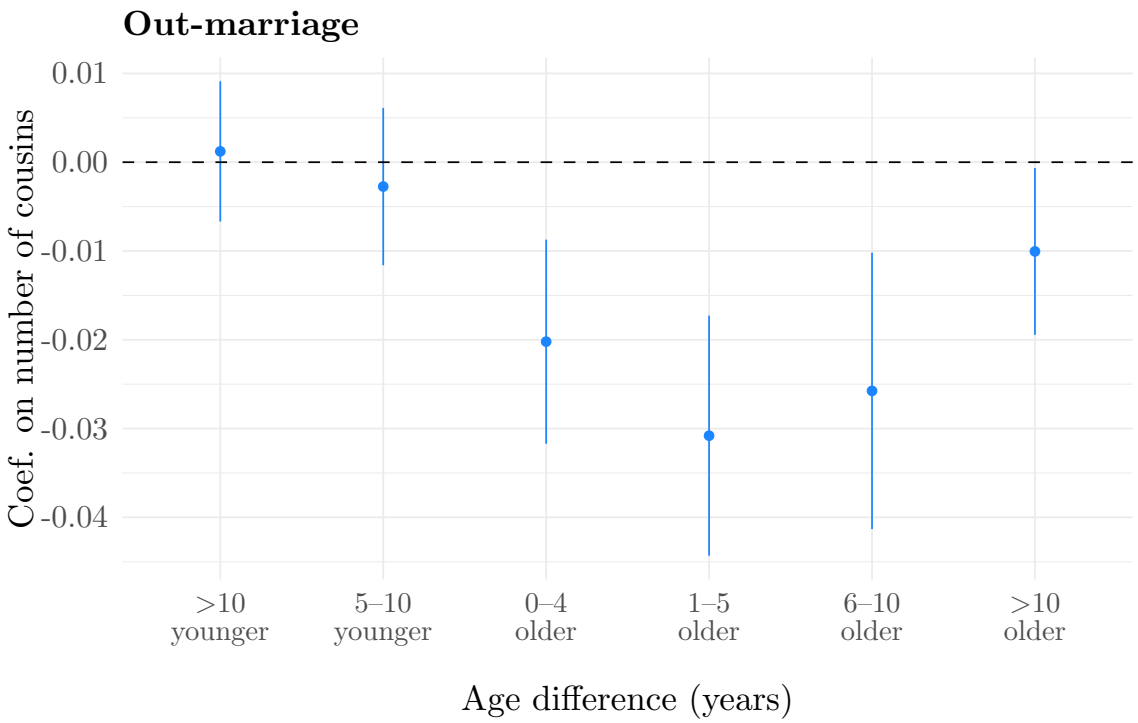
Figure 4 graphically presents the first-stage relationship using the age-weighted instrument. The figure displays binned scatter plots showing the probability of out-marriage against the number of marriageable male cousins. Panel (a) shows the strong negative raw correlation. Panel (b) demonstrates that this relationship remains strong and statistically significant after including our standard controls (female cousins, age quadratic, birth order, village FE), with each additional age-weighted marriageable male cousin reducing the probability of out-marriage by 5.6 percentage points.[7] The corresponding first-stage F-statistic is 61, well above conventional thresholds for weak instruments. Further, Appendix Table A.1 demonstrates that this strong first-stage relationship is

[5] 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.

[6] Unlike in China and much of South Asia, there seems to be limited sex selection in Oman and the Arab Gulf more generally (Chao et al., 2019). This is consistent with the similar number of male and female cousins in our data.

[7] Appendix Figure A.2 regresses different marital outcomes on the instrument to show the composition of marital outcomes induced by the instrument among compliers (those shifted away from first-cousin marriage by reduced cousin availability): 66% marry a non-relative, 21% marry a second cousin, 6% marry another relative, and 8% remain unmarried.

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 age (quadratic), village fixed effects, and birth order. Whiskers indicate 95% confidence intervals based on robust standard errors.

robust to alternative specifications of the instrument (e.g., simple counts, inverse hyperbolic sine transformation).

The crucial identifying assumption is the exclusion restriction: $\text{MarriageableCousins}_i$ must affect $\text{GenderAttitudes}_i$ only through its effect on $\text{OutMarriage}_i$, conditional on the included controls. While this assumption is fundamentally untestable, we provide several pieces of supporting evidence. First, the instrument appears uncorrelated with pre-determined characteristics that might independently influence attitudes or be correlated with unobserved factors driving both cousin availability and attitudes. Figure 5 shows no significant relationship between $\text{MarriageableCousins}_i$ and respondent height, age of menarche, or father's characteristics once we include our standard set of controls (see also Table 1, Panel A). This balance supports the argument that the instrument arises from quasi-random demographic variation rather than systematic differences across families.

Second, the instrument's effect on marriage patterns appears specific to the availability of potential husbands, rather than reflecting general family size or network density effects. The falsification test in Figure 4 (Panel c) shows that the number of *female* marriageable-age cousins (who represent similar demographic variation but are not potential spouses) has no significant relationship with out-marriage once the number of male cousins is controlled for. This reinforces the interpretation that $\text{MarriageableCousins}_i$ primarily captures marriage market constraints.

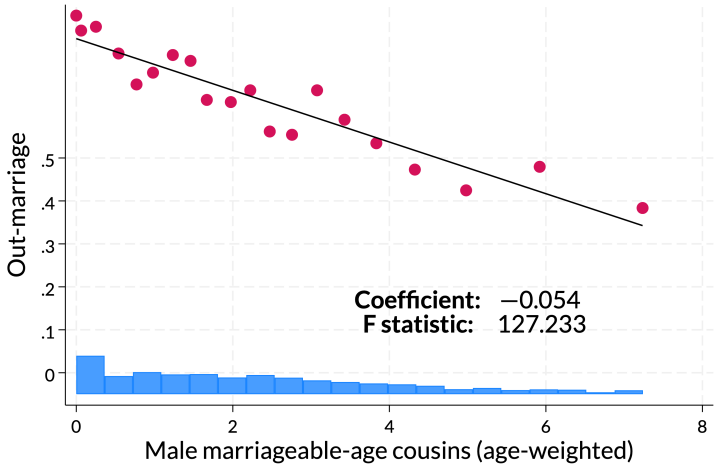
Third, further evidence suggests the instrument operates through specific marriage market opportunities rather than broader family network characteristics potentially correlated with attitudes. Appendix Table A.2 examines the effect of the availability of specific types of male cousins (e.g., father's brother's son, mother's sister's son) on the likelihood of marrying that exact type of cousin. It shows that an additional age-weighted male cousin of a specific type significantly increases the probability of marrying a cousin of that exact 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.

Despite this supporting evidence, potential threats to the exclusion restriction remain. For instance, conditional on marrying a first 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, the instrument could affect the 'quality' of cousin-husbands. 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 $\text{OutMarriage}_i$.

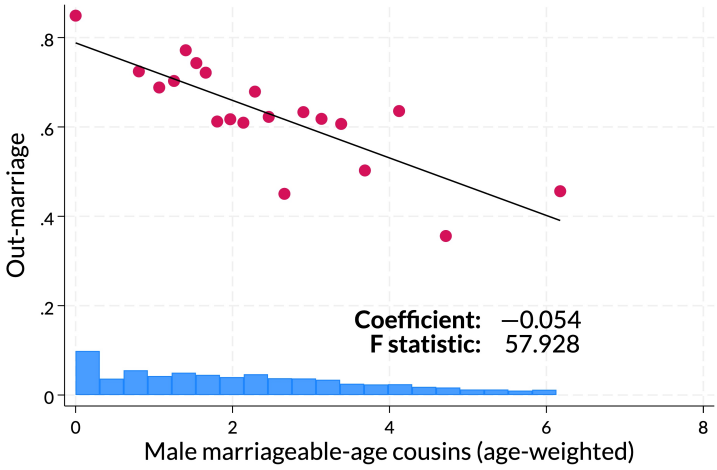
A distinct potential violation of the exclusion restriction is if reductions in cousin availability shifts women from marrying a first cousin to never marrying. Our estimating equation again requires that the instrument affect outcomes only through variation in $\text{OutMarriage}_i$. A third potential violation is if cousin availability affects women through some channel other than who

Figure 4: First stage relationship and falsification test

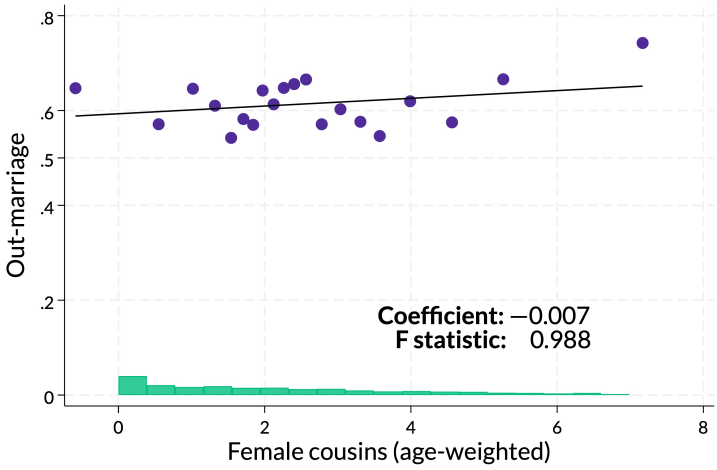
(a) First stage without controls




(b) First stage with controls

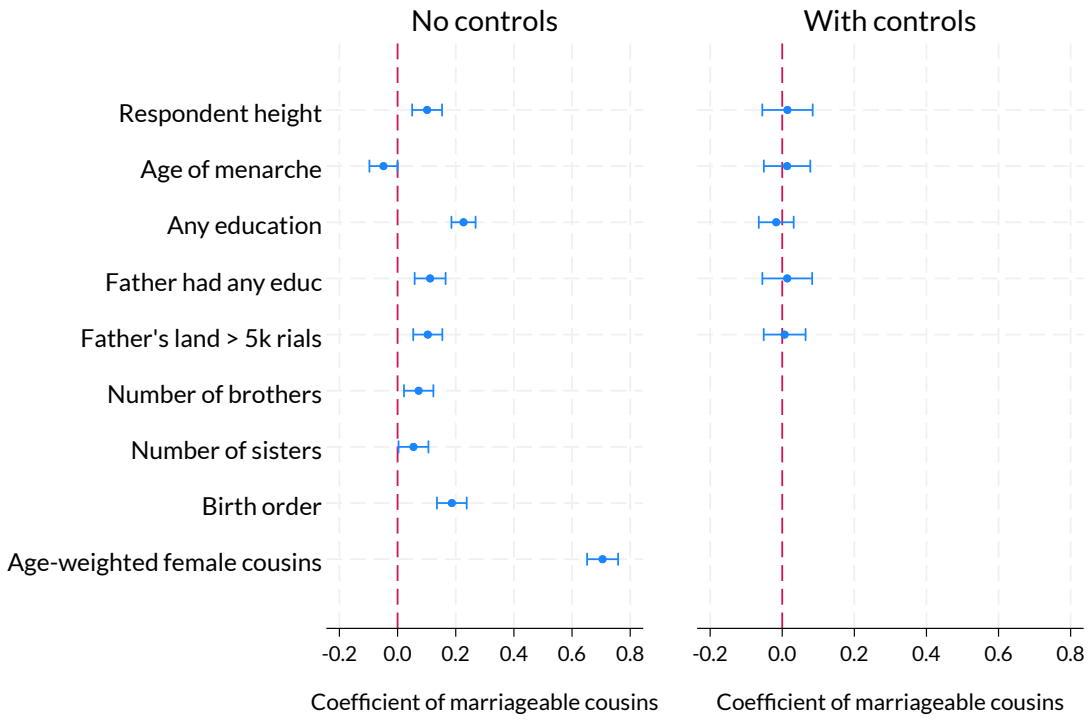



(c) Falsification: Female cousins




*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 without controls. Panel (b) shows the relationship for marriageable male cousins including controls for female marriageable-age cousins, age (quadratic), village fixed effects, and birth order. Panel (c) serves as a falsification test, showing the relationship with female marriageable-age

Figure 5: First stage balance




*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 include the number of age-weighted female marriageable-age cousins, respondent's age (quadratic), village fixed effects, and birth order.

they marry. For example, knowing a woman has no marriageable cousins may lead her parents to raise her differently, perhaps investing more in her education, or increasing their efforts to inculcate traditional values. More male cousins near her age could also affect her childhood playmates, and her relationships in adulthood.

We address each of these specific concerns in detail in Section 4.4, presenting additional empirical tests, sample restrictions, alternative treatment definitions, and heterogeneity analyses that provide further confidence in the validity of our approach.

Under the assumption that our IV strategy is valid, the estimates represent local average treatment effects (LATE). They capture the average causal effect of out-marriage on gender attitudes specifically for the subpopulation of "compliers"—those women whose marriage to a first cousin is influenced by the *availability* of marriageable cousins. That is, women who would marry a first cousin if one were available. Given the cultural context where cousin marriage is common and often preferred, we expect this group of compliers to be substantial.

# 4 Results

This section presents the empirical findings from our IV analysis, estimating the impacts of out-marriage (marrying someone other than a first cousin). Following the conceptual framework emphasizing the role of social insularity, we first examine how out-marriage affects women's social networks through changes in daily contact with and geographic proximity to extended kin. We then test how this affects gender attitudes, our primary outcome of interest. Finally we explore the effects of out-marriage on marriage timing, educational attainment, and socioeconomic status. In each case, we present estimates derived from the IV specification outlined in Section 3.3, using the number of age-weighted marriageable male cousins as an instrument for out-marriage.

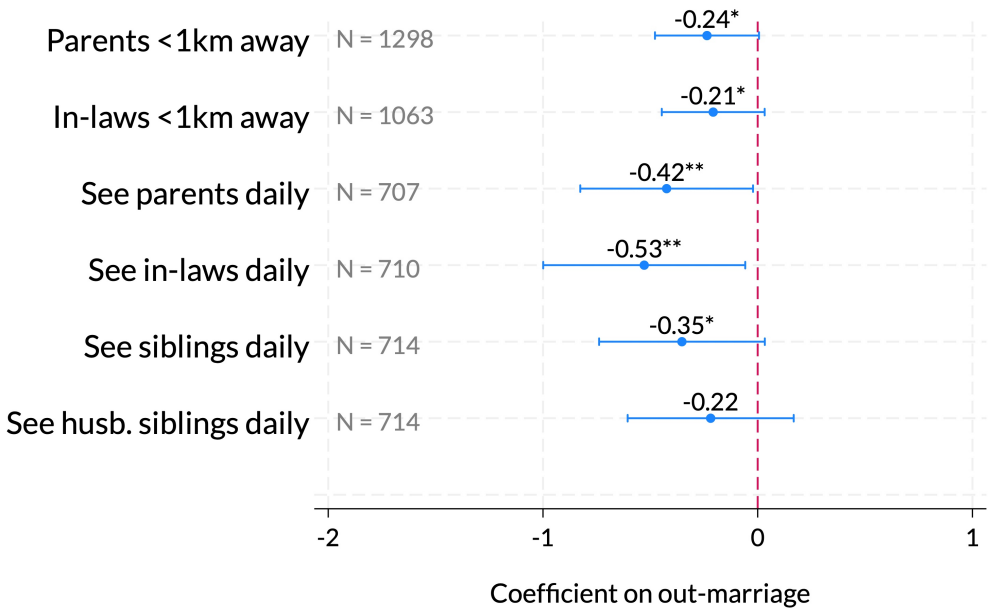
## 4.1 Effect of Out-Marriage on Family Contact and Proximity

Figure 6 documents how out-marriage transforms women's social environments through changes in both geographic proximity and daily interactions. Our estimates reveal that marrying outside the extended family significantly reduces women's embeddedness in traditional family networks.

Out-marriage leads to substantial geographic separation from extended family. It reduces the likelihood of living within 1 km of parents by 22 percentage points and reduces the likelihood of living within 1 km of in-laws by 20 percentage points. This physical distancing extends beyond immediate proximity: out-marriage increases the probability of living more than 50 kilometers from parents by 12 percentage points (Appendix Figure A.4).

Beyond geographic separation, out-marriage drastically reduces family interaction. Out-marriage

Figure 6: Impact 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 the number of age-weighted female marriageable-age cousins, respondent's age (quadratic), village fixed effects, and birth order. 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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

causes a 39 percentage point reduction in seeing parents daily, a 46 percentage point reduction in seeing in-laws daily, and a 33 percentage point reduction in daily sibling interaction, effects that are substantially larger than proximity changes alone might predict. When compared to women who marry first cousins—where approximately half maintain daily contact with parents (55%), in-laws (35%), and siblings (48%)—the magnitude of these shifts becomes apparent. Out-marriage cuts this intensive family contact by more than half, suggesting changes in family relationships beyond physical distance.

Together, these findings demonstrate that out-marriage significantly reduces women's social insularity by disrupting both physical proximity to and daily interaction with extended family members. This transformation from dense, overlapping kinship networks to more dispersed social arrangements creates conditions under which alternative perspectives and attitudes might more readily develop.

### 4.2 Effect of Out-Marriage on Gender Attitudes

We find that out-marriage significantly shifts women toward more gender-equal attitudes, as shown in Figure 7. Panel A displays the reduced form relationship between our instrument (marriageable male cousins) and the gender attitudes index via a binned scatter plot, demonstrating that women with fewer marriageable male cousins, and consequently a higher likelihood of out-marriage, hold more gender-equal attitudes. Panel B presents a falsification test using female cousins, confirming that our results are not a function of family size or other confounding factors related to cousins more generally.

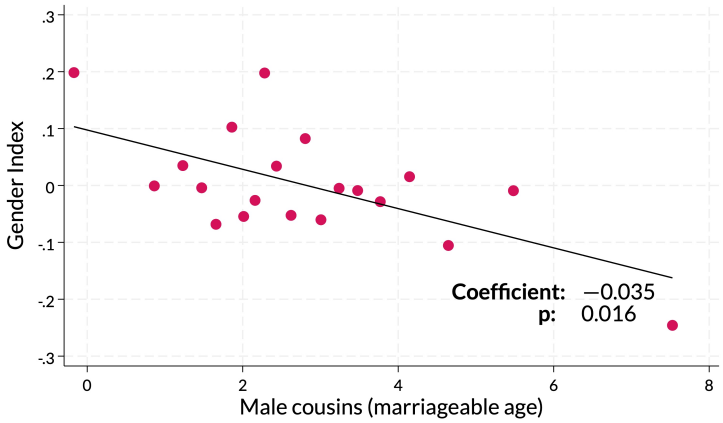
The IV regression estimate is that marrying out-marriage increases our index of egalitarian gender attitudes by 0.6 standard deviations (Panel C of Figure 7). This suggests that escaping traditional family networks through out-marriage leads women to develop substantially more egalitarian views about gender roles. This finding is consistent with the reduced social insularity documented above; less exposure to the dense, homogenous network of extended kin appears to facilitate the adoption of less traditional views.

Panel C of Figure 7 shows results for each component of the gender attitudes index. The most substantial effect of out-marriage is on perceptions of women's capabilities, increasing support by about 0.7 standard deviations for women as political leaders and similarly for women as businesspeople. While the effect on support for gender equality in job opportunities is positive (0.2 standard deviations), it is not statistically significant. Out-marriage has no detectable effect on views about educational equality, perhaps reflecting women's relatively high levels of schooling in this context, which often occurs in gender-segregated settings.

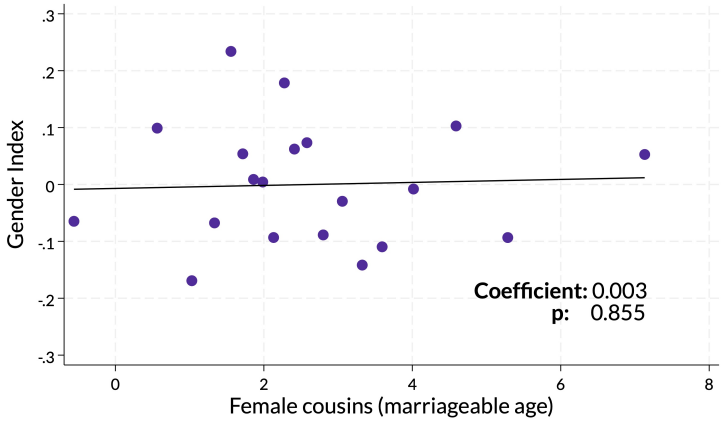
While reduced contact with extended family likely explains much of the attitude change, the

Figure 7: Out-marriage and gender attitudes

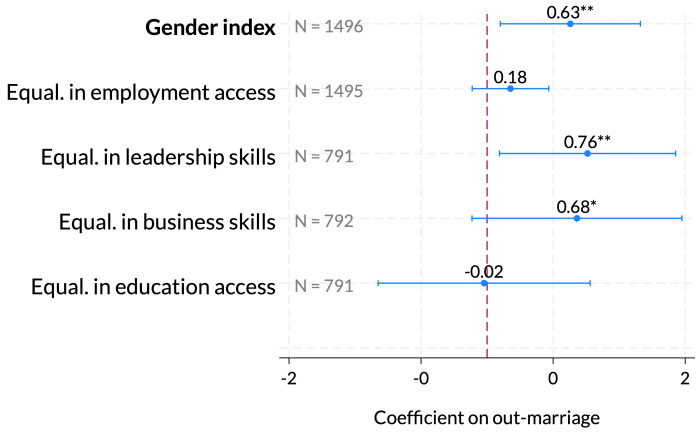
(a) Reduced form




(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 age-weighted female marriageable-age cousins, age (quadratic), village fixed effects, and birth order. Panel (b) presents a falsification test using the number of age-weighted female marriageable cousins as the main regressor (with controls). 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. Higher values indicate more gender-equal attitudes. All regressions use robust standard errors. Bars/shading in Panel (c) represent 95% confidence intervals. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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. These husbands may be more accepting of gender-equal attitudes, creating a second pathway through which out-marriage affects women's views. Our research design does not allow us to fully disentangle these mechanisms, but the substantial reduction in family contact documented in Section 4.1 suggests that changes in social networks play a significant role.

Overall, the instrumental variable analysis provides strong evidence that out-marriage increases gender-equal attitudes through multiple potential pathways. These findings are robust to various specification checks and alternative approaches, as detailed in Section 4.4.

### 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, 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) reveals that out-marriage leads to a 21 percentage point increase in the probability of being married by age 16. Figure 8 breaks this down by plotting, for ages 10 to 20, how out-marriage affects the probability of being married by that age. The figure also plots the baseline fraction of women married by each age. The effect is negligible for ages 10-13 but becomes substantial from age 14 onward, remaining large in magnitude through age 19 before tapering off. This pattern indicates that out-marriage increases the likelihood of marriage during adolescence.

Panel A of Table 2 also shows that out-marriage reduces the time between engagement and wedding by 1.2 years, almost exactly matching the decrease in age at marriage (-1.3 years). This suggests out-marriage does not change when couples initiate marital arrangements, but rather shortens the pre-marital period. This faster transition to marriage is likely due to the reduced trust outside kinship networks, as Section 2 discusses. Out-marriage also reduces age at first birth by 2.3 years. This earlier childbearing is notable 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).

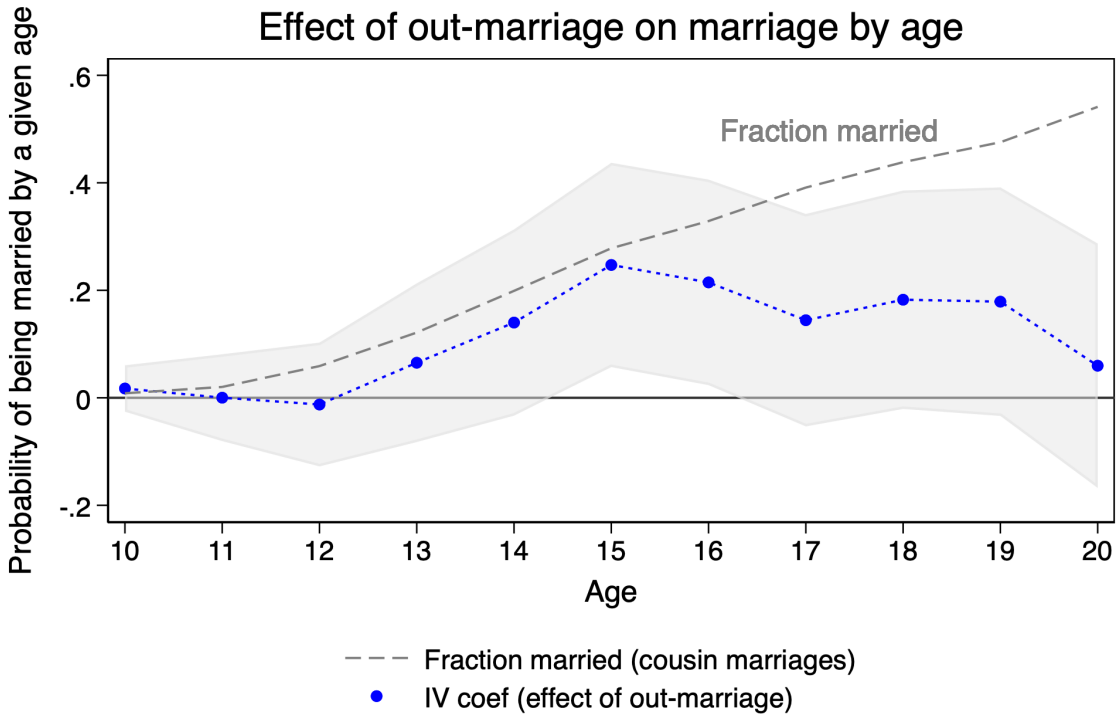
The earlier marriage and childbirth patterns induced by out-marriage have significant implications for women's human capital acquisition. Out-marriage causes a 20 percentage point reduction in the likelihood of completing grade 12 (Panel B of Table 2). While the estimated effect on total years of education is also negative (-0.9 years), it is not statistically significant. Despite these educational consequences, our estimates reveal no effect of out-marriage on women's employment. The point estimate is close to zero and precisely estimated. This null effect suggests that in our

Table 2: Effect of Out-Marriage on Marriage Timing and Socioeconomic Outcomes

| | Coefficient | SE | N |
|---|---|---|---|
| *Panel A: Marriage and Fertility* | | | |
| Married by 16 | 0.209** | (0.100) | 1,360 |
| Age at marriage | -1.322 | (1.004) | 1,360 |
| Length of engagement (years) | -1.230** | (0.620) | 794 |
| Age at first birth | -2.276** | (1.096) | 1,276 |
| *Panel B: Education and Employment* | | | |
| Completed grade 12 | -0.197* | (0.116) | 1,501 |
| Years of education | -0.919 | (0.984) | 1,501 |
| Woman employed | -0.007 | (0.104) | 1,527 |
| *Panel C: Husband Quality* | | | |
| Husband education (years) | -1.983* | (1.113) | 1,336 |
| Husband completed 12th grade | -0.186 | (0.122) | 1,336 |
| Husband's log income | -0.387** | (0.165) | 1,027 |
| Husband-wife age gap $< 10$ yrs | 0.152 | (0.096) | 1,355 |
| *Panel D: Marriage Quality* | | | |
| Argues with husband | -0.068 | (0.196) | 717 |
| Can make purchases | -0.015 | (0.148) | 668 |
| Satisfied with life | -0.031 | (0.211) | 789 |
| Divorced | -0.043 | (0.067) | 675 |
| Husband has co-wives | 0.176 | (0.125) | 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 the corresponding number of age-weighted female marriageable-age cousins, respondent's age, age squared, birth order, and village fixed effects. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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 the corresponding measure for age-weighted female marriageable-age cousins, respondent's age, age squared, birth order, and village fixed effects. Confidence intervals are based on robust standard errors.

setting, the institution of marriage primarily affects educational trajectories rather than labor force outcomes, with women's employment remaining consistently 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 socioeconomic status men. This pattern aligns with ethnographic evidence from Oman and neighboring regions, where cousin marriage is often associated with maintaining family status and is especially favored by wealthier families (Eickelman, 1984). The magnitude of these effects indicates that cousin marriage serves an important function in preserving access to higher-status spouses within extended family networks, perhaps by facilitating matches that consolidate family resources across generations.

Despite the substantial differences in marriage timing, education, and husband quality, we find no significant effects of out-marriage on measures of marriage satisfaction (Panel D of Table 2). The coefficients for arguments with husband, ability to make independent purchases, life satisfaction, divorce status, and husband having co-wives are all statistically insignificant and mostly small in magnitude. This suggests that while out-marriage alters many aspects of women's lives and socioeconomic outcomes, it does not substantially impact these dimensions of marital relationship quality.

Taken together, these results present a striking pattern: Out-marriage leads women to hold more gender-equal attitudes despite experiencing earlier marriage, less education, and having poorer, less educated husbands. This pattern supports the idea that the change in gender norms comes from the reduction in social insularity rather than 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 is robust to various specification checks and alternative variable definitions. Table A.3 presents our main results alongside several robustness checks and the OLS estimates for comparison. We now address potential threats to identification and explore explanations for discrepancies between OLS and IV estimates.

*Exclusion Restriction: Cousin Match Quality.* A potential concern with our instrumental variables 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 within cousin marriages, 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.3, minimizes the possibility that our instrument captures effects from choosing among multiple potential cousin-husbands, focusing instead on the binary decision of whether to marry outside the family. While this restriction reduces our sample size considerably and weakens the first stage F-statistic to 28.4, the coefficient remains similar to our baseline estimate at 0.76 standard deviations (significant at the 10% level). As further evidence, we note that the inverse hyperbolic sine (IHS) transformation of the instrument (Panel B of Table A.3) similarly places more weight on the first few cousins relative to later ones, and provides results consistent with our baseline estimate.

Second, we directly control for measures of husband quality in our main specification, including the husband's years of education and income. This approach tests whether our results might be a result of systematic differences in husband characteristics rather than by marriage type itself. If the instrument's effect on gender attitudes operates primarily through husband quality (e.g., if women who marry non-cousins have more progressive husbands who influence their views), then controlling for these characteristics should substantially reduce or eliminate our estimated effect of out-marriage. While these are "bad controls" in the sense that they are potential outcomes affected by our treatment, 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.4, the effect of out-marriage on gender attitudes remains substantial and significant at 0.5 standard deviations (significant at the 10% level) even with these controls. While we observe some attenuation compared to our baseline estimate, the persistence of a significant effect suggests that our results are not primarily driven by husband quality differences.

The results across these approaches supports our interpretation that the estimated effects are a result of having to marry outside traditional family networks rather than by the specifics of which cousin one might marry. This aligns with our broader argument that escaping closed family networks, rather than specific match characteristics, leads to the development of more gender-equal attitudes. However, we acknowledge that we cannot completely 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 type of marriage partner (our treatment, out-marriage) but also through whether they marry 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.

Whether this potential bias affects our estimates depends on how being never-married affects women in our sample relative to the other two options: marrying a cousin and marrying a non-cousin. Our baseline approach effectively assumes it is 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 never marrying leads to lower insularity as 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. This now means never-married women are 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 `tab:appendix_robustness_marriedtocousin`). 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 the instrument's potential effect related to 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. We consider two potential mechanisms. First, the availability of male cousins could directly shape women's gender attitudes through childhood socialization (e.g., via mixed-gender play, or more older cousins policing your behavior). Second, 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 operates primarily through these pre-marital channels, we would expect its impact to be largely determined before marriage and thus remain relatively constant regardless of how long a woman has been married. 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.

Ideally, we would test this by examining how the effect varies with the duration of marriage.

However, marriage itself and age at marriage are potentially endogenous to the availability of marriageable cousins. We therefore examine 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:

$$\begin{aligned} \text{GenderAttitudes}_i = \beta_0 + \beta_1 \cdot \text{MarriageableCousins}_i + \beta_2 \cdot \text{Age}_i \\ + \beta_3 \cdot (\text{MarriageableCousins}_i \times \text{Age}_i) \\ + \lambda \cdot \text{FemaleMarriageableAgeCousins}_i + X_i\gamma + u_i \end{aligned} \tag{4}$$

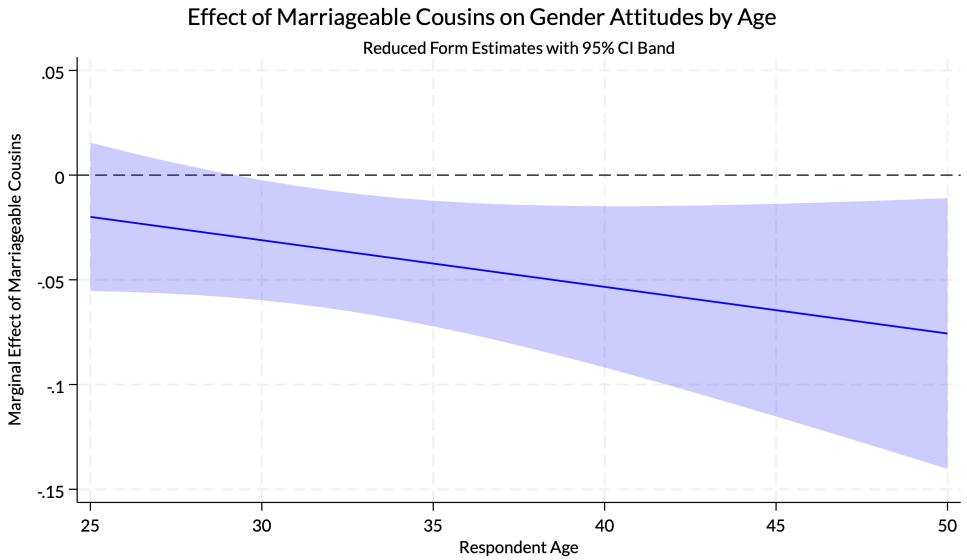
with all variables as defined in section 3.3. The coefficient $\beta_3$ captures the linear change in the instrument's effect per year of age. The marginal effect of the instrument at a given age is $\beta_1 + \beta_3 \cdot \text{Age}_i$.

Figure 9 plots this estimated marginal effect of marriageable cousins on the gender attitudes index across the sample age range (25-50). While the interaction approach reduces statistical power, the pattern of results strongly suggests that effects accumulate over time. The magnitude of the negative effect (fewer marriageable cousins predicting more gender-equal attitudes) 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 substantial increase in effect size with age is consistent with a cumulative post-marriage mechanism rather than one determined entirely pre-maritally. If pre-existing factors were dominant, we would expect a relatively flat profile across ages. This pattern provides evidence that the instrument's effect operates primarily through post-marriage channels related to family interaction and social exposure, substantially alleviating concerns about the exclusion restriction.

*OLS versus IV Estimates.* A notable feature of our results is the substantial difference between OLS and IV estimates. As shown in Panel E of Table A.3, 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. This pattern suggests substantial selection into who marries within versus outside the family.

We indeed 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. By leveraging quasi-random variation in marriageable cousin availability, our instrumental variable approach isolates the causal effect from these confounding background characteristics, revealing the true liberalizing effect of escaping traditional family networks. This selection pattern

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 ($\beta_1 + \beta_3 \cdot \text{Age}$), and the shaded area indicates the 95% confidence interval band based on robust standard errors. Controls include age-weighted female marriageable-age cousins, age squared, village fixed effects, and birth order indicators.

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.* The identification strategy in this paper relies on variation in the availability of marriageable-age male cousins, instrumenting for out-marriage. 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.3 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 (IHS) 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 remarkably stable and statistically significant. The point estimates range narrowly from 0.59 to 0.68 standard deviations (all significant at the 5% level). While the first-stage F-statistics vary somewhat (52 for baseline, 76 for IHS, 58 for simple count), all remain well above conventional thresholds, indicating a strong first stage in each case.

The consistency of the estimated IV coefficient across these alternative ways of measuring

marriage market constraints provides confidence that our findings are not sensitive to the specific functional form chosen for the instrument. Whether using the baseline age-weighted measure, the non-linear IHS transformation, or a simple count, the substantive conclusion remains the same: marrying outside traditional family networks leads to substantially more gender-equal attitudes.

# 5 Conclusion

Traditional family structures, particularly cousin marriage, seem to play a crucial role in maintaining conservative gender attitudes in Oman. Using quasi-random variation in the availability of marriageable male cousins, we find that out-marriage leads women to develop substantially more gender-equal attitudes, scoring 0.6 standard deviations higher on our index. This effect operates through changes in social network structure rather than through conventional channels of female empowerment such as education or economic opportunity.

These findings yield several insights into cultural persistence and gender attitudes. First, the results underscore social insularity, fostered by dense family networks, as a mechanism maintaining traditional values even amid modernization. Second, they demonstrate how marriage patterns structure women's social worlds, either reinforcing traditional norms through kin marriage or creating openings for new perspectives through out-marriage. Third, the study reveals that gender-equal attitudes can emerge independently of, and sometimes despite, conventional indicators of female empowerment like education or later marriage, highlighting the powerful role of social exposure.

These findings suggest a complex relationship between marriage patterns, individual outcomes, and cultural change. From a normative standpoint, it is not clear that out-marriage is advantageous for individual women in this setting, despite its liberalizing effect on attitudes. Notably, it leads to what are typically considered worse outcomes: earlier marriage, less education, and lower household income. This pattern highlights a potential tension between aggregate progress on female equality (to the extent that women's attitudes matter for social change) and individual well-being. While breaking out of traditional family networks may contribute to cultural change at the societal level, it may simultaneously expose individual women to early marriage and reduced educational opportunities.

Looking forward, demographic transitions in Oman and similar societies may naturally disrupt traditional marriage patterns. As fertility rates decline, a trend already underway in much of the Middle East, the next generation will have fewer cousins available as potential spouses. Our findings suggest this demographic shift could have profound cultural implications, accelerating the development of more gender-equal attitudes as more women necessarily marry outside their extended family networks.

While these demographic processes may gradually alter social structures over generations, our findings also inform contemporary policy. Our results suggest that conventional development efforts focused on education and economic opportunities may have limited impact when women remain embedded in closed family networks. The persistence of traditional attitudes among educated women who marry cousins aligns with our conceptual framework, in which social insularity may restrict both information access (limiting exposure to alternative viewpoints) and increase the social costs of norm deviation through potential family sanctions. Though modern technologies like smartphones may partially address information constraints, they likely have more limited impact on conformity pressures embedded in daily face-to-face interactions. Interventions that expand women's social circles through community organizations may therefore contribute to cultural change by simultaneously addressing both channels. Direct exposure to alternative gender norms through culturally appropriate programs (Dhar et al., 2022) might further complement these structural approaches.

While dense family networks provide valuable services, fostering trust, cooperation, and information sharing among members, they can also function as a powerful mechanism for cultural persistence in traditional societies, potentially leading to cultural stasis regarding gender norms. By determining women's daily social interactions, these networks can either reinforce traditional values or create openings for cultural change. Understanding this mechanism helps explain the uneven pattern of cultural modernization across societies and suggests barriers for interventions aimed at promoting gender equality.

## References


Abbasi-Shavazi, M., 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.

Acemoglu, D., A. Ozdaglar, and A. ParandehGheibi (2010, November). Spread of (mis)information in social networks. *Games and Economic Behavior 70*(2), 194–227.

Alesina, A., P. Giuliano, and N. 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, M. 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, C., A. Menendez, and T. Mutevedzi (2015, January). 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. Publisher: The University of Chicago Press.

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

Bahrami-Rad, D., J. Beauchamp, J. Henrich, and J. Schulz (2022, August). Kin-Based Institutions and Economic Development.

Bisin, A. and T. Verdier (2001, April). The Economics of Cultural Transmission and the Dynamics of Preferences. *Journal of Economic Theory 97*(2), 298–319.

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

Bursztyn, L., A. L. González, and D. Yanagizawa-Drott (2020, October). Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia. *American Economic Review 110*(10), 2997–3029.

Carvalho, J.-P. (2013, February). Veiling. *The Quarterly Journal of Economics 128*(1), 337–370.

Chao, F., P. Gerland, A. R. Cook, and L. Alkema (2019, May). 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.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology 94*, S95–S120. Publisher: The University of Chicago Press.

Dhar, D., T. Jain, and S. Jayachandran (2022, March). Reshaping Adolescents' Gender Attitudes: Evidence from a School-Based Experiment in India. *American Economic Review 112*(3), 899–927.

Do, Q.-T., S. Iyer, and S. Joshi (2013). The economics of consanguineous marriages. *Review of Economics and Statistics 95*(3), 904–918.

Duflo, E. (2012, December). Women Empowerment and Economic Development. *Journal of Economic Literature 50*(4), 1051–1079.

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

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

Fernández, R. (2011). Does culture matter? *Handbook of Social Economics 1*, 481–510.

Fernández, R. (2013, February). Cultural Change as Learning: The Evolution of Female Labor Force Participation over a Century. *American Economic Review 103*(1), 472–500.

Ghosh, A., S. I. M. Hwang, and M. Squires (2023, 05). Economic Consequences of Kinship: Evidence From U.S. Bans on Cousin Marriage. *The Quarterly Journal of Economics 138*(4), 2559–2606.

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

Goldin, C. (2006, April). The Quiet Revolution That Transformed Women's Employment, Education, and Family. *American Economic Review 96*(2), 1–21.

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

Holy, L. (1989). *Kinship, Honour, and Solidarity: Cousin Marriage in the Middle East*. Manchester, UK: Manchester University Press.

Hwang, S. I. M., D. Jakob, and M. Squires (2025). Health Effects of Cousin Marriage: Evidence from US Genealogical Records. *American Economic Review: Insights*.

Iqbal, S., R. Zakar, F. Fischer, and M. Z. Zakar (2022, April). 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.

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

Jackson, M. O. (2011). *Social and economic networks*. Princeton, N.J. Woodstock: Princeton University Press.

Jayachandran, S. (2015, August). The Roots of Gender Inequality in Developing Countries. *Annual Review of Economics 7*(1), 63–88.

Johow, J., K. P. Willführ, and E. 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.

Khuri, F. I. (1970). Parallel cousin marriage reconsidered: A middle eastern practice that nullifies the effects of marriage on the intensity of family relationships. *Man 5*(4), 597–618.

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

Mete, C., L. Bossavie, J. Giles, and H. Alderman (2020). Is consanguinity an impediment to child development? *Population Studies 74*(2), 139–159. Publisher: Routledge.

Mobarak, A. M., T. Chaudhry, J. Brown, T. Zelenska, M. N. Khan, S. Chaudry, R. A. Wajid, A. H. Bittles, and S. Li (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, A. M., R. Kuhn, and C. Peters (2013). Consanguinity and other marriage market effects of a wealth shock in bangladesh. *Demography 50*(5), 1845–1871.

Munshi, K. and S. Singh (2024, September). Social Status, Economic Development and Female Labor Force (Non) Participation.

Tillion, G. (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, U. (1991, May). *Behind the Veil in Arabia: Women in Oman.* Chicago, IL: University of Chicago Press.

# A Appendix: Supplementary Tables and Figures

Table A.1: First-stage regression results

| *Number of age-weighted cousins:* | *(baseline)* | 0-6 years older | IHS | 0-2, trimmed |
|---|---|---|---|---|
| | Outcome: Married to a First Cousin | | | |
| Male cousins | 0.051*** | 0.036*** | 0.164*** | 0.103*** |
| | (0.007) | (0.006) | (0.019) | (0.019) |
| Female cousins | -0.008 | -0.001 | -0.017 | -0.002 |
| | (0.007) | (0.005) | (0.019) | (0.018) |
| Observations | 1538 | 1538 | 1538 | 726 |
| F-stat on instrument | 52.22 | 39.85 | 75.77 | 30.38 |
| Controls | Yes | Yes | Yes | Yes |

*Notes:* This table presents first-stage regression results for the likelihood of marrying a cousin. The dependent variable is an indicator for cousin marriage. Key independent variables include: Male Cousins (0-6 years older), the count of male cousins 0-6 years older; Male Cousins (Age-Weighted), the count weighted by age difference; 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. All regressions control for age (quadratic) and village fixed effects, and birth order. 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.2: 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 | 0.061*** | 0.058*** | 0.049*** | 0.095*** |
| | (0.011) | (0.012) | (0.011) | (0.015) |
| Number of other cousins | 0.005 | -0.001 | -0.001 | -0.001 |
| | (0.005) | (0.004) | (0.004) | (0.006) |
| Observations | 1538 | 1538 | 1538 | 1538 |
| F-stat on instrument | 29.28 | 22.08 | 18.62 | 41.62 |

*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, and birth order. 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.3: Results: Gender attitudes index

| | 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 | 0.630** | 0.177 | 0.761** | 0.680* | -0.023 |
| | (0.271) | (0.148) | (0.340) | (0.406) | (0.410) |
| Observations | 1496 | 1495 | 791 | 792 | 791 |
| F-stat on instrument | 57.4 | 57.4 | 20.8 | 20.9 | 20.8 |
| Controls | Yes | Yes | Yes | Yes | Yes |
| *Panel B: Male Cousins (IHS)* | | | | | |
| Out-marriage | 0.603** | 0.210 | 0.488 | 0.565 | 0.231 |
| | (0.268) | (0.148) | (0.336) | (0.394) | (0.404) |
| Observations | 1496 | 1495 | 791 | 792 | 791 |
| F-stat on instrument | 64.6 | 64.6 | 21.5 | 21.5 | 21.5 |
| 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 | 0.709 | 0.283 | -0.290 | 0.070 | 0.570 |
| | (0.500) | (0.288) | (0.722) | (0.763) | (0.820) |
| Observations | 694 | 693 | 345 | 346 | 345 |
| F-stat on instrument | 17.4 | 17.5 | 4.5 | 4.3 | 4.5 |
| Controls | Yes | Yes | Yes | Yes | Yes |
| *Panel E: OLS* | | | | | |
| Out-marriage | -0.034 | -0.045 | 0.021 | -0.067 | 0.106* |
| | (0.053) | (0.029) | (0.053) | (0.055) | (0.063) |
| Observations | 1496 | 1495 | 791 | 792 | 791 |
| 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 birth order, age (quadratic), village fixed effects, and a similarly constructed measure for female cousins. 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.4: Intensive margin robustness

| *Outcome:* | Patriarchal attitudes | |
|---|---|---|
| Married to cousin | 0.677** | 0.456* |
| | (0.295) | (0.248) |
| Wife age - Husb. age | | -0.005 |
| | | (0.004) |
| Husband education (yrs) | | -0.014* |
| | | (0.007) |
| Observations | 1496 | 1284 |
| 1st stage F | 51.87 | 66.33 |

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

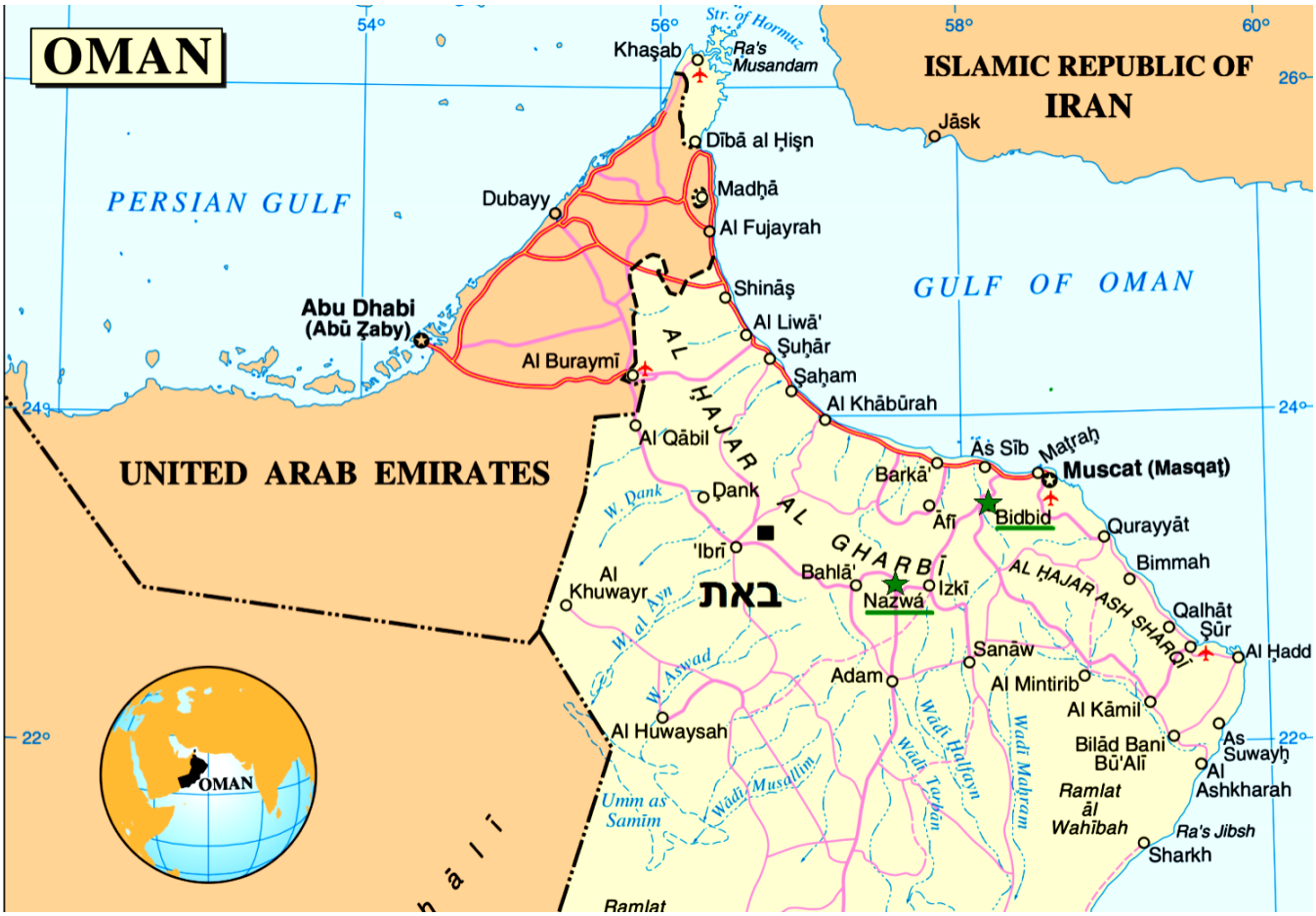


Figure A.2: Breakdown of counterfactual marriage outcomes

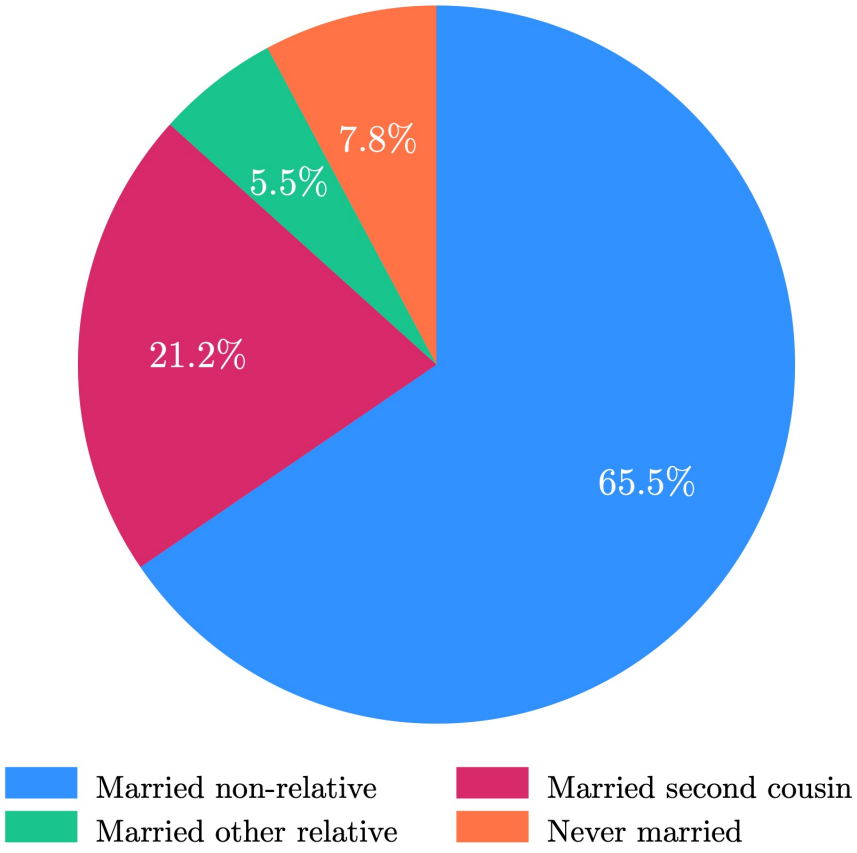
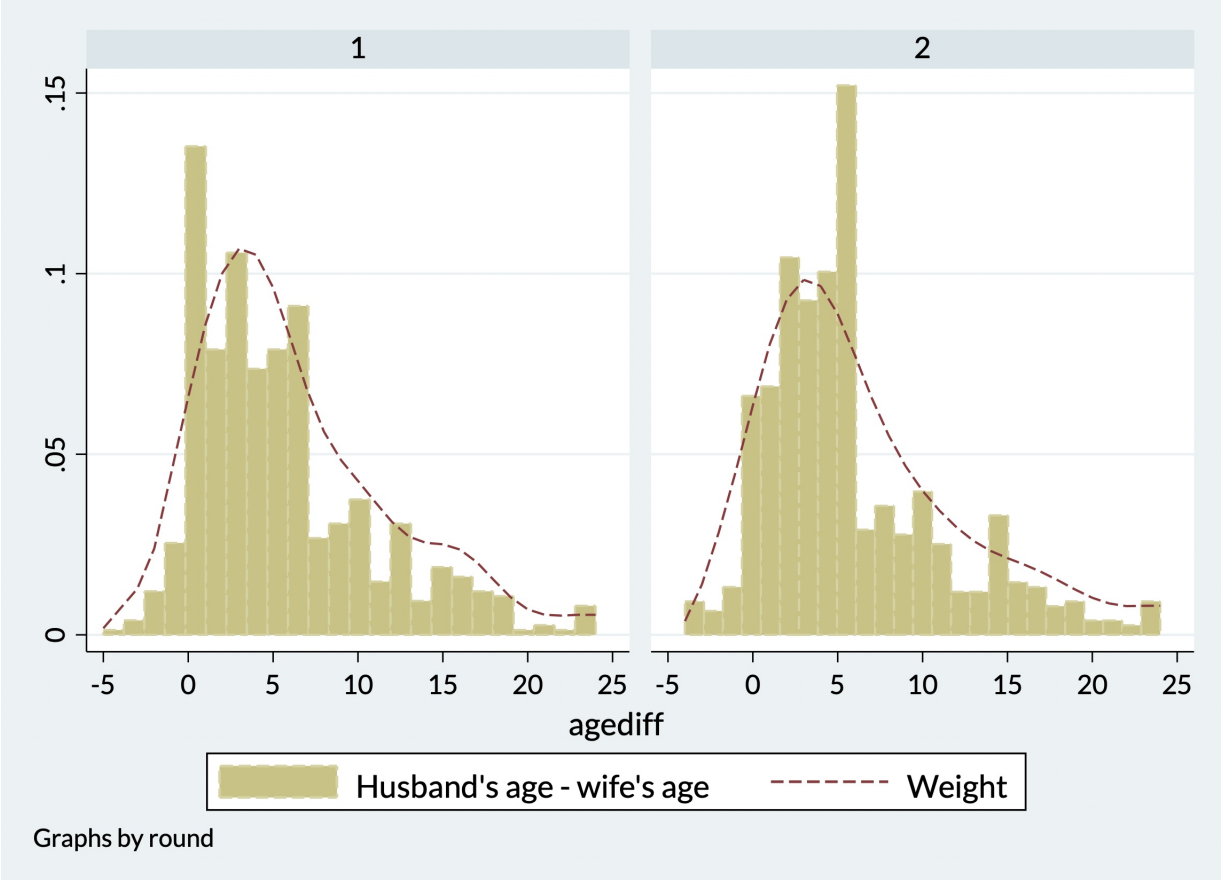
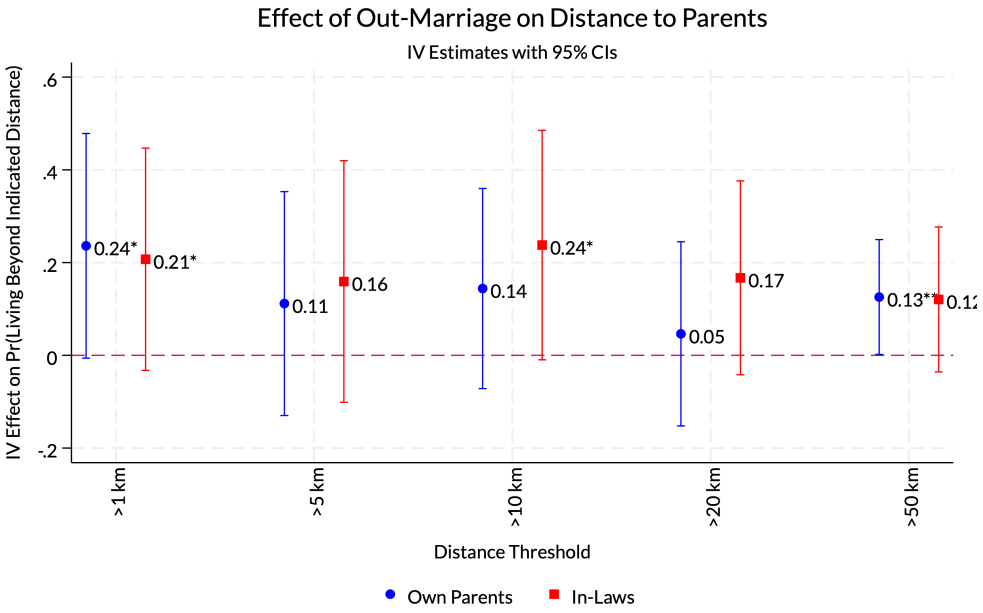


Figure A.3: Smoothed density of husband-wife age differences used for weighting cousins




*Notes:*

Figure A.4: IV Effect of Out-Marriage on Living Beyond Distance Thresholds




*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 the corresponding measure for female cousins, age, age squared, birth order indicators, and village fixed effects. 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

(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 respondent's age (quadratic), village fixed effects, and birth order. 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 documents the survey questions and data collection methods used to construct the key variables analyzed 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 $\leq 16$.
- *Arranged Marriage:* "If the marriage was arranged, how old were you at the time it was arranged?"
- *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 $\geq 12$.
- *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 $\geq 12$.
- *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).

## Contextual Variables (Mentioned in Text)

### Trust Questions

- *Family Trust:* "Generally speaking, would you say that most of your family members can be trusted, or that you need to be very careful in dealing with them?" (Response options: Can be trusted, Need to be careful).
- *General Trust:* "Generally speaking, would you say that most people other than your family members can be trusted, or that you need to be very careful in dealing with them?" (Response options: Can be trusted, Need to be careful).