

Bride Abduction & modeling inter-generational incentives in Central Asia

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Outline

- 20 years ago...
- Background: bride kidnapping and patrilocality
- LiK empirical work on patrilocality
- Patrilocality and violence against young women: evidence from Tajikistan
- LiK empirical work on bride kidnapping
- An unrelated (?) issue: rising wealth inequality

References

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20 years ago

...

- I started work in Kyrgyzstan on June 11, 1998, as Team Leader for the Asian Development Bank's Pension Reform Technical Assistance project.
- It immediately became clear that this would not be easy:



20 years ago...

- But the most difficult part was lack of information.
- That was not because of lack of effort by the Kyrgyz Government or international LSMS and DHS surveys. Rather, conditions were unstable, and hence it was very difficult to draw inferences from the data.
- And, given the difficulty of conditions, we focused on emergency topics -

20 years ago...

- Collapsing registered marriage
- Rapidly declining birth rates
- Collapsing employment and tax revenues
- A sharp decline in life expectancy
- Vastly under-reported infant mortality
- Large government deficits
- Sergey Paltsev and I estimated that for every som collected in social payments from rural areas and small cities, 11 som were paid out.
- We also made 50 year pension system forecasts but confidence intervals were violated after 3-5 years.

20 years ago...

- I mention this because it is important to maintain perspective and understanding of how far Kyrgyzstan has come.
- We are now in a generation of economic and social analysis that is highly informed, thanks to the National Statistics Committee <http://www.stat.kg/en/> and to many social surveys, of which the Life in Kyrgyzstan survey is probably most important.
- This information will be valuable for identifying and understanding major social problems, and designing social policy responses.

Background: bride abduction in Kyrgyzstan

- Anthropologists have extensively studied the practice of bride abduction and find that it disappeared in most countries with the development of modern laws and social norms (Stross 1974; McLaren 2001)
- Historically, Kyrgyz people are traditional nomads with a herding culture. The traditional role of a woman was a housekeeper (Abazov 2004). Nomadic culture resulted in significant female autonomy and empowerment relative to neighboring sedentary populations.
- Under Soviet rule, laws were established in the 1920s that banned forced marriages. Women were generally well-integrated into the labor force and public life. Kyrgyzstan had Central Asia's and indeed the former USSR's first woman president in 2010.

Background: *Ala kachuu* statistics

- No official data on the number of kidnappings that occur each year: up to a third of all ethnic Kyrgyz women may have married non-consensually kidnapping (Kleinbach 2003). Several sources indicate that approximately 15,000 girls are kidnapped and forced into marriage annually.
- According to a single village survey conducted in 2004, 80 percent of Kyrgyz marriages were the result of *ala kachuu*, and 57 percent of these marriages were non-consensual (Kleinbach *et al.* 2005). They suggest there is an increase over the last 40-50 years.
- According to a 2011-2012 nationally representative survey collected on men and women in Kyrgyzstan, one-third of marriages were the result of kidnappings among Kyrgyz; half of these marriages were of forced nature (Agadjanian and Nedoluzhko 2013). They suggest there is a decline since the collapse of the USSR.
- These last numbers are broadly consistent with LiK 2011 and 2016 survey data. The way in which the question is phrased, the nature of related questions, and the interview process all may affect responses.

Background: Patrilocality

- In many if not all Central Asian societies, a high proportion of newlyweds will live with the husband's parents, especially in the case where the groom is also the youngest son. This is known as patrilocality.
- In three-generation households, the younger couple – and especially the younger wife – is subservient to the older generation.
- This loss of autonomy is documented and the consequences are discussed below for both Kyrgyzstan and Tajikistan.

Patrilocal residence and female labor supply and household effort: Landemann, Seitz, & Steiner 2017

- Consider the effect of co-residence on female labor supply in Kyrgyzstan.
- They account for the endogeneity of co-residence by exploiting the tradition that youngest sons usually live with their parents. In both OLS and IV estimations, the effect of co-residence on female labor supply is negative and insignificant.
- This is in contrast to previous studies, which found positive effects in less patrilocal settings.
- They go beyond earlier work by investigating effect channels. In Kyrgyzstan, co-residing women invest more time in elder care than women who do not co-reside and they do not receive parental support in child care or housework

Patrilocal residence and female labor supply and household effort: Landemann, Seitz, & Steiner 2017

Table 3: Estimation Results: Labour Force Participation

	(1)	(2)	(3)	(4)	(5)
A. OLS Estimation Results					
(Co-residence exogenous)					
Co-residence	-.168*** (0.03)	-.057 (0.036)	-.023 (0.037)	-.049 (0.037)	-.050 (0.037)
B. Two-stage Least-Squares Estimation Results					
(Co-residence endogenous)					
First Stage					
Youngest son	0.316*** (0.031)	0.204*** (0.032)	0.21*** (0.031)	0.216*** (0.03)	0.214*** (0.03)
F-statistic	104.104	41.637	46.865	51.254	50.192
Second Stage					
Co-residence	-.196* (0.101)	-.084 (0.185)	-.106 (0.175)	-.097 (0.169)	-.102 (0.171)
Observations	1,048	1,048	1,048	1,048	1,048
Conditioning Variables		✓	✓	✓	✓
Wife Characteristics			✓	✓	✓
Residence Characteristics				✓	✓
Husband Characteristics					✓

Patrilocal residence and female labor supply and household effort: Landemann, Seitz, & Steiner 2017

Table 4: Estimation Results: Working Hours

	(1)	(2)	(3)	(4)	(5)
A. Tobit Estimation Results					
(Co-residence exogenous)					
Co-residence	-14.241*** (2.672)	-4.388 (3.131)	-1.264 (3.179)	-2.700 (3.244)	-2.820 (3.254)
B. IV Tobit Estimation Results					
(Co-residence endogenous)					
First Stage^a					
Youngest son	0.316*** (0.031)	0.204*** (0.032)	0.21*** (0.031)	0.216*** (0.03)	0.214*** (0.03)
F-statistic	104.104	41.637	46.865	51.254	50.192
Second Stage					
Co-residence	-19.731** (8.874)	-12.161 (16.120)	-15.299 (15.519)	-14.115 (15.041)	-14.417 (15.212)
Observations	1,048	1,048	1,048	1,048	1,048
Conditioning Variables		✓	✓	✓	✓
Wife Characteristics			✓	✓	✓
Residence Characteristics				✓	✓
Husband Characteristics					✓

Patrilocal residence and female labor supply and household effort: Landemann, Seitz, & Steiner 2017

Table 5: Channel Analysis I: Time Use Woman

	Elder Care (in hours) (1)	Housekeeping (in hours) (2)	Child Care (in hours) (3)
A. OLS Estimation Results (Co-residence exogenous)			
Co-residence	0.191*** (0.036)	0.410** (0.204)	0.105 (0.145)
B. Two-stage Least-Squares Estimation Results (Co-residence endogenous)			
Second Stage			
Co-residence	0.959*** (0.339)	-1.449 (1.906)	1.114 (0.681)
Observations	1,048	1,048	1,048
Conditioning Variables	✓	✓	✓
Wife Characteristics	✓	✓	✓
Residence Characteristics	✓	✓	✓
Husband Characteristics	✓	✓	✓

Patrilocal residence and violence against young women: Turaeva & Becker 2017

- Use Tajikistan 2012 DHS data to explore the correlation between domestic violence and young married women's living arrangements.
- Controlling on observables variables both indicate a positive and statistically significant treatment effect.
- Women who live with the in-law family are at least 24.6% more likely to experience emotional abuse committed by their husbands/partners.
- A similar effect does not emerge between physical violence, either severe or less severe, and a presence of parents-in-law in the household.

Patrilocal residence and violence against young women: Turaeva & Becker 2017

- The underlying story is the “Queen Bee” phenomenon.
- Younger women are subservient to and oppressed by older women with married sons.
- The system is self-perpetuating, since those oppressed eventually (if they produce sons who marry) will end up on the top of the family social hierarchy and oppress a younger generation.
- In practice, men in the older generation are less engaged in running the household. Matriarch often acts through her son.

Patrilocal residence and violence against young women: Turaeva & Becker 2017

- Use principal components to define three aggregate types of violence against women: emotional, physical, and severe physical.
- Test for importance of patrilocality (living with mother in law) on violence.
- Controls for household characteristics, region, demographics
- Alternately use OLS and IV regressions
- Following Grogan (2007), the instrument for patrilocality is a measure of housing tightness, as determined by Soviet era employment in (now closed) heavy industry by raion.

Patrilocal residence and violence against young women: Turaeva & Becker 2017

Table 1: General Case, All respondents, , Predicted DIL variable (reported are odds ratios)

	(1) Emotional Violence	(2) Physical Violence	(3) Severe Physical Violence
Relationship to HH			
Daughter-in-law_hat	7.959* (8.997)	52.63*** (48.18)	0.155 (0.288)

Patrilocal residence and violence against young women: Turaeva & Becker 2017

DIL = 0

Variable	Obs	Mean	Std. Dev.
Emotional Violence	1,233	0.0786699	0.2693321
Physical Violence	1,233	0.1719384	0.37748
Severe Physical Violence	1,232	0.0251623	0.1566816
<i>Wealth Index</i>			
Poor	1,235	0.5538462	0.4972935
Wealthy	1,235	0.2477733	0.4318943
<i>Person in Charge of Husband's Income</i>			
Husband	1,227	0.2893236	0.4536333
Respondent & Husband	1,227	0.5843521	0.4930343
Nobody (husband has no earnings)	1,227	0.0138549	0.1169364
Mother-in-law	1,227	0.00815	0.0899452
Other	1,227	0.00815	0.0899452
Husband's Family	0	-	-
Father-in-law	1,227	0.002445	0.0494065
Number of Women in HH	1,235	1.398381	0.6972955
Current Age of Child	1,161	6.226529	5.247941
Husband's Years of Schooling	1,233	11.28305	2.573942
Husband is Controlling	1,207	0.0687655	0.2531599
Ever Terminated Pregnancy	1,235	0.3157895	0.4650178
Age at Marriage	1,235	19.80243	3.264141
Ever Experienced Sibling Violence	1,227	0.0122249	0.1099333
Currently Employed	1,231	0.28026	0.4493087
Owns land	1,228	0.6343648	0.481804
Owns a house	1,230	0.8479675	0.3591985
Justifies Beating	1,187	0.5425442	0.4983967

Patrilocal residence and violence against young women: Turaeva & Becker 2017

DIL = 1

Variable	Obs	Mean	Std. Dev.
Emotional Violence	1,118	0.1028623	0.3039148
Physical Violence	1,118	0.1556351	0.3626713
Severe Physical Violence	1,118	0.0250447	0.1563309
<i>Wealth Index</i>			
Poor	1,123	0.411398	0.4923063
Wealthy	1,123	0.3294746	0.4702319
richer	1,489	0.2390866	0.426669
richest	1,489	0.2028207	0.4022351
<i>Person in Charge of Husband's Income</i>			
Husband	1,117	0.2479857	0.4320369
Respondent & Husband	1,117	0.4037601	0.4908702
Nobody (husband has no earnings)	1,117	0.0268577	0.1617397
Mother-in-law	1,117	0.1181737	0.3229583
Other	1,117	0.0716204	0.2579739
Husband's Family	1,117	0.0241719	0.1536514
Father-in-law	1,117	0.0581916	0.2342102
Number of Women in HH	1,123	1.866429	0.9645981
Current Age of Child	929	2.575888	3.37985
Husband's Years of Schooling	1,123	11.25378	2.665999
Husband is Controlling	1,093	0.0933211	0.2910151
Ever Terminated Pregnancy	1,123	0.1816563	0.3857328
Age at Marriage	1,123	20.09528	2.973862
Ever Experienced Sibling Violence	1,110	0.0189189	0.1363001
Currently Employed	1,121	0.2221231	0.415859
Owns land	1,119	0.3690795	0.4827713
Owns a house	1,121	0.5816236	0.4935128
Justifies Beating	1,072	0.5721504	0.4948404

Becker- Mirkasimov-Steiner *Demography*

2017 Conceptual Framework

- There is uncertainty and scarce information about potential mates in the marriage market.
- A prospective groom either (1) finds the bride and proposes to her, (2) has the bride “arranged,” or (3) “seizes” the bride.
- **The fundamental logic behind the economic analysis of marriage formation is the following: Both partners compare each other's characteristics and evaluate their potential gains from forming a union.** If the gains for both partners from marriage are greater than their expected gains from continued search for a potential mate, then they marry (Becker 1973, 1974, 1991).
- In love and arranged marriages, both partners can usually evaluate their potential gains from marriage and give their consent to forming a new family.

Becker- Mirkasimov-Steiner *Demography*

2017 Conceptual Framework

- The search for a suitable mate in a kidnaped marriage is undertaken by the groom, but there is consent only by the male. The groom may collect information about the woman he targets and evaluates his potential gain from marriage to her.
- Once kidnapped, the potential bride lacks choice over her potential groom. She cannot “signal” her interest to the groom with the highest expected gains from marriage. Relative to love and arranged marriages, her expected gains from forming this union are lower in kidnapped marriages. Under normal circumstances, marriage represents a voluntary union between two households, but in this instance, marriage is forced and involuntary.

Becker- Mirkasimov-Steiner *Demography*

2017 Conceptual Framework

- It is socially harmful for the young women who are involved in this physical affair. Once a woman is kidnapped by force, it imposes high psychological, emotional and physical cost for her (*i.e.*; fear, abuse, threats of divorce/beatings).
- She cannot choose the timing of fertility and the number of children. The psychological stress and anxiety during gestation can result in poor pregnancy outcomes. Low birth weight imposes substantial costs on society (Almond *et al.*, 2005; Currie *et al.*, 1999). It is thus an important public health concern.
- Mansour *et al.* (2012) discuss four factors associated with low birth weight: psychological stress, physical exertion, prenatal care and malnutrition. They find positive association between fatalities 9-6 months before birth caused by Israeli security forces and low birth weight. They argue that psychological stress is a plausible mechanism for this relationship.

Becker- Mirkasimov-Steiner *Demography*

2017 Conceptual Framework

- Becker, Mirkasimov, and Steiner (2017) find that birth-weights of children of women who were kidnapped are 100-200 grams lower (3-6% lower) than those of comparable mothers who were not kidnapped.
- They also find that kidnapped women are roughly twice as likely to divorce as non-kidnapped women. This continues to hold when one controls for obvious correlates.
- Steiner and Becker (2017) also find that personality characteristics of couples who marry via *ala kachuu* are more dissimilar than those who marry via love or arranged marriages.
- This leads to the question: why does society tolerate a practice that has fairly visible social costs?

Hypotheses

- Forced marriages have an adverse impact on child's birth weight.
- Women's exposure to psychosocial stress, anxiety and strenuous maternal work in kidnapped marriages increases the risk of a bad pregnancy outcome. Our hypothesis suggests that these risk factors result in sizeable birth weight loss.
- Secondly, we expect women who are kidnapped to have worse marriages and to be less positively assorted with their husbands in terms of psychological characteristics.
- The Becker-Steiner-Zhao companion paper explores a formal model in which kidnapping may be a rational event.

The search process:
why might prospective brides expose themselves to kidnapping risk?

- Kidnapping is strategically bad for women and their families: women have worse choices of husband, families get lower bride price, women's social status is at least temporarily reduced.
- Empirical evidence below: women don't like being kidnapped: increased risk of divorce, less compatible husbands, stress leads to lower birthweight of children

The search process:
why might prospective brides expose themselves to kidnapping risk?

- So, the risk must have positive potential payoff.
- Pool of love and arranged marriage husbands must be fairly poor:
 - young women expose themselves to kidnapping risk in the hopes of getting a better draw in subsequent periods;
 - Marginal cost of being kidnapped is reduced as average male quality declines

The search process:
why does society tolerate kidnapping?

- Quality of match declines, but it is not clear that losses in individual utility sum to social utility losses unless there is gender balance in characteristics.
- On the other hand, reduced infant health outcomes and increased divorce are social costs.
- However, sparsely populated societies that value fertility may tolerate kidnapping as an incentive system to both brides and grooms that enforces early marriage (and hence high fertility)

The search process:
why does society tolerate kidnapping?

- Without kidnapping, young men may delay effective search and have unreasonably high standards.
- The same is true for young women.
- If marriage age men and women are all identical, the problem degenerates: everyone gets married young (and the mechanism is irrelevant).
- If they are not identical, and do not like parents' attempts to arrange marriage, the threat of kidnapping prevents young Kyrgyz from socially excessive search for their soul-mates.

While the stereotype of kidnapping is that a bunch of drunk young men sweep up an unsuspecting young woman, it is not the only story:

Ismailbekova, Aksana. "Migration and patrilineal descent: the role of women in Kyrgyzstan." *Central Asian Survey* 33, no. 3 (2014): 375-389.

- A BEDTIME STORY...Anthropological study finds scheming mother-in-law:

The case of bride kidnapping in the village of Bulak is now described. It is important to note that, despite the name, 'kidnapping' does not always happen against the will of the girl. In the practice '*ala kachuu*', which translates roughly as 'grab and run', a girl is taken by a man on an involuntary (non-consensual) or voluntary (consensual) basis, depending on the individual case, in order to enter into marriage. My informants told me that this often happens because the man then pays a lower bride price. Consensual kidnappings occur if a young couple has been dating for many years and decide to get married despite their parents' refusal to agree to this course of action. However, grooms' mothers can also initiate and support the bride kidnapping practice if their sons do not get married on time. This is best exemplified by my informant, Nurjan, in Bulak village.

Nurjan, 58 years old with three children, found a potential bride for her eldest son by asking neighbours and other distant relatives. She took this action because Kanybek, her son, was not planning to get married in the near future and was completely ignoring the requests of his mother. Kanybek, almost 29 years old, had been working in Russia for five years and been constantly ordered by his relatives to get married as soon as he could find a suitable bride, but for him it was very hard to date a girl in the village because he considered many of them to be his sisters. He did not have time to go to the neighbouring village or to the city to search for a marriageable girl, so working in Russia was one way of avoiding the constant social pressure to get married. (It should also be noted that he was not interested in the Kyrgyz girls in Russia either.) Men by the age of 28 are expected to be married and already have at least two or three children, but this was not the case of Kanybek. Nurjan would constantly tell him that she was tired at her age of being a young wife (*kelin*) by cooking for her children, cleaning the house and washing their clothes; instead, her wish was to take care of her grandchildren and spend enjoyable times with her girlfriends and neighbours by drinking tea or chatting. Moreover, she desperately needed someone to help her with the household tasks so that she could return to her position as a history teacher at the local secondary school.

While the stereotype of kidnapping is that a bunch of drunk young men sweep up an unsuspecting young woman, it is not the only story:

One day, Nurjan decided to visit her sister, Gulsun, in the city of Tokmok to discuss her concerns about Kanybek. While they were talking about various alternatives and potential brides around, one of them remembered that their mother's younger brother, who lived in the village of Emgekchil, had three daughters. Nurjan recalled that she had seen them as small girls only once before, when she visited the village for a funeral 10 years previously. Nonetheless, she realized that one of these daughters should be at a marriageable age by now, since almost 10 years had passed since the funeral. One of these daughters would be an ideal bride for her son, because Nurjan knew the parents and their educational backgrounds. Moreover, Nurjan thought that by joining their children in marriage she would 'renew the bones' between two distant relatives and strengthen relationships with the relatives of their deceased mother and her brother. Nurjan and Gulsun went to the village of their mother's younger brother just to visit and greet them. Once they were in the village, they found out that one of the elder daughters of the family had already gotten married, but that their second daughter, Mirgul, 17 years old, was studying at the medical school in the city of Tokmok. Nurjan did not tell the father of the girl her intention; rather, she expressed her happiness that finally the relatives had gotten together and they should do it more regularly.

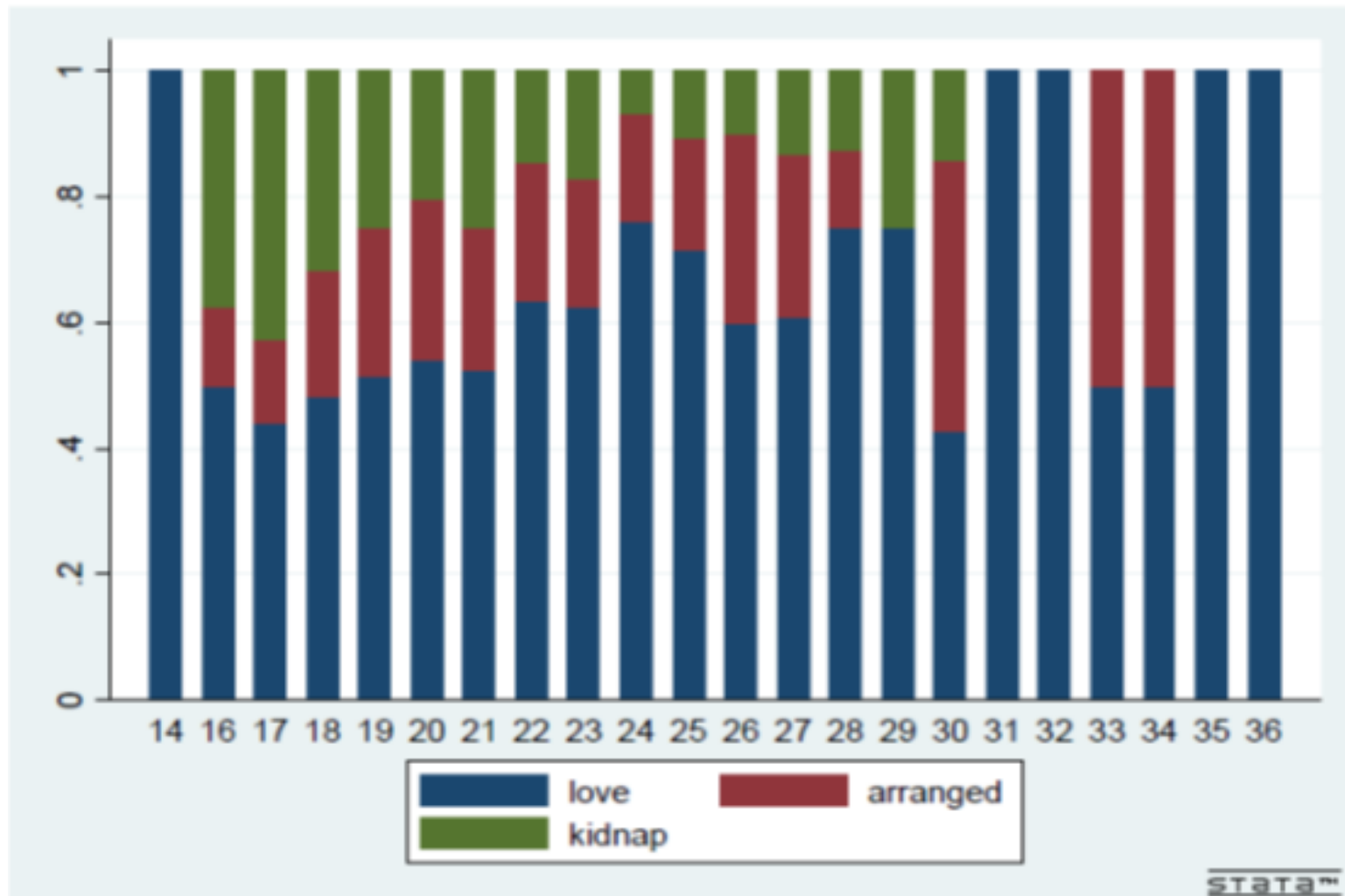
Mirgul welcomed Nurjan and her sister Gulsun splendidly and showed great hospitality to her distant relatives. The day before going home, both Nurjan and Gulsun suggested that Mirgul visit their own village and spend the night there, and then the next morning go to the city from their

...and they lived happily ever after. THE END.

village directly to her school, which was 10 kilometres closer than the village where Mirgul was living. Mirgul immediately agreed to be a guest in Nurjan's house. When Nurjan, Gulsun and Mirgul all came home together, Mirgul did not even suspect that in a few minutes she would be asked to stay at this house forever; rather, she was enjoying tea in her relatives' house. Once the girl was in the house, Nurjan told Kanybek that she had brought this girl to the village with the specific intention of making her his bride and future wife. Kanybek was shocked and totally disagreed with this option, as well as with the decision of his mother, but the mother insisted that he should get married soon and this was the only girl she wanted to see as her daughter-in-law, otherwise she would not give her blessings in future. Kanybek finally had to agree with his mother because he had run out of any other options. He hoped that 'if Mother says that she likes the girl, perhaps I will like her eventually'. When everything had been settled with Kanybek, the mother told Mirgul directly that she had been kidnapped and would be expected to stay in the house and be Kanybek's wife. Mirgul attempted to leave, but Nurjan did not allow her to go home. Moreover, Nurjan invited many village women to help her with the young bride. Mirgul tearfully protested but the other women in the village physically restrained her and persuaded her to accept her fate by staying with the groom's family, saying that the family was well respected in the village. They also described Kanybek as a positive and kind person. A delegation (*achuu bazar*) was then sent to Mirgul's family to inform them of the news that their daughter had been kidnapped. After several hours of resistance and the constant persuasion of the women, Mirgul finally decided to accept the 'proposal' on the basis that the groom was not a bad person and the family was well respected in the village. Moreover, Kanybek's family members were not complete strangers because of their distant familial relationship. When the family of the girl arrived in the village, Mirgul had already accepted that she would be married to Kanybek by symbolically taking the white scarf. Mirgul told me that for a few months it was very hard to adapt to the new house and family, but after a year she was very happy with her husband and mother-in-law. **Many female relatives in the village even took a dislike to Kanybek because he was now too close to his wife by being very attentive, constantly buying various kinds of gifts and helping her.**

In this way, Kanybek's family brought a new member into the household and the bride was incorporated into Kanybek's lineage. However, Nurjan wanted to ensure that her bride was treated well by her husband once she was married, so that she did not go to her natal family with any complaints. After living together for almost three months, Kanybek went to Russia for half a year and returned when his wife gave birth to their first son.

Age distribution of brides: love marriages are different



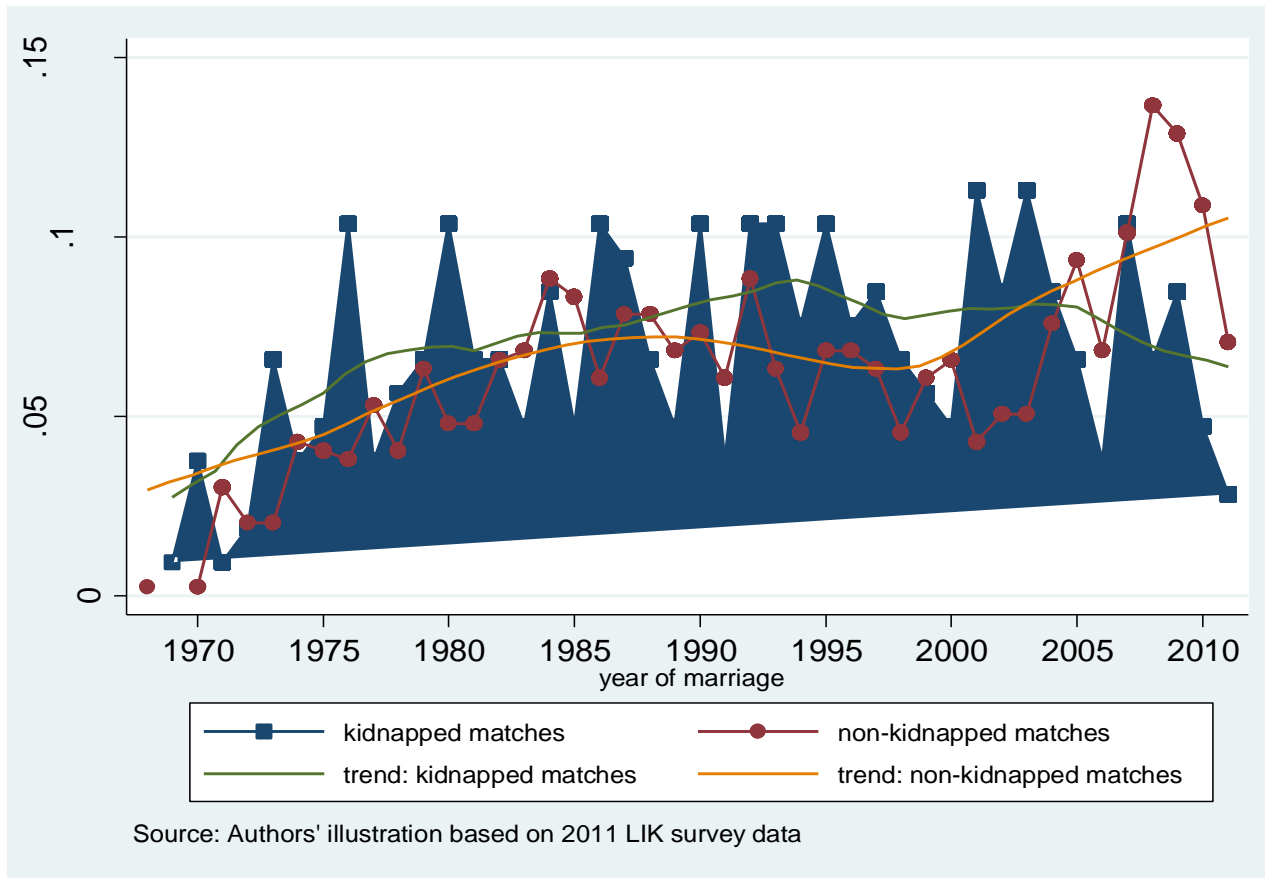
Data

- We use data from Kyrgyzstan. “Life in Kyrgyzstan” survey (LIK) collected annually (2010-2012) by the German Institute for Economic Research (DIW Berlin) in collaboration with partners in Berlin and Bishkek (project funded by Volkswagen Foundation).
- LIK is a multi-purpose socio-economic panel; data are representative at the rural/urban, North/South, and national levels (Brück et al., 2014).
- In 2010, 3,000 households and 8,160 adult individuals interviewed. In 2011, 2,863 households and 8,066 adult individuals re-interviewed in 120 communities.
- We use the 2011 (Wave 2) data; it includes information on children. Children’s birth weight was recorded based on their mother’s recall.
- Currently, we do not explicitly distinguish consensual vs. non-consensual kidnapped marriages. Non-kidnapped marriages include love and arranged marriages.

Descriptive Statistics:

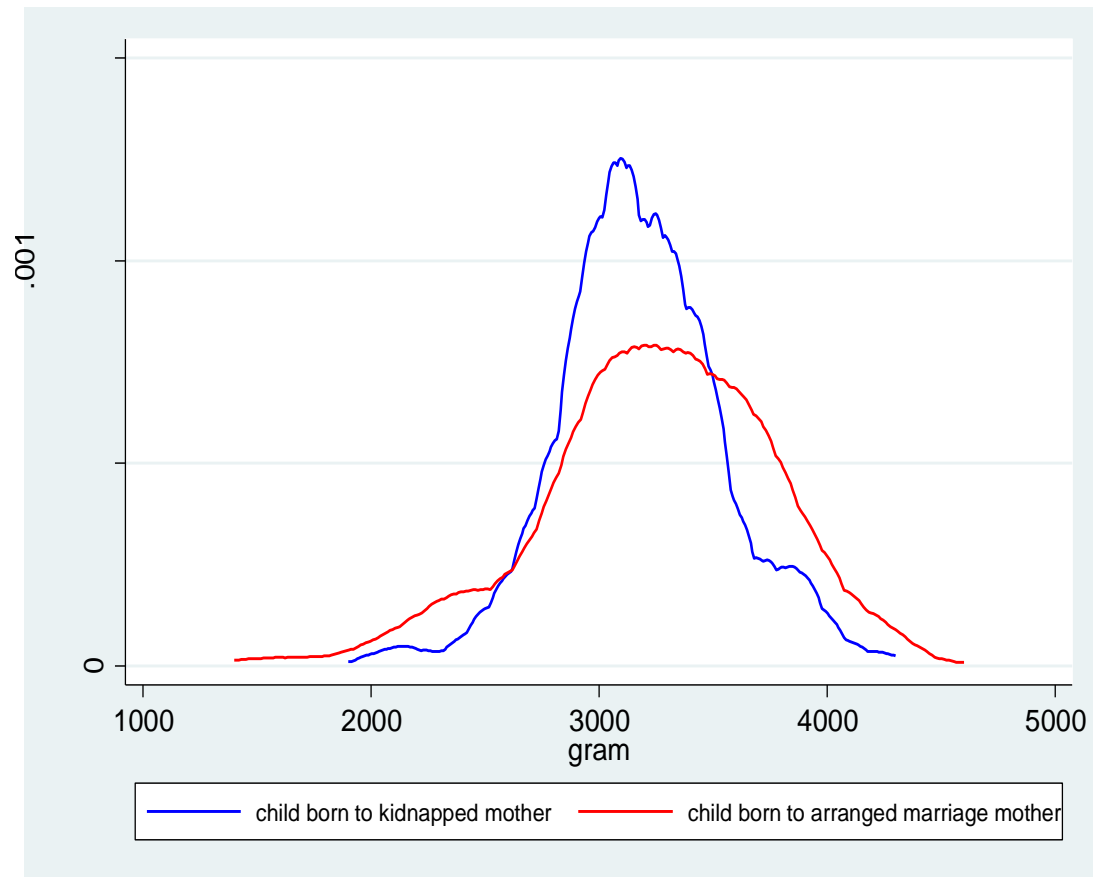
- We restrict our sample to rural Kyrgyz women between the ages of 18 and 59.
- 308 women (22%) reported that they got married through the process of kidnapping. Out of that, 80% are currently married, 11% divorced and 9% widowed.
- 1,077 women were not kidnapped. Out of that, 90% are currently married, 5% divorced and another 5% widowed.
- The mean age gap at first marriage is higher among kidnapped matches.
- Kidnapped women obtain on average less years of education.
- Kidnapped women are more likely to live in mountain and sparsely populated areas than non-kidnapped women.
- Kidnapped mothers have on average more children.
- Children of kidnapped women have on average lower birth weight (n=3942).
- On a scale between 0 (“least”) and 10 (“most”) satisfied with life, kidnapped women’s own assessment of satisfaction is on average lower.
- The incidence of kidnapping fell after 1994, while the incidence of non-kidnapped matches is on the rise.

Bride abduction through the years



...and consequences for the next generation

Figure 2: Birth weight distribution



Source: Authors' illustration based on 2011 LIK data.

Empirical Methodology (1)

- We estimate the effect of bride kidnapping on pregnancy outcomes using two econometric methods: OLS and 2SLS. The birth weight of child i born to household j is a function of whether the marriage was a kidnapped marriage (K), control variables (X) and birthdate (T).

$$\text{Birth Weight}_{ijk} = \alpha + \beta_1 K_{jk} + \beta_2 X_{ijk} + \beta_3 M_{jk} + \tau_k + \beta_6 T_i + \varepsilon_{ijk} \quad (6)$$

$$\text{Kidnap}_j = \mu + \gamma_1 Z_s + \gamma_2 V_j + \epsilon_j \quad (2)$$

- Birth weight is measured in grams. K is a dummy variable indicating whether child's mother had a kidnapped marriage or not. The control variables (X) include child, mother, household, and community characteristics.
- T is child's birth month and birth year fixed effects. We cluster standard errors at the mother level.
- Kidnapping is not a random event. We address potential endogeneity of kidnapping with an instrumental variable (IV).

Empirical Methodology (2)

- Our instrument for kidnapping (Z) is the **rural abduction propensity for older women in district s** (in Russian: *pañon*). Rural population density is equal to the total rural population over the square root of land area in each district. During the Soviet Kyrgyzstan, three natural experiments exogenously shifted the population within Kyrgyzstan and determined the density of the rural population within each district (Abazov 2004).
- The **logic behind our choice of this instrument**: In a sparse rural population, prospective brides are sparsely distributed, and the costs of locating a mate are higher for men and women. In such instances, males can lower their search costs if they kidnap (predatory behavior) their spouse.
- Difficulty of finding a bride through conventional means will be reflected in risk faced by older women. However, the nature of kidnapping was likely different – and far more consensual – in the Soviet era.

Table A3: Propensity score estimation: probit estimates for kidnapping

	Dependent variable: kidnapping
Wife's age at marriage	-0.0847* (0.0456)
Husband's age at marriage	-0.0644 (0.0422)
Basic education	-0.101 (0.804)
Secondary education	-0.445 (0.436)
Technical education	-0.290 (0.577)
Kyrgyz and Russian	0.176 (0.239)
Number of siblings	0.0410 (0.0454)
Worked in agriculture in year of marriage	-0.313 (0.407)
Worked in non-agriculture in year of marriage	1.119** (0.476)
Was in education in year of marriage	0.0510 (0.247)
Father worked in agriculture	0.105 (0.293)
District-level share of bride capture	4.934*** (1.022)
Constant	1.979* (1.073)
Observations	220
Pseudo R-squared	0.379

Who gets
kidnapped?

Table 1: Determinants of birth weight for non-Kyrgyz women

	Dependent variable: birth weight
District-level share	14.20 (139.9)
Child male	33.81 (29.68)
Child firstborn	-52.81 (41.92)
Twin	.
Age at birth	30.61 (35.84)
Age at birth squared	-0.314 (0.662)
Basic education	-178.6 (112.9)
Secondary education	-131.3 (110.8)
Technical education	-212.9* (126.3)
Kyrgyz and Russian	-21.61 (74.30)
Mother's height	1.699 (4.159)
Constant	2,644*** (850.5)
Birth month & year FE	YES
Observations	630
R-squared	0.109

Note: The sample consists of non-Kyrgyz women, who have given birth to at least one child, are of the age group 18-43, do not live in cities, and live below 2500 meters of altitude. Clustered standard errors in brackets.

*** significant at 1%, ** at 5%, * at 10%.

Identification: share of older women kidnapped has no impact on non-Kyrgyz women's birthweights

Table 3: Estimates of birth weight

	(1) OLS	(2) IV	(3) OLS, matched sample
Kidnap	-96.49** (44.50)	-227.1*** (83.96)	-200.3*** (61.43)
Child male	96.67*** (23.98)	71.71*** (27.53)	138.2*** (42.93)
Child firstborn	-15.45 (37.22)	-47.13 (41.82)	-22.23 (64.84)
Twin	-798.1*** (221.1)	-862.7*** (251.5)	-737.2*** (230.6)
Age at birth	43.45 (32.00)	26.95 (35.40)	75.63 (51.93)
Age at birth squared	-0.790 (0.581)	-0.624 (0.653)	-1.801* (0.971)
Basic education	-36.72 (79.66)	36.27 (122.3)	63.35 (158.5)
Secondary education	-1.990 (60.94)	20.56 (80.25)	44.77 (59.70)
Technical education	60.97 (73.52)	96.63 (89.91)	68.76 (88.99)
Kyrgyz and Russian	98.28** (44.11)	-5.897 (46.35)	184.1** (75.29)
Mother's height	3.840 (3.028)	2.865 (4.586)	2.418 (6.327)
Constant	1,694** (713.4)	2,525*** (924.6)	643.7 (1,384)
Birth month & year FE	YES	YES	YES
District FE	YES	NO	YES
Observations	807	773	492
R-squared	0.410	0.127	0.623

Note: The sample consists of ever-married Kyrgyz women, who have given birth to at least one child, are of the age group 18-43, do not live in cities, and live below 2500 meters of altitude. Clustered standard errors in brackets.

*** significant at 1%, ** at 5%, * at 10%.

The effects seem very large: a loss of 100-200 grams. Cf. Aizer (2012) loss of 120g for abused women in the USA.

Table A1: First-stage estimate

	IV
District-level share of	1.148***
bride capture	(0.105)
Child male	0.004
	(0.032)
Child firstborn	-0.069
	(0.041)
Twin	-0.269*
	(0.139)
Age at birth	-0.009
	(0.034)
Age at birth squared	0.000
	(0.001)
Basic education	-0.072
	(0.156)
Secondary education	-0.234**
	(0.107)
Technical education	-0.100
	(0.126)
Kyrgyz and Russian	0.069
	(0.059)
Mother's height	-0.003
	(0.005)
Constant	1.033
	(0.947)
Birth month & year FE	YES
Observations	773
R-squared	0.375
Adjusted R-squared	0.334
Partial R-squared	0.277
F-stat of instrument	127.01

First
stage
estimates

Table 4: Robustness tests

<i>Exclude all children born out of wedlock</i>			
	(1) OLS	(2) IV	(3) OLS, matched sample
Kidnapped	-112.7** (44.63)	-234.6*** (85.92)	-205.0*** (62.46)
District FE	YES	NO	YES
Observations	792	759	479
R-squared	0.410	0.125	0.629
F-statistic (first stage)	.	123.6	.
<i>Observations below 2000m of altitude</i>			
	(4) OLS	(5) IV	(6) OLS, matched sample
Kidnapped	-97.05** (45.75)	-253.2*** (95.77)	-149.2** (60.21)
District FE	YES	NO	YES
Observations	728	694	445
R-squared	0.429	0.116	0.640
F-statistic (first stage)	.	106.3	.
<i>New definition for young vs. old generation (cutoff: 50 years)</i>			
	(7) OLS	(8) IV	(9) OLS, matched sample
Kidnapped	-35.92 (39.46)	-350.6*** (93.69)	12.90 (59.80)
District FE	YES	NO	YES
Observations	1,233	1,117	515
R-squared	0.365	0.071	0.642
F-statistic (first stage)	.	128.7	.
<i>Only women with maximum two children</i>			
	(10) OLS	(11) IV	(12) OLS, matched sample
Kidnapped	-198.3** (100.1)	-209.0* (114.6)	-67.58 (163.1)
District FE	YES	NO	YES
Observations	190	175	120
R-squared	0.564	0.337	0.814
F-statistic (first stage)	.	54.7	.

Robust-
ness
checks

Placebos

Table 5: Placebo test - OLS estimates: the effect of kidnapping on mother's height and chronic illness

	(1) Maternal height	(2) Heart disease	(3) Lung disease	(4) Liver disease	(5) Gastrointesti disease
Kidnapped	0.149 (0.845)	0.011 (0.001)	-0.004 (0.024)	-0.016 (0.030)	0.002 (0.0.19)
Observations	807	807	807	807	807
R-squared	0.382	0.335	0.214	0.308	0.389
	(6) Kidney disease	(7) High blood pressure	(8) Low blood pressure	(9) Spinal problems	(10) Diabetes
Kidnapped	0.071* (0.039)	0.022 (0.023)	0.005 (0.004)	-0.005 (0.021)	0.008 (0.006)
Observations	807	807	807	807	807
R-squared	0.195	0.197	0.230	0.400	0.314

Kidnapping density doesn't matter for others

Table 1: Determinants of birth weight for non-Kyrgyz children

	Dependent variable: birth weight		
	(1) No controls	(2) Child controls included	(3) Child and mother controls included
District-level share kidnapping	83.28 (139.9)	40.12 (142.2)	-45.39 (153.2)
Observations	640	640	640
R-squared	0.001	0.076	0.187

Note: The sample consists of non-Kyrgyz women, who have given birth to at least one child, are of the age group 18-43, do not live in cities, and live below 2500 meters of altitude. Standard errors clustered at the district level.

*** significant at 1%, ** at 5%, * at 10%.

Source: Authors' illustration based on 2011 LIK data.

Kidnapping density doesn't matter for maternal characteristics

Table 3: OLS estimates - Association between district-level prevalence of kidnapping and mother's characteristics

	(1) Maternal height	(2) High blood pressure	(3) Kyrgyz and Russian proficiency	(4) Father worked in agriculture
District-level share	-1.184 (1.870)	-0.002 (0.014)	-0.279 (0.280)	-0.006 (0.104)
Observations	706	706	706	589
R-squared	0.002	0.000	0.013	0.000

Note: The sample consists of ever-married Kyrgyz women (including those in love marriages), who have given birth to at least one child, are of the age group 18-43, do not live in cities, and live below 2500 meters of altitude. Standard errors clustered at the district level.

*** significant at 1%, ** at 5%, * at 10%.

Source: Authors' illustration based on 2011 LIK data.

But birth outcome effects are robust

Table 5: OLS estimates of birth weight for Kyrgyz children

	(1) Basic model	(2) Include district fixed effects	(3) Control for father's education	(4) Control for mother's personality	(5) Control for mother's employment
Kidnap	-128.2* (47.15)	-106.1** (44.11)	-100.8* (49.42)		-109.2** (48.35)
Child male	76.55** (27.16)	100.3*** (23.98)	112.8*** (25.73)		115.4*** (26.65)
Child firstborn	-31.63 (34.09)	-0.715 (34.63)	-11.85 (37.52)		5.176 (38.97)
Twin	-897.9*** (233.7)	-836.4*** (207.3)	-903.3*** (235.8)		-906.4*** (234.9)
Age at birth	35.65 (31.74)	57.42** (32.05)	58.17* (33.41)		56.88* (35.14)
Age at birth squared	-0.577 (0.582)	-0.791 (0.593)	-0.774 (0.606)		-0.798 (0.634)
Basic education	60.86 (114.3)	42.62 (76.32)	61.81 (91.59)		27.69 (99.13)
Secondary education	60.74 (81.50)	22.47 (55.44)	85.95 (63.62)		71.67 (71.41)
Technical education	72.09 (91.11)	90.35 (69.74)	156.5* (74.83)		133.9 (81.84)
Kyrgyz and Russian	-19.81 (47.41)	127.5** (41.93)	162.9*** (44.94)		143.5** (46.75)
Maternal height	1.727 (3.674)	1.115 (3.099)	0.204 (3.399)		-0.280 (3.461)
Constant	2,113** (777.6)	531.5 (664.4)	2,234** (975.8)		2,801*** (977.8)
Birth month FE	YES	YES	YES		YES
Birth year FE	YES	YES	YES		YES
Marriage year FE	YES	YES	YES		YES
District FE	NO	YES	YES		YES
Observations	832	832	753		726
R-squared	0.205	0.447	0.456		0.451

Note: The sample consists of ever-married Kyrgyz women, who have given birth to at least one child, are of the age group 18-43, do not live in cities, and live below 2500 meters of altitude. Standard errors (in brackets) are clustered at the district level.

*** significant at 1%, ** at 5%, * at 10%.

Source: Authors' illustration based on 2011 LIK data.

Happy kidnapping stories are more myth than reality

Table 7: OLS estimates of alternative stress outcomes

	(1) Dependent variable: Divorce	(2) Dependent variable: Satisfaction with family life
Kidnap	0.108* (0.0586)	0.205 (0.280)
Divorced		-2.508*** (0.875)
Kidnap*Divorced		-2.558** (1.161)
Age at marriage	0.048 (0.057)	0.009 (0.257)
Age at marriage squared	-0.001 (0.001)	-0.001 (0.005)
Basic education	0.101 (0.108)	0.619 (1.144)
Secondary education	-0.099 (0.108)	-0.008 (0.633)
Technical education	-0.117 (0.096)	0.656 (0.652)
Kyrgyz and Russian	0.044 (0.045)	0.202 (0.301)
Height	0.002 (0.002)	0.013 (0.025)
Constant	-0.674 (0.857)	3.040 (5.297)
District FE	YES	YES
Observations	282	273
R-squared	0.237	0.573

...and kidnapped couples are less similar

Table 8: Percentage of husbands and wives giving similar responses to personality questions, across marriage type

		(1)	(2)
	Love marriage (N=405)	Arranged marriage (N=115)	Kidnapped marriage (N=120)
I see myself as someone who ...			
keeps distance	74.32	80.00	75.00
tends to find fault with others	81.98	80.00	70.83
does a thorough job	83.46	86.96	80.00
is depressed	81.98	86.96	71.67
is curious about many different things	80.99	82.61	74.17
generates a lot of enthusiasm	78.52	87.83	71.67
generally trusts other people	84.44	84.35	75.00
tends to be lazy	80.74	81.74	72.50
is relaxed, handles stress well	80.49	75.65	70.83
is ingenious, a deep thinker	81.98	84.35	75.00
tends to be quiet	71.60	75.65	75.83
can be cold and aloof	76.05	74.78	70.83
is inventive	78.27	82.61	69.17
worries a lot	75.06	73.04	71.67
has an active imagination	79.51	79.13	68.33
is outgoing, sociable	66.42	66.09	67.50
is sometimes rude to others	74.57	69.57	67.50
makes plans and follows through with them	80.99	80.87	73.33
gets nervous easily	76.05	80.87	70.00
values art and esthetic events	77.28	83.48	73.33
has few artistic interests	73.58	74.78	73.33

Discussion

- One caveat: we cannot fully rule out alternate channels of influence for lower birth weight. But the findings are robust here.
- OLS/2SLS difference suggests several possibilities:
 - Evans and Ringel (1999) and Wehby et al. (2011): 350-700 gram decrease across several 2SLS models (IV estimates are larger than their OLS estimates)
 - Selection in kidnapped women (don't kidnap an obviously unhealthy bride)
 - Kidnapping takes place in remote but not the poorest rural areas (which tend to be higher density)
- The paper results have important policy implications for Kyrgyzstan.
 - Bride kidnapping ban laws need to be strongly enforced