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## **Marriage decision-making models based on male's willingness to cooperate on housework and childcare**

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The unmarried rate of Japanese people is rising year by year, and countermeasures are required. We modelled male and female marriage decision-making models based on male's willingness to cooperate on housework and childcare. We assume that male marriage utility function decreases as male's willingness to cooperate on housework and childcare increases, while female marriage utility function increases. We also assume that a male decides to marry a female when his marriage utility function is nonnegative, while a female does so when her partner's willingness to cooperate is at least the value that she demands. When both male's and female's conditions are satisfied, they get married. If they don't get married, the utility function is 0 for both males and females. Male's strategy is the value of his willingness to cooperate, and female's strategy is the value that she demands. There are Nash equilibria with marriage and without marriage. At Nash equilibria with marriage, both male and female marriage utility functions are positive and male's strategy is equal to female's. When the utility function changes by individuals, increase of marriage utility raises male's marriage fraction slowly in the all range and female's sharply in the range of large female marriage utility. We conclude that we should take countermeasures to all males and females with greater marriage utility to increase the rate of marriage.

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