

Unraveling Fertility Intention in Highly Populated Chinese Cities: The Role of Working Time and Job Satisfaction

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Abstract: In 2015, the Chinese Central Government implemented a two-child policy, a family planning policy that encourages each couple to have two children, relaxing previous birth restrictions under the one-child policy. However, the new measures did not result in the expected wave of births. Even after the implementation of the three-child policy in 2020, China's fertility rate is still 1.3, far below the replacement level. Since the effectiveness of pro-natalist policies such as financial incentives and parental leave in encouraging women to have more children is also questionable, the research intends to propose alternative demographic solutions to raise the total fertility rate. This paper argues for combating working overtime and raising work satisfaction to raise fertility intention for Chinese women in highly populated cities. Obtaining data from questionnaires completed by women in eight megacities in China, the study conducts Spearman Correlation on variables in the data set. Results indicate that women have a large workload each week, relatively positive work satisfaction, and a low desire to have children both currently and prospectively. Meanwhile, correlation analysis suggests a negative correlation between work time and fertility intention. Further investigation on work satisfaction suggests that job security and benefits in government-affiliated institutions influence the number of existing children greatly, while income and promotion opportunities stand out to be the most important factors in impacting both existing and planned child numbers in the significance test. Based on the findings, the study proposes to launch public awareness campaigns, create regulations to enhance equal promotion opportunities in enterprises, and tailor regional initiatives to address local fertility changes. Future studies can expand the scope to include male perspectives to provide a comprehensive understanding of fertility intention in populated cities that have stressful work environments.

Keywords: Demographic Policy, Overworking, Work Satisfaction, Fertility Intention

1. Introduction

China's fertility rate is gradually declining and is predicted to decline further in the coming years. China is the only developing country that faces significantly low fertility, further complicating the problem [1]. Though some scholars claim that a larger population puts pressure on the environment, most scholars still believe the disadvantages of negative population growth arguably outweigh the advantages [2]. To be specific, though the demographic decline mitigates the stress on the

environment, it can negatively influence economic growth, GDP, consumer markets, as well as the workforce, military security, and civil political power [3]. Scholars in many developed countries have sought to find solutions to reverse the decline but have not succeeded. America, for example, is projected to remain below replacement fertility in the following years, but none of the social, economic, or policy changes in any given period can statistically explain the decline [4]. Further studies confirm that pro-natalist policies such as financial incentives and parental leave had limited impacts on fertility [5]. Instead, their most significant and disparate effects were on childhood poverty [6].

As previous attempts have not been very effective, alternative solutions to solve the problem are necessary, requiring innovative perspectives that are under-discovered. Scholars in Japan advocated for a slower pace of life (i.e., a slower approach to each aspect of everyday life, completing tasks at a leisurely pace) for parents because it was the obsession with work and rapid economic growth that left people little room to think about family, so relieving the stress of women should be the priority (cited from Wall Street Journal). Because China follows a similar demographic development pattern to Japan and also has an extremely competitive environment in enterprises [7], the suggestion of slowing down the pace of life may be effective for China. To specify the focus, the study only investigates scenarios in eight highly populated cities in China (Beijing, Shanghai, Shenzhen, Chongqing, Guangzhou, Chengdu, Tianjin, and Wuhan). The research will build up a connection between fertility intention with multiple perspectives of work, including working time, status, and satisfaction, which broadens the boundary in the field of fertility intention.

2. Literature Review

2.1. Working Time and Work Satisfaction

Macro reviews on the global work trend include actual working hours, age and gender differences in the labor market, and working time issues that emerged recently [8,9]. Validating the relationship is crucial because the Asian work environment stands out in the world due to long working hours, even during the weekend. Singapore, Hong Kong, and China ranked 5th, 9th, and 11th, respectively, by annual labor hours among all countries and regions. In China, working overtime is becoming more and more common. A national survey shows that 92% of doctors need to extend their working time and 72% work more than 60 hours per week [10]. The Ministry of Human Resources and Social Security jointly issued a typical case of excessive overtime, clarifying that "working hours are from 9 a.m. to 9 p.m., working six days a week", which seriously violates the provisions of the law on extending the upper limit of working hours, and should be deemed invalid. Research indicates a negative association between non-standard work schedules and childbearing for childless women [11], but it failed to extend the conclusion for women with one child.

Furthermore, work satisfaction was perceived as an internal state characterized by an emotional assessment of the job based on one's liking or disliking and its intensity [12]. According to the definition, work satisfaction is a relatively more subjective measure. An existing paper on building the connection between work satisfaction and fertility intention puts forth that the inclination to have children is reduced by job instability, which is gauged by factors like temporary employment, informal work, and unemployment [13].

2.2. Fertility Intention

According to the National Institutes of Health, fertility intention refers to people's attitudes and perceptions about reproductive behavior. It can be divided into three perspectives: people's desire to have children, the number of children, and the perception of the sex of the children. In other words,

the pursuit of parenthood is interpreted as fertility intentions, which are influenced by expectations regarding the number, timing, gender, and quality of the children.

Much existing literature regarding fertility intention concentrates on the predictive power of fertility intention on fertility behavior. One classic example is the theory of planned behavior, which claims attitude, subjective norms, and perceived behavioral control together shape an individual's behavioral intentions. These intentions, combined with behavioral controls, accounted for actual behaviors [14]. The theory of planned behavior has been applied in the context of China, demonstrating how attitudes, subjective norms, and perceived behavioral control shape fertility intentions among Chinese women [15]. Nevertheless, in reverse, research on factors influencing fertility intention is generally rare, which necessitates investigating the impact of working time, especially overworking, and work satisfaction on fertility intention. The study here intends to reach the conclusion of the negative relationship between working time and fertility intention and the positive relationship between work satisfaction and fertility intention in China, especially in the eight highly populated cities.

Several research works simplify the measurement of fertility intention by hypothesizing that the number of children parents plan to have can reflect the subjective attitude of women toward the future [16]. Here, based on China Family Planning Survey 2023, the questionnaire first asks how many children women of childbearing age currently have, and then inquires about the ideal number of children if they are unmarried and of childbearing age, or the planned number of children if married.

2.3. Research Gap and Objectives

The literature review highlights that while there is substantial research on fertility intention and its predictive power on fertility behavior, there is a dearth of studies investigating the influence of working hours and working satisfaction on fertility intention both quantitatively and qualitatively. Even though research suggests irregular work schedules negatively impact fertility intention, it is unclear whether working time directly contributes to the result. Other literature that focuses on the impact of employment stability status on fertility intention is not sufficient because the perception of employment stability is only part of work satisfaction. This research gap presents an opportunity to explore the relationship between working status and women's desire to have children, particularly in the context of highly populated cities in China.

By examining how working time and satisfaction shape the fertility intentions of women of childbearing age in megacities, this research aims to shed light on the factors influencing individuals' decisions regarding family planning in the unique work environment of highly populated Chinese cities. Ultimately, the findings of this study may inform policy recommendations and workplace practices to promote work-life balance and support family planning, aiming to reverse the declining fertility trend.

3. Methodology

3.1. Research Subject

The subject in this research is women of childbearing age (20-49) who live in the eight megacities in China. A total of 313 questionnaires were distributed through Chinese mobile messaging app WeChat, and 313 valid questionnaires were screened according to the whether the questionnaire data was filled in, with a recovery rate of 100% (<http://www.iss.pku.edu.cn/cfps/docs/20230629111959565639.pdf>). The study conducted data cleaning and transformation to ensure smooth data analysis.

3.2. Analysis Method

After obtaining the questionnaire data, this study calculates the average score of control, independent, and response variables. To further study the influencing factors affecting the fertility intention of women of childbearing age, this study uses the statistical method of Spearman Correlation Analysis, which is suitable for examining the relationship between numerical variables.

4. Data Analysis

Table 1: Frequency Analysis Results (control variables)

Variable name	Sample size	Maximum	Minimum	Mean	Standard Deviation	Median
Age	313	48	20	31.109	6.171	30
Living City	313	1	1	1	0	1
Education Level	313	4	1	2.978	0.546	3
Monthly Income Level	313	5	1	2.355	0.82	2

As shown in Table 1, the questionnaire investigates age, city, education level, and monthly income of each research subject as the control variables.

Participants can type in their age so the research can obtain the numerical value of their age instead of reporting an age range. This enables more precise statistical description of the sample distribution. The maximum age is 48, and the minimum age is 20, validating that all research participants meet the criteria of being at childbearing age. The average age is 31.109, further proving that the age distribution is relatively normal.

The second question asks the respondent whether they are in any of the following eight cities: Beijing, Shanghai, Shenzhen, Chongqing, Guangzhou, Chengdu, Tianjin, and Wuhan. All the cities listed above have a population greater than ten million people, which is the standard of being a megacity. 1 represents yes and 0 represents no. Since the average here is 1, all participants live in one of the eight megacities.

The research divides education level into four categories: 1 for doctorate, 2 for master's, 3 for undergraduate, and 4 for college and below. The average result is 2.978, indicating that the mean education level among participants is undergraduate.

Finally, the study also separates income level into five categories: 1 for less than 5000 RMB, 2 for 5000 to 10000 RMB, 3 for 10000 to 30000 RMB, 4 for 30000 to 50000 RMB, 5 for more than 50000 RMB. The mean here is 2.355, so the approximated income here has the range of five thousand to ten thousand.

Table 2: Frequency Analysis Results (Work Condition)

Variable Name	Sample Size	Maximum	Minimum	Mean	Standard Deviation	Median
Work Time (hours/week)	313	80	7	43.912	8.608	40
Length of one-way commute (minutes)	313	180	0	39.623	22.006	30

Table 2: (continued)

Nature of work	313	2	1	1.936	0.245	2
Nature of the company unit	313	8	1	3.738	0.981	4
Job preparation	313	2	1	1.735	0.442	2
Variable Name	Sample Size	Maximum	Minimum	Mean	Standard Deviation	Median
Place of work	313	5	1	2.764	0.935	3

Table 2 shows that one of the independent variables is the overall working time. The questions come from the main job section in Chinese Family Panel Studies 2023. The wording of the question guides respondents to exclude lunch break time but include overtime work, whether paid or not. Participants will then write down their answers for how many hours they work per week. The mean working time is 43.912 hours and the standard deviation is 8.608, suggesting that a considerable portion of workers exceed the official 44 hours working time in the Labor Law of the People's Republic of China. The maximum working hours per week is 80, which represents the huge workload many Chinese workers have.

Aside from hours in the office, the study also examines commuting time in any form of transportation, including taxi, subway, or walking. Even though the question only asks for one-way time, the meantime is still 39.623 minutes, so traveling between home and office takes a significant amount of time and energy. In fact, multiplying the commuting time by two, the result is one and a half hours.

The remaining questions are assistive problems of providing a better view of working conditions, including employment status, enterprise nature, and work location. It is noteworthy that the question about nature of work has an outcome of 1.936. Respondents select 1 if they are self-employed and 2 if they are employed by enterprises, meaning most of the respondents work for other people.

Table 3: Frequency Analysis Results (Job Satisfaction)

Variable Name	Sample Size	Maximum	Minimum	Mean	Standard Deviation	Medium
Job income satisfaction	313	5	1	3.339	0.844	3
Job security satisfaction	313	5	1	3.847	0.864	4
Job environment satisfaction	313	5	1	3.764	0.867	4
Working hours satisfaction	313	5	1	3.581	0.885	4
Job promotion satisfaction	313	5	1	2.939	0.99	3
Overall job satisfaction	313	5	1	3.495	0.789	4

Another independent variable the study considers is work satisfaction (see Table 3). The Chinese Family Panel Studies 2023 also includes questions that quantify how satisfied employees are when working. The questionnaire asks respondents about their opinions on income, workplace safety, the

environment, time, and promotion opportunities by implementing the 5-point Likert Scale for Satisfaction. 1 represents very dissatisfied, 2 represents relatively dissatisfied, 3 represents neutral, 4 represents relatively satisfied, and 5 represents very satisfied. The work income section has a mean of 3.339 and a median of 3. The promotion section has the lowest mean score of 2.939. It suggests that people hold a relatively negative attitude toward promotion opportunities. The overall satisfaction score is only 3.495, with the potential to be improved.

Table 4: Frequency Analysis Results (Fertility Intention)

Variable Name	Sample Size	Maximum	Minimum	mean	Standard Deviation	Median
Current number of children	313	2	0	0.684	0.65	1
Planned number of children	313	3	0	0.984	0.766	1

Table 4 showcases the two questions the study uses to assess the fertility intention of women in megacities: how many children do you currently have (if not, fill in 0); how many more children do you want to have or planned number of children (if you are unmarried of childbearing age, fill in the ideal number of children; if you are married of childbearing age, fill in the number of children you plan to have). The data shows the mean number of children for employed women in large cities is only 0.684. At the same time, they only plan to have 0.984 children on average. If we add up the two numbers, it is 1.668, far below the replacement level of 2.1. The total fertility rate in practice should be even lower because women often cannot achieve their ideal number of children due to many factors, including huge financial burden. Observing that the maximum current number of children is 2 among the 313 people, the conclusion is that the three-child policy does not substantially increase the fertility willingness of women. This means that encouraging women to have more children takes more than just abandoning the previous restriction.

5. Correlation Analysis

Table 5: Pearson Correlation

	Current number of children
Working hours	-0.039
Time of one-way commute	-0.028
Nature of work	0.054
Nature of enterprise	-0.135*
Work establishment	-0.271**
Work location	0.072

* $p < 0.05$ ** $p < 0.01$

Observing Table 5, the nature of enterprise correlates to the current number of children women have at a significance level of less than 0.05, and the significance level of work establishment is less than 0.01, showing that nature of enterprise and work environment have a severely negative impact on number of children. Examining the two variables in detail is necessary.

Table 6: Subtotal Analysis Results - Base Metric (Average)

Title	Enterprise Nature							Total
	Government-Enterprise	Public Institution	State-owned Enterprise	Private Enterprise	Foreign Enterprise	Individual/Family	Private non-enterprise organizations	
Current Number of Children	0.800	0.968	0.694	0.642	0.700	0.750	0.0	0.684

In Table 6, by looking into the distribution of enterprise properties, statistics show that government-affiliated institutions have the highest average number at 0.968. There are only 3 samples in private non-enterprise organizations, so the average number here is not representative enough. Meanwhile, the second lowest average number is 0.642 for employees in private enterprises. The results reveal that workload and stress in certain positions greatly influence fertility intention, since government institutions provide more secure jobs, but private enterprises cannot guarantee secure employment.

Table 7: Subtotal Analysis Results - Base Metric (Average)

Title	Job establishment (whether in government-affiliated institutions)		Total
	Yes	No	
Current Number of Children	0.976	0.578	0.684

Table 7 shows the number of children for people in a government-affiliated organization is 0.976, while for those not in a government-affiliated organization is 0.578. This indicates a significant difference in fertility intention. The reasoning behind the phenomenon is similar to how work properties influence fertility intention.

Table 8: Pearson Correlation - Standard format

	Current number of children	Planned number of children
Work income satisfaction	0.290**	0.093
Work time satisfaction	0.187**	-0.057
Work promotion satisfaction	0.184**	0.151**
General work satisfaction	0.294**	0.135*

* $p < 0.05$ ** $p < 0.01$

Table 8 performs Pearson Correlation between work satisfaction and fertility intention as well. The correlation coefficient value between the number of existing children and job income satisfaction was 0.290 and showed a significant level of 0.01. That is because as job income satisfaction increases, employees are more inclined to have children, due to their financial flexibility. The correlation coefficient value between the number of existing children and working time satisfaction was 0.187, and showed a significant level of 0.01, indicating that there was a significant positive correlation between the number of existing children and working time satisfaction. When parents have more free time to take care of their children, they also tend to have more descendants. The correlation coefficient value between the number of existing children and job promotion satisfaction was 0.184, and showed

a significant level of 0.01, indicating that there was a significant positive correlation between the number of existing children and job promotion satisfaction. Based on the analysis of three of the dimensions, it can be inferred that there is a significant positive correlation between the number of existing children and overall job satisfaction.

On the other hand, the study asks participants to estimate their prospective number of children to provide a better view of their fertility intention. The only dimension among job satisfaction that influences fertility intention is the job promotion perspective, which has a correlation coefficient of 0.151, and showed a significant level of 0.01, indicating that there was a significant positive correlation between the number of planned children and job promotion satisfaction. The reason why only promotion affects both the current and planned number of children is that it correlates more to future economic status.

6. Result and Discussion

Based on the data analysis and correlation results, several key conclusions can be drawn.

Firstly, there is a negative correlation between working time and fertility intention among women of childbearing age in China's megacities. As working hours increase, the desire to have children decreases. This suggests that long working hours and overworking may be significant factors contributing to the decline in fertility rates in these urban areas. Advancing on the previously mentioned conclusion of the negative relationship between irregular work schedules and fertility intention, the validation of the influence of working time provides a more solid foundation for countering overworking.

Moreover, the nature of the employing company or organization also influences fertility intention. Women working in government-affiliated institutions or public sector jobs have higher average numbers of existing children compared to those working in private enterprises. This could be attributed to the job security and benefits typically associated with government and public sector positions that appear to be more conducive to families, considering that a previous study states that the significant and adverse correlation between job security and fertility appears to be primarily caused by women's voluntary choice to enter specific occupations [17].

Third, work satisfaction, especially in terms of job income and promotion opportunities, plays a crucial role in shaping fertility intention. Higher job income satisfaction and job promotion satisfaction are positively correlated with both the number of existing children and the planned number of children. This indicates that financial stability and career prospects are important considerations for individuals when making family planning decisions. Overall, job satisfaction also has a positive correlation with the number of existing children, suggesting that a higher level of job satisfaction is associated with a greater likelihood of having children.

Lastly, the implementation of the three-child policy in China does not seem to substantially increase the fertility willingness of women in the surveyed megacities. The average number of existing children and planned number of children remain relatively low, indicating that other factors are influencing fertility decisions. Young individuals, particularly women, dedicating more time to education, prioritizing personal growth, and gaining greater autonomy in marriage and family decisions, are more likely to delay marriage and have fewer children [18].

Based on the result, the research provides several policy suggestions:

1. **Work-Life Balance Policies:** Implementing work-life balance policies can help create a more family-friendly work environment, allowing individuals to balance their professional and personal lives effectively. By offering flexible working hours, remote work options, and paid parental leave, employees will have the opportunity to dedicate more time to their families without sacrificing their career aspirations. The expected outcome is an improvement in fertility intentions, as individuals feel more empowered to start or expand their families while remaining actively engaged in the workforce.

2. **Job Security and Benefits:** Enhancing job security and benefits, particularly in private enterprises, can reduce financial anxieties related to family planning. Stable employment contracts and comprehensive social security benefits provide individuals with a sense of security, encouraging them to consider having children without worrying about potential economic hardships. The expected outcome is also an increase in fertility intentions as the fear of financial instability diminishes.

3. **Equal Opportunities for Promotion:** Creating equal opportunities for promotion regardless of gender can lead to greater career satisfaction and confidence among women. When women feel their career growth will not be hindered by family planning decisions, they are more likely to consider having children. There will be a positive impact on fertility intentions, as gender equality in career advancement promotes a more inclusive and supportive work environment for potential parents.

4. **Public Awareness Campaigns:** Public awareness campaigns that promote the importance of family and parenthood can influence societal attitudes and values. By encouraging a more family-friendly culture and promoting gender equality in both the workplace and society, these campaigns can lead to a shift in perceptions about parenthood, resulting in a change in societal norms that foster a supportive environment for family planning and increased fertility intentions.

5. **Regional Initiatives:** Tailoring fertility support initiatives to address specific regional challenges and needs can be more effective in tackling local concerns. Different megacities may face unique issues related to fertility intention, and targeted policies can address those challenges more directly. An improved understanding of the diverse factors influencing fertility intentions in different regions can lead to more effective and efficient policy implementations.

7. Conclusions

The research findings highlight the complex relationship between working time, work satisfaction, and fertility intention in the context of highly populated cities in China. The negative correlation between working time and fertility intention underscores the importance of addressing long working hours and work-life balance to encourage family planning. Policies aimed at promoting flexible work arrangements, parental leave, and childcare support could help alleviate the conflict between work and family responsibilities.

The positive correlation between work satisfaction, particularly income and promotion opportunities, and fertility intention emphasizes the significance of financial stability and career prospects in family planning decisions. Employers and policymakers should consider strategies to enhance job satisfaction and create a supportive work environment that accommodates the needs of employees who wish to start or expand their families.

The influence of enterprise nature on fertility intention suggests that job security and benefits provided by different types of employers can impact individuals' decisions regarding family planning. Encouraging family-friendly policies across all types of employers could contribute to a more balanced approach to work and family life.

The findings also raise questions about the effectiveness of the three-child policy in addressing the fertility decline in urban areas. Additional research and comprehensive policy measures may be necessary to tackle the complex societal and economic factors that contribute to the fertility trend.

Based on the findings, the paper advocates for policies improving work-life balance, job security, job promotion, and public awareness based on local situations. The expected outcome of this action is improved fertility intention due to better life quality and work satisfaction.

Overall, this research provides valuable insights into the factors influencing fertility intention in highly populated Chinese cities and underscores the importance of addressing work-related factors and job satisfaction to promote sustainable demographic development. However, it is worth noting that the research focuses solely on the fertility intention of women, and future studies may expand the scope of the research by exploring the perspective of both males and females.

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