

Market Feasibility of Senior-Provided Childcare Meeting Gen-Z Families in Central China: Causal Evidence from Young-Old Reemployment Initiatives

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Abstract: China's dual demographic pressures—a rapidly aging population and fertility rates below replacement levels—pose systemic risks to labor markets and intergenerational equity. Leveraging survey data from 4,147 Gen-Z families and 3,251 young-old (60–69 years) individuals in central China, this study evaluates the feasibility of integrating elderly labor into childcare markets to address both elderly underemployment and youth parenting costs. Employing ordinal logistic regression and sharp regression discontinuity (RD) designs, we find that familiarity with elderly-provided childcare services significantly boosts demand among young families (coefficient: 2.074 for married households) and reemployment willingness among the young-old (log-odds: +0.768 per familiarity unit). However, information asymmetry persists: 88.5% of youth lack awareness of service specifics, while income thresholds (¥10,500/month) sharply divide adoption rates (RD coefficient: 0.284, $p < 0.01$). Policy simulations suggest that structured interventions—training programs, income-linked subsidies, and certification systems—could align preferences, as 54% of families express openness to professional caregiving. These findings demonstrate lifecycle-stage complementarity, challenging assumptions of generational competition, and offer scalable solutions for aging economies globally.

Keywords: Young-old, Reemployment, Generation Z, Childcare Market, Ordinal Logistic Regression, Sharp RD

1. Introduction

China's demographic transition presents a dual challenge: the working-age population shrinks as the elderly dependency ratio rises to 20.8%, while fertility rates plummet to 1.09 births per woman—the world's lowest [1]. This collision of aging and sub-replacement fertility creates compounding pressures: pension systems strain under silver waves as young families grapple with childcare costs equating to 6.3×GDP per capita. Conventional policy responses—elderly care subsidies and fertility incentives—address symptoms separately. Our study examines an innovative synthesis: Can reemploying the “young-old” (60–69 years old) in childcare markets simultaneously alleviate elderly underutilization and reduce youth parenting costs?

This research fills critical gaps in three dimensions. First, while existing literature examines elderly labor supply and childcare demand in isolation, we establish the first causal framework analyzing their intersection. Second, through original survey data and regression discontinuity design, we

quantify how institutional interventions alter market equilibria—a dimension absent in prior observational studies. Third, our findings challenge the presumption of inherent generational competition, demonstrating that lifecycle-stage complementarity can generate Pareto improvements. These insights provide empirical foundation for China's 2025 Elderly Talent Utilization Initiative while offering developing economies new pathways to address demographic transitions.

2. Literature Review

The literature review synthesizes three critical strands of research on elderly labor utilization and childcare markets. First, studies on active aging strategies reveal systemic inefficiencies in elderly human capital deployment, where suboptimal scale operations and input redundancy constrain productivity despite high aggregate development levels—a finding corroborated by Xu's DEA analysis of China's elderly workforce in 2023 [2]. Comparative analyses of East Asian economies, notably Japan's Silver Human Resource Centers, demonstrate elderly reemployment's dual efficacy in alleviating pension pressures and labor shortages, though these models emphasize manufacturing over service sectors. Second, intergenerational childcare economics literature identifies substantial externalities: China's childcare costs at $6.3 \times \text{GDP}$ per capita depress fertility rates while creating service demand equivalent to 20% of young families. Pan's work in 2023 on grandparenting validates its role in reducing parenting stress and enhancing elderly life meaning, yet highlights skill mismatches between traditional caregiving and modern professional standards [3]. Crucially, existing research lacks causal evidence on policy interventions' market-shaping effects, a gap our regression discontinuity design addresses.

3. Empirical Context and Methodological Framework

3.1. Public Opinion Analysis on the Target Market

In the current socio-economic climate, the childcare market in China is experiencing significant transformation. Rising living standards, shifting fertility trends, and increasing parental demands for high-quality services have collectively spurred the rapid expansion of professional childcare services such as maternity centers and baby-nurse agencies. Despite a sizable base of newborns and a growing inclination among Generation Z parents toward structured childcare support, challenges remain. These include information asymmetry, fluctuating service standards, and insufficient regulatory oversight. Such factors highlight the need for innovative market strategies and robust policy interventions to harness the untapped potential of both consumer demand and the available labor force.

A key component of this research is the analysis of public sentiment regarding elderly-provided childcare services. Data were gathered using a Python-based web crawler that systematically extracted Weibo posts and comments using targeted keywords (e.g., “baby-nursing”, “child-rearing”). The crawler, leveraging libraries such as NumPy, Pandas, Jieba for text segmentation, and WordCloud for visual representation, enabled the efficient collection and pre-processing of extensive textual data. Subsequent sentiment analysis was conducted with SnowNLP—a Python tool that employs a Naive Bayes algorithm—to classify emotions in the textual data. This method revealed that, although Generation Z parents sometimes express anxiety and fatigue over parenting challenges, the overall sentiment is positive. These findings underscore the latent acceptance of professional childcare assistance and signal an opportunity for elderly caregivers to alleviate parental stress while ensuring service quality.

3.2. Portraits of the Target Groups

This study delineates the target populations into two distinct yet complementary groups: Generation Z families and the young-old labor pool. The portrait of young families is constructed using the AARRR model, which segments consumer behavior into Acquisition, Activation, Retention, Revenue, and Referral stages [4]. This model facilitates the understanding of the evolving needs—from pre-childbearing concerns to the long-term educational and developmental support of children—thereby revealing opportunities for tailored childcare services. In parallel, the young-old group is analyzed through the lens of the Boston Matrix. This framework classifies individuals based on two dimensions: labor quality and work willingness, resulting in four quadrants that guide strategic recruitment and training. By integrating these models, the study captures the multifaceted nature of market demand and labor supply, offering actionable insights for aligning the strengths of experienced elderly caregivers with the dynamic needs of modern young families.

3.3. Questionnaire Design

Bridging theoretical constructs and empirical investigation, the questionnaire is meticulously crafted to capture detailed data on demographic profiles, economic conditions, fertility intentions, and the acceptance of elderly-provided childcare services. Emphasis is placed on precision and reliability: Income data are collected via fill-in-the-blank questions to ensure specificity, while a 5-point Likert scale is employed to gauge conditions, attitudes and perceptions. The design process is informed by extensive literature review and expert interviews, and it incorporates quality control measures such as detection statements and pretesting phases. By integrating robust statistical methods—including ordinal logistic regression and regression discontinuity techniques—the questionnaire not only facilitates a rigorous analysis of market behavior but also serves as a vital link between the literature review and subsequent empirical results. This comprehensive design ensures that the survey instrument effectively captures the complex interplay of socio-economic and behavioral factors driving both childcare demand and the reemployment willingness of the young-old.

4. Results of Statistical Analysis

Data for this study is based on the author's questionnaire survey conducted from February to June 2024 in 5 cities and 15 districts across central China, utilizing both online questionnaires and on-site visits, with 4,147 valid responses collected from the youth group and 3,251 from the elderly group.

4.1. Basic Situation Analysis

4.1.1. Preference of the Two Groups in Selecting Childcare Work

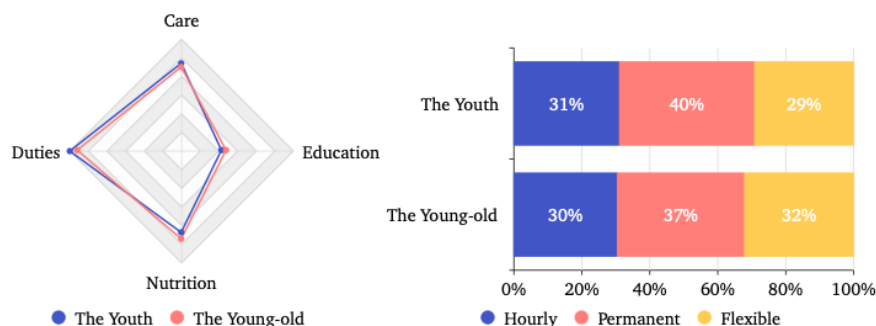


Figure 1: Preference for Work Type and Employment Duration

To better match the demand for childcare services of young families with the reemployment willingness of the elderly group, we separately investigated the preference of the youth and the elderly group in the types of childcare services and the length of employment. As shown in Fig.1, the types of work include companionship and care, housework, nutritious diet, and educational support. Childcare workers can be divided into hourly workers and long-term workers according to the length of employment. The survey results show that, whether in terms of the types of work or the length of employment, there is a good match between the choices of young families for childcare services and the willingness of the elderly group for childcare work. This indicates that, under ideal circumstances, the supply-demand relationship of the market unit groups can reach a relatively good balance. However, in reality, there are still problems such as information asymmetry, insufficient guarantees, and inadequate supervision in the market, resulting in low market efficiency.

Overall, the preference order of the two groups for the types of work is: housework > companionship and care > nutritious diet > educational support; and the preference for the length of employment is: long-term workers > hourly workers. From this, we can see the focus of future market improvement and upgrading work.

4.1.2. Considerations of the Elderly Group for Reemployment

When the elderly group reemploys, they need to consider many factors, such as the level of work income, whether they have the corresponding work skills, the convenience of life and transportation, whether it meets their hobbies, whether it is related to the occupations they have engaged in, whether their rights and interests can be guaranteed, whether it can promote physical and mental health, the contribution to society, and the difficulty of adapting to the new environment. In the questionnaire survey, although we learned about the selection of each option, we still cannot determine the importance ranking of each factor, so further analysis is needed.

1) Weight Assignment: Since the importance degree is different due to different selection orders, when analyzing, each value needs to be assigned a weight. Therefore, reverse assignment is carried out for a total of 9 items of data. The first-ranked item is scored 9 points, the second-ranked item is scored 8 points, the third-ranked item is scored 7 points, and so on.

2) Descriptive Analysis: After the assignment is completed, descriptive analysis is used to view the average scores and variances of each group of data. The obtained average value can represent the order in which the items are selected. The larger the average value, the higher the ranking, indicating that the higher the importance degree of the index; the larger the variance, the greater the degree of dispersion of the importance of the index.



Figure 2: Difference Analysis of the Elderly Group's Willingness to Engage in Childcare Work

After calculating the mean and variance of the importance degree of each factor through the empowerment method, they are ranked from high to low in terms of importance, and a combined bar-line statistical chart of sample means and variances is made. The survey results show that the priority order of factors considered by the elderly group when reemploying is: level of work income > whether having the corresponding work skills > convenience of life and transportation > whether meeting hobbies > whether fitting the occupations engaged in > whether rights and interests are guaranteed > whether promoting physical and mental health > contribution to society > difficulty of adapting to the new environment, as shown in Fig.2. In addition, it can be seen that there are great differences in the choices of the survey objects on the two factors of “level of work income” and “whether meeting hobbies”, so the subsequent steps can conduct difference analysis in this regard.

4.2. Attitude Analysis

From the data given by the sample attitude analysis, as shown in Panel A of Tbl.1, it can be found that among the youth group, 51.60% have a demand degree for childcare services provided by the elderly ≥ 4 , and 72.61% have an acceptance degree for childcare services provided by the elderly ≥ 4 . This shows that most of the youth group need and are willing to accept the childcare services provided by the elderly. However, 88.53% of the youth group have a familiarity degree with childcare services provided by the elderly ≤ 3 , indicating that nearly 90% of the youth do not quite understand what kind of childcare services are provided by the elderly, but they are still willing to try this undeveloped field.

Among the elderly group, as shown in Panel B of Tbl.1, 35.15% have a willingness to participate in the childcare industry ≥ 3 , and 40.29% have an acceptance degree for participating in childcare services ≥ 3 . This shows that a large part of the elderly is willing and accept to participate in the childcare services of young families. And 84.86% of the elderly have a familiarity degree with childcare services ≥ 3 . The reason may be that they are older and have richer life experiences. More than 50% of the remaining elderly have a lower willingness and acceptance degree. The reasons may be that the elderly families are relatively wealthy and do not want or need to participate in work anymore; or the childcare industry is not in line with the industries they used to engage in, resulting in their low willingness to participate in the childcare industry.

Table 1: Results of Attitude Analysis

Indicator	Score				
	1	2	3	4	5
Panel A. The Youth					
Demand	19.75%	5.10%	23.57%	29.94%	21.66%
Familiarity	17.83%	28.66%	42.04%	8.92%	2.55%
Acceptance	0.00%	5.73%	21.66%	49.58%	22.93%
Panel B. The Young-old					
Willingness	24.57%	40.29%	14.00%	10.86%	10.29%
Familiarity	6.00%	9.14%	16.29%	57.43%	11.14%
Acceptance	25.43%	34.29%	15.43%	10.00%	14.86%

4.3. Basic Analysis Using Ordinal Logistic Regression

This study employs ordinal logistic regression to examine the determinants of willingness to continue working (measured as an ordered categorical variable, e.g., 1–5 scales) among the young-old population and the demand for child-care services (similarly ordered) among youth subgroups. In our model specifications, familiarity with the childcare market was deliberately chosen as a core

explanatory variable for both groups. This is because familiarity not only reflects the degree of awareness and understanding of the service system but also serves as a key driver of acceptance and willingness to engage with these services. Enhanced familiarity can mitigate information asymmetry, thereby facilitating a smoother alignment between market demand and labor supply. Key findings are revised as follows:

This study employs separate ordinal logistic regression models for the young-old and youth subgroups to analyze the determinants of ordered categorical outcomes. For the young-old group, the dependent variable is $Willingness_{ij}$ to continue working, measured on a 5-point Likert scale (1 = “highest willingness”, 5 = “lowest willingness”). For the youth group, the dependent variable is $Demand_{ij}$ for child-care service, similarly structured as an ordered variable (1 = “highest demand”, 5 = “lowest demand”). The core independent variable, $Familiarity_{ij}$ —assessing respondents' awareness of relevant labor or childcare markets—is also ordinal (1 = “not familiar at all”, 5 = “very familiar”). The models are formalized as follows:

$$Willingness_{ij} = \alpha_0 + \alpha_1 \times Familiarity_{ij} + \alpha_3 \times X_{ij} + \theta_i + \varepsilon_{ij} \quad (1)$$

$$Demand_{ij} = \beta_0 + \beta_1 \times Familiarity_{ij} + \beta_3 \times Y_{ij} + \varphi_i + e_{ij} \quad (2)$$

where X_{ij} and Y_{ij} denote vectors of control variables (e.g., marital status, retirement age, self-care ability for the Young-old; number of elderly caregivers, desired fertility for the Youth, as detailed in Tbl.2), θ_i and φ_i represent provincial fixed effects, and ε_{ij} and e_{ij} are random error terms. The coefficients α_1 and β_1 capture the focal relationship: the log-odds shift in higher willingness or demand categories per unit increase in familiarity. The proportional odds assumption, validated via Brant tests, ensures consistent predictor effects across all outcome thresholds. Control variables and fixed effects mitigate confounding from observed regional and socioeconomic heterogeneity, while the ordinal framework explicitly accounts for the graded nature of policy-relevant behavioral outcomes.

Ordinal logistic regression results in Tbl.2 reveal that familiarity is a pivotal determinant of the outcome variables across all three groups. For the young-old (Column 1), a one-unit increase in familiarity is associated with a 0.768-unit rise in the log-odds of expressing higher willingness to continue working. Among youth, increased familiarity similarly boosts demand for elderly-provided childcare services, with coefficients of 2.074 for married individuals (Column 2) and 0.736 for unmarried ones (Column 3). These findings suggest that enhanced awareness of the childcare service system substantially mitigates information asymmetry, thereby reinforcing both the supply side (young-old reemployment willingness) and the demand side (youth service adoption).

In summary, the evidence confirms that familiarity is a key factor in aligning market behavior across different demographic segments. The notably higher coefficient for married youth indicates that households with fewer informal care options are more reliant on formal, professional services. This robust effect of familiarity not only underscores its central role in driving market dynamics but also provides a natural segue to the ensuing sharp regression discontinuity analysis, which further examines the precise impact of policy interventions.

Table 2: Results of Logistic Regression

	The Young-old	The Youth	
	(1)	Married (2)	Unmarried (3)
Familiarity (1–5)	0.768*** (0.197)	2.074** (0.892)	0.736*** (0.262)
Marriage (Married = 1, Others = 0)	0.193 (0.105)	\	\
Reaching the Retirement Age (Yes = 1, No = 0)	−0.183 (0.299)	\	\
Way of Living (With Family = 1, Others = 0)	−0.019** (0.009)	\	\
Self-care Ability (Basically Able or beyond = 1, Others = 0)	−0.086*** (0.033)	\	\
Number of Elderly to Support in Family	\	−0.449 (1.139)	−0.201 (0.278)
Numbers of Elderly with Child-care Ability in Family	\	−0.367** (0.169)	−0.249** (0.123)
Desired Number of Children	\	−0.091*** (0.034)	−0.252*** (0.094)
Sex (Male = 1, Female = 0)	−0.019 (0.230)	0.291 (2.435)	0.573 (0.425)
Age	−0.082** (0.040)	0.889 (1.052)	0.257 (0.398)
Years of Schooling	0.284** (0.133)	−1.147 (1.163)	0.099 (0.296)
Monthly Household Income (ln)	0.178* (0.462)	2.284*** (0.587)	−0.119*** (0.032)
Number of Children in Family	−0.196 (0.201)	2.096 (1.514)	0.012 (0.009)
Region F.E.	Yes	Yes	Yes
Observations	3,251	1,369	2,778
Pseudo R^2	0.172	0.104	0.112

Note: ***, ** and * represent the significance levels of 1%, 5% and 10%, respectively.

5. Market Empirical Analysis Based on Sharp RD

5.1. Research Background, Data Variables, and Identification Strategies

5.1.1. Research Background and Data Variables

This study investigates whether market or policy interventions can effectively correct the supply–demand imbalance in the elderly childcare market. In light of data constraints and the absence of pilot projects, a sharp regression discontinuity (RD) design based on cross-sectional survey data is

employed [5]. The RD framework assumes that, absent any intervention, the outcome variable evolves smoothly with the assignment variable; thus, any discontinuity at a predefined income threshold can be attributed to the intervention—specifically, the training and screening of the young-old and promotional efforts to enhance young families' familiarity with elderly-provided childcare services.

Data were collected from a targeted social survey primarily involving Wuhan households, supplemented by additional regional data to capture comprehensive household characteristics and financial conditions. Rigorous screening ensured that the experimental and control groups were comparable, with family incomes clustered near the critical threshold. The final sample comprised 340 questionnaires (296 for the experimental group and 44 for the control group), yielding 1,360 observations. The acceptance of elderly-provided childcare services—quantified via a percentage-based fill-in-the-blank method—serves as the key outcome variable, reflecting both market feasibility and the potential to resolve elderly employment challenges.

5.1.2. Identification Strategy

Following the regression discontinuity design idea of Lee Lemieux, to ensure the exogeneity of the break-point setting, we use the results of exogenous research to determine the position of the break point [6]. According to the research of Yang Xiaolei et al. based on the analysis of the data of the China General Social Survey 2017 (CGSS2017) used in 2016, the average value of the middle-income level, which is the income range that can maintain childbearing and accounts for a larger proportion of the total, is 72,946.20 yuan [7]. However, since this is 2016 data, the current family income level needs to be converted according to the annual inflation rate and economic growth rate. After using the data from the National Bureau of Statistics, the current average value of middle-income families is 125,999.81 yuan. finally, the break point is determined at 10,500. Samples with a monthly family income higher than 10,500 yuan are set as the experimental group, and those lower than 10,500 yuan are set as the control group. Since this standard is determined by other research, the break-point setting meets exogeneity, so the impact of this concept on the acceptance of elderly-provided childcare services by young people can be identified through regression discontinuity. At the same time, since whether a young family receives an intervention is completely determined by the reported income, this regression model is a precise regression discontinuity.

$$D_i = \begin{cases} 1 & X_i \geq 10,500 \\ 0 & X_i < 10,500 \end{cases} \quad (3)$$

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 S_i + \beta_3 S_i^2 + \varepsilon_i \quad (4)$$

Y_i is the outcome variable, representing the acceptance of young families for childcare services provided by the elderly; D_i is the treatment variable, indicating that a family with an income higher than the break-point value will be identified as a middle-high-income family and thus receive an intervention; X_i is the assignment variable, representing the family income obtained from the survey; S_i is the age break-point difference (family income-break-point value). In this study, high-order terms of S_i are added to construct a non-linear relationship, and the order of S_i is determined by the AIC criterion; z_1 and z_2 are educational attainment and the number of elderly people in the family who have the ability to raise children respectively, both of which are control variables; β_1 is the core parameter, representing the effect degree of the implementation of the intervention on the outcome variable; ε_i is the random disturbance term.

5.2. Empirical Results of RD

5.2.1. Results of Regression Discontinuity

The first column of Tbl.3 presents a sharp regression discontinuity design (RDD) estimate at the cutoff point of 10,500. The coefficient for high-income households (0.284) is statistically significant at the 1% level, indicating a strong positive discontinuity in the dependent variable at the threshold. The standard error (0.0913) is relatively small, supporting the precision of the estimate. With control variables and region fixed effects included, the model accounts for potential confounders and regional heterogeneity. The sample size of 1,360 observations ensures sufficient statistical power, and the R^2 of 0.421 suggests moderate explanatory strength. These results imply that crossing the 10,500 cutoff is associated with a 0.284-unit increase in the familiarity for high-income households, consistent with a meaningful treatment effect.

Table 3: Results of Sharp RD

Variables	Dependent variable					
	(1)	(2)	(3)	(4)	(5)	(6)
High-income Households = 1	0.284*** (0.0913)	-0.357* (0.204)	-0.741 (0.155)	0.262*** (-0.091)	0.264*** (0.0965)	0.226*** (0.0754)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Region F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Cutoff Point	10,500	8,400	12,600	10,500	10,500	10,500
Observations	1,360	1,360	1,360	1,292	1,360	1,360
R^2	0.421	0.376	0.398	0.437	0.453	0.448

Note: ***, ** and * represent the significance levels of 1%, 5% and 10%, respectively.

To ensure the effectiveness of the RD test, it is necessary for us to test the smoothness of the control variables to ensure that the appearance of the break point is not caused by the control variables. After the smoothness test of the control variables, the coefficient of year of schooling is -0.324, and it is not significant at this level. The original hypothesis is not rejected, and it is considered that there is no jump; the coefficient of desired number of children is 0.025, the significance, and it is not significant at this level. The original hypothesis is not rejected, and it is considered that there is no jump.

5.2.2. Robustness Tests

To enhance the persuasiveness of the research conclusions and prove their effectiveness, we need to conduct robustness tests on the regression results. The tests mainly consist of three parts: placebo test, sample-selection sensitivity test, and bandwidth-selection sensitivity test.

1) Placebo Test

To ensure that the appearance of the break point is not caused by the placebo effect of the break point, we conducted a placebo test. We respectively selected 0.8 times and 1.2 times of the original break point as the break points for regression-discontinuity analysis, as shown in column (2) and (3) of Tbl.3. At this time, the regression coefficient becomes negative, and the P-value is much greater than 0.05, indicating that the effect is no longer significant. This rules out the possibility that the significant results are caused by the placebo effect of the break point and verifies the robustness of the conclusion.

2) Sample-Selection Sensitivity Test

After excluding 1/20 of the data near the break point, we repeated the regression-discontinuity process. The results are shown in column (4) of Tbl.3, indicating that the intervention effect is still significant, which shows that the conclusion is not highly sensitive to sample selection and has robustness.

3) Bandwidth-Selection Sensitivity Test

In this paper, the bandwidth was set to 0.5 times and 2 times of the optimal bandwidth, and the regression-discontinuity process was repeated, as shown in column (5) and (6) of Tbl.3. The results under these two bandwidths are both significant and have the same positive-negative nature as the benchmark regression, indicating that the results are robust.

6. Conclusions and Suggestions

This study provides empirical evidence on the feasibility of integrating elderly labor into the childcare market, demonstrating that targeted interventions can effectively align supply and demand. The findings indicate that increasing familiarity with elderly-provided childcare services enhances both young families' acceptance and the reemployment willingness of the young-old. Moreover, regression discontinuity analysis confirms that financial thresholds influence adoption patterns, with higher-income families exhibiting a significantly greater likelihood of service uptake. These results suggest that structured training and market promotion can mitigate information asymmetry, improve service quality, and foster a sustainable childcare ecosystem.

Looking ahead, expanding senior-provided childcare market requires policy support and societal attitudinal shifts. The government could introduce targeted subsidies, training programs, and quality certification to professionalize elderly caregiving. Simultaneously, public awareness campaigns can enhance trust and encourage broader participation. Future research should explore longitudinal effects, regional disparities, and potential spillover benefits, such as improved elderly well-being and intergenerational cohesion. By leveraging demographic complementarities, this model offers a scalable solution to China's dual challenge of an aging workforce and declining fertility rates, with implications for other aging economies worldwide.

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