

Hao, Zhuang; Cheng, Huihui; Bärnighausen, Till; Chen, Simiao

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## The effects of parental retirement on adult children's health: Evidence from China

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## SHORT RESEARCH ARTICLE

Health Economics Letters

# The effects of parental retirement on adult children's health: Evidence from China

Zhuang Hao<sup>1,2</sup>  | Huihui Cheng<sup>1,3</sup> | Till Bärnighausen<sup>4,5,6,7</sup> | Simiao Chen<sup>4,5</sup> 

<sup>1</sup>School of Economics and Management, Beihang University, Beijing, China

<sup>2</sup>Laboratory for Low-carbon Intelligent Governance, Beihang University, Beijing, China

<sup>3</sup>Rutgers Business School, Rutgers University, New Brunswick, New Jersey, USA

<sup>4</sup>Heidelberg Institute of Global Health (HIGH), Faculty of Medicine and University Hospital, Heidelberg University, Heidelberg, Germany

<sup>5</sup>Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China

<sup>6</sup>Africa Health Research Institute, Somkhele, KwaZulu-Natal, South Africa

<sup>7</sup>Department of Global Health and Population, Harvard T.H. Chan School of Public Health, Boston, Massachusetts, USA

## Correspondence

Simiao Chen, Heidelberg Institute of Global Health (HIGH), Faculty of Medicine and University Hospital, Heidelberg University, INF 130.3, Heidelberg 69120, Germany.  
Email: [simiao.chen@uni-heidelberg.de](mailto:simiao.chen@uni-heidelberg.de)

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## Abstract

Using representative data from China, we examine the causal effects of parental retirement on the health of adult children. To do so, we adopt a fuzzy regression discontinuity design and exploit the mandatory retirement ages in China as cut-off points. We find no evidence that parental retirement has significant effects on the mental health, healthcare utilization, or risky health behaviors of adult children. However, paternal retirement and maternal retirement have different effects on adult children's Self-reported health (SRH). Paternal retirement has a significantly negative effect only on the SRH of sons, while maternal retirement does not induce such effects. Potential mechanisms of intergenerational transfer through which parental retirement might affect adult children's health are also explored.

## KEYWORDS

fuzzy regression discontinuity, health, intergenerational effect, parental retirement

## 1 | INTRODUCTION

Population aging is a formidable challenge for many countries including China, imposing a potentially substantial economic burden (Bloom et al., 2020). There is an imperative to comprehensively explore and investigate the effects of retirement. Previous studies have examined the causal effects of retirement on the health of retirees and their spouses (Bloemen et al., 2017; Chen et al., 2020a, 2021; Eibich, 2015; Heller-Sahlgren, 2017; Lei & Liu, 2018; Müller & Shaikh, 2018; Zang, 2020; Zhang et al., 2018). Surprisingly, very few studies have investigated the intergenerational effects of retirement.<sup>1</sup> Furthermore, no study has ever examined the effects of elderly parents' retirement on their adult children's health specifically.

A large literature has shown that retirement leads to reduced income and increased free time (Battistin et al., 2009; Eibich, 2015; Eibich & Siedler, 2020; Wu & Gao, 2020; Zang, 2020; Zhang et al., 2018). Because of this, parental retirement

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may affect adult children's health through intergenerational money and time transfer (Benzeval & Judge, 2001; Daly et al., 2015). However, the theoretical direction of how parental retirement affects adult children's health is unclear.

On the one hand, because retirees experience a loss of regular income (Wu & Gao, 2020), this may cause parents to transfer less money to children (downward money transfer) or force children to provide more money to retired parents (upward money transfer). Either of these adjustments may lead to an increased financial burden for children, which may lead to biochemical changes in the body or cause ill health (Benzeval et al., 2014). In addition, because retirement may detrimentally affect the cognition and health of the elderly (Bonsang et al., 2012; Feng et al., 2020; Mazzonna & Peracchi, 2012; Rohwedder & Willis, 2010), retired parents may further burden adult children by requiring them to provide more care (upward time transfer), which may lead to worsened health.

On the other hand, with an increase in free time and a decrease in time costs, retired parents may assist their children more with housework and childcare (downward time transfer). For example, Eibich and Siedler (2020) found that retired parents are more likely to invest time in adult children via childcare provision, which in turn leads to an increase in adult children's fertility. If retired parents indeed make more downward time transfer, this may ease the burden faced by adult children and therefore lead to an improvement in their health.

These theoretically opposite effects motivate us to empirically examine the effects of paternal and maternal retirement on adult children's health. Furthermore, the effects of paternal and maternal retirement may differ due to differences in social norms. The potential for such differences makes it necessary to explore the effects of paternal and maternal retirement separately.

In this study, we use data from the China Family Panel Studies (CFPS) and adopt a fuzzy regression discontinuity (FRD) design to assess the causal effects of paternal and maternal retirement on adult children's health. We also explore potential mechanisms by examining whether parental retirement caused upward or downward intergenerational money or time transfer.

## 2 | DATA

The CFPS is a nationally representative biennial longitudinal household survey of Chinese families, which was launched in 2010 by the Institute of Social Science Survey, Peking University. Follow-up surveys were conducted in 2012, 2014, 2016, and 2018. The CFPS covers individuals from 25 provinces of China, which account for 94.5% of the total population in Mainland China (Xie et al., 2017). We use four waves of CFPS from 2012 to 2018 because the measurement of self-rated health used in 2010 differed from that used in other years. The CFPS contains detailed demographic information on each household member and their relations. We construct a child-centric sample by linking each adult respondent (and their corresponding health outcomes) with his or her biological father and mother (and their retirement status) by their unique identification numbers. In total, there are 18,973 child-parent pairs (observations) in CFPS 2012–2018.

The statutory retirement age (SRA) is 60 years for men and 50 years for women in urban China. For female civil servants, who only constitute a small portion of the population, the SRA is 55 (Chen et al., 2021). In principle, individuals are required to process retirement when reaching the SRA, although early or late retirement is possible in certain circumstances (Zhang et al., 2018). Because statutory retirement does not apply to rural China, we restrict our sample to respondents whose mothers or fathers are urban residents.

Our key independent variable is the parents' self-reported retirement status. Parents are defined as retired at the time of the interview if they reported being retired regardless of whether they had a paid job at that time (Feng et al., 2020). Following previous studies (Chen et al., 2021; Zhang et al., 2018), we exclude adult children whose parents neither work nor report processed retirement. Observations with fathers under 40 or over 80 years old (20 years or further from the SRA) are excluded from the analyses of paternal retirement (leaving us with 8247 observations), and observations with mothers under 30 or over 70 (20 years or further from the SRA) are excluded from the analyses of maternal retirement (leaving us with 8229 observations). Finally, individuals with missing variables of interest are also dropped from the analyses. After data cleaning, we are left with 6683 observations for the analyses of paternal retirement and 5590 observations for the analyses of maternal retirement.

One limitation of our data is that we could only identify child-parent pairs if the adult children were living in the same household as their parents in the initial wave of CFPS 2010, although we are still able to track identified children if they moved out in later waves. As a result, although the CFPS is a representative sample of Chinese families, our sample primarily consists of parent-child dyads living in the same household, 78.7% and 82.0% in the samples for the paternal retirement and maternal retirement analyses, respectively (authors' calculation). Due to this limitation, the external validity of our conclusions only extends to adult children who are more likely to live with their parents when their parents retire, although we note that the internal validity remains strong. We will return to this later.

We consider the following set of health outcomes for adult children in our main analysis: self-rated health, mental health, healthcare utilization, and risky health behaviors. Self-reported health (SRH) is measured on a five-point scale, with 1–5 representing excellent, very good, good, fair, and poor, respectively. Mental health is measured using the Center for Epidemiologic

Studies Depression Scale (CES-D depression score), on a scale of 0–60, which is calculated from a battery of questions that measure the severity of depression symptoms.<sup>2</sup> Higher CES-D scores correspond to higher levels of depression symptoms. Healthcare utilization is measured using two variables: hospital incident and medical cost. Hospital incident is a dummy variable indicating whether the respondent has been in hospital during the last year ('1' if yes or '0' if no). Medical cost is the total amount of inpatient and outpatient costs incurred in the past year (This variable is only recorded in CFPS 2014, 2016, and 2018). Risky health behaviors under consideration include drinking and smoking, where drinking is a binary variable indicating whether the respondent drinks more than three times a week ('1' if yes or '0' if no), and smoking is a binary variable indicating whether the respondent had smoked during the past month at the time of the interview ('1' if yes or '0' if no).

Control variables for the adult children generation include age, gender ('1' if male or '0' if female), marital status ('1' if married or '0' if otherwise), urban resident ('1' if yes or '0' if no), and educational levels (a set of dummy variables that indicate whether an individual's education level is illiterate, primary school, middle school, high school, 3-year college, 4-year college/bachelor's degree, master's degree, or doctoral degree).

Table 1 presents the descriptive statistics for the full sample as well as the stratified samples by paternal and maternal retirement status; Panel A and Panel B report the summary statistics for the samples used for estimating the effects of paternal retirement and maternal retirement, respectively. Both adult children with retired fathers and adult children with retired mothers experienced worse self-rated health, worse mental health, higher healthcare utilization, and higher risky health behaviors compared with their counterparts. Though suggestive, we note that such negative associations may not represent the true causal effects because parental retirement is an endogenous decision (that may depend on the individual's health and wealth, and perhaps the presence of grandchildren and their children's health), and adult children with retired parents are on average older than those with unretired parents and may have experienced deteriorations in health stock. We lay out our strategy to identify causal effects in the next section.

### 3 | EMPIRICAL STRATEGY: FUZZY REGRESSION DISCONTINUITY DESIGN

We adopt a FRD design as our identification strategy. Specifically, we follow previous literature (Chen et al., 2020a, 2020b, 2021; Li et al., 2015; Zang, 2020; Zhang et al., 2018; Zhao et al., 2022) and exploit the exogenous changes in parental retirement likelihood caused by China's statutory retirement requirement (SRA = 60 for men and SRA = 50 for women) to identify the causal effect of parental retirement on adult children's health outcomes.

To do so, we perform a local linear regression discontinuity estimation with triangular kernel and bias-corrected confidence intervals proposed by Calonico et al. (2014a, 2014b) and Calonico et al. (2017, 2019). Covariates (adult children's gender, age, marital status, urban/rural resident status, and educational level dummies) are included in the estimation to achieve efficiency gains (Calonico et al., 2019). Following Zang (2020) and Zhang et al. (2018), bandwidths are selected using two different MSE-optimal bandwidth selectors below and above the cutoff. Standard errors are clustered at the individual level to account for the correlation of error terms within individuals (Eibich & Siedler, 2020; Zhang et al., 2018).

The validity of an FRD design requires: (1) discontinuity of the likelihood of retirement at the cutoff of the running variable, (2) no discontinuity of other observed covariates or unobserved factors, and (3) no manipulation of the running variable, that is, parents' age.

The following tests are performed to verify the validity of the identification assumptions. First, As shown in Figure 1, reaching the SRA increases the likelihood of retirement dramatically for both fathers and mothers; a clear jump in retirement is observed at the statutory retirement ages. Second, we investigate whether there are systematic differences in individual characteristics that are correlated with the threshold (Imbens & Lemieux, 2008) by plotting children's age, marital status, and urban residence status against their parents' normalized age in Appendix Figure A1. We observe no discontinuity of children's characteristics around their parents' retirement cutoff. Third, Appendix Figure A2 plots the age distribution of parents around the SRA and shows no evidence of substantial bunching around the threshold. Finally, when using the density discontinuity test of the running variable developed by Cattaneo et al. (2018, 2020), we find that the test of the fathers' age yields a test statistic of  $-0.162$  with an associated  $p$ -value of  $0.871$ , and for mothers, the test statistic is  $1.163$  with an associated  $p$ -value of  $0.245$ , suggesting that the continuities of the normalized fathers' age and mother's age cannot be rejected. These assessments suggest that there is no manipulation of the running variables.

### 4 | MAIN RESULTS

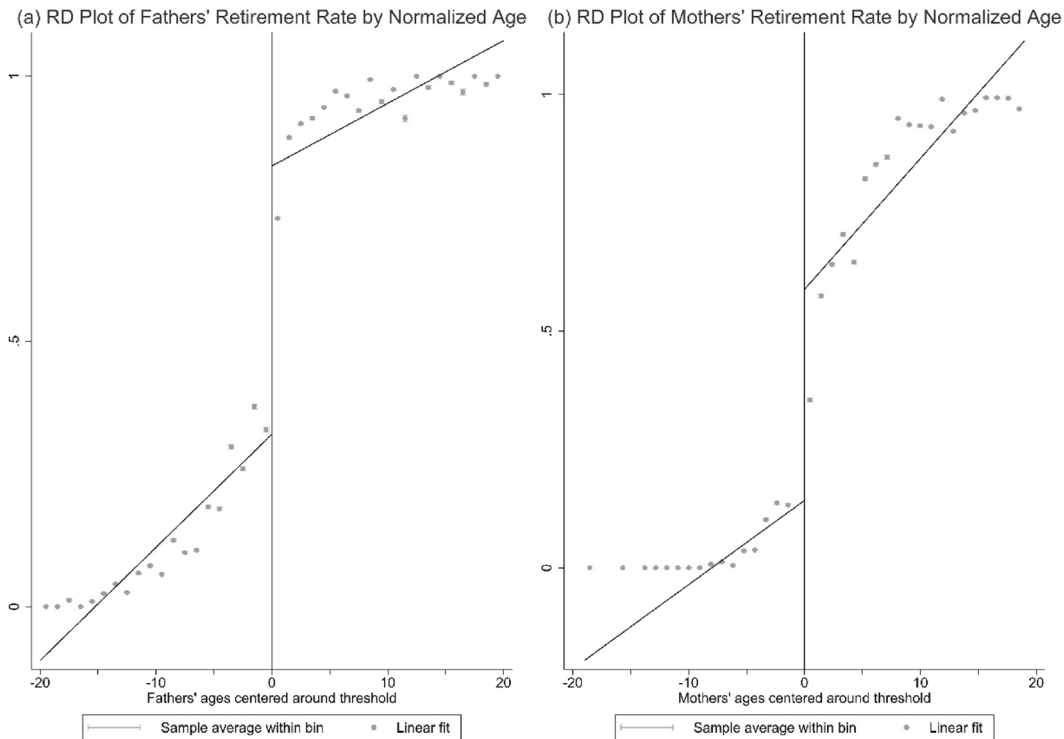
We estimate the effects of paternal and maternal retirement on adult children's health independently in Table 2. Gender-specific effects for sons and daughters are also examined because the effects of parental retirement on sons and daughters might differ due to traditional "son preference" in China (Ebenstein, 2010).

TABLE 1 Descriptive statistics for adult children: Full sample and the sample stratified by paternal and maternal retirement status.

	Full sample			Stratified by paternal retirement status						Test of equal means
	N	Mean	S.D.	Not retired			Retired			
				N	Mean	S.D.	N	Mean	S.D.	
Panel A: Sample for paternal retirement analyses										
Self-reported health	6668	2.586	1.032	3679	2.405	0.978	2989	2.809	1.052	-0.404***
CES-D depression score	4476	31.300	6.757	2467	30.991	6.593	2009	31.678	6.937	-0.687***
Hospital incident	6250	0.051	0.220	3446	0.043	0.202	2804	0.061	0.239	-0.018***
Medical cost	5336	1573.202	10,064.663	2952	1377.062	8042.961	2384	1816.074	12,106.495	-363.562
Drink	6251	0.138	0.345	3446	0.096	0.295	2805	0.190	0.392	-0.094***
Smoke	6251	0.317	0.465	3446	0.242	0.428	2805	0.409	0.492	-0.167***
Age	6683	29.794	8.303	3685	24.770	4.971	2998	35.968	7.360	-11.198***
Male	6683	0.624	0.484	3685	0.554	0.497	2998	0.709	0.454	-0.155***
Married	6683	0.531	0.499	3685	0.351	0.477	2998	0.753	0.432	-0.401***
Urban resident	6683	0.967	0.178	3685	0.958	0.200	2998	0.978	0.147	-0.020***
Educational level										
Illiterate	6683	0.022	0.146	3685	0.011	0.106	2998	0.034	0.182	-0.023***
Primary school	6683	0.066	0.249	3685	0.056	0.230	2998	0.079	0.269	-0.023***
Middle school	6683	0.257	0.437	3685	0.237	0.425	2998	0.281	0.449	-0.044***
High school	6683	0.297	0.457	3685	0.333	0.471	2998	0.253	0.435	0.080***
3-year college	6683	0.183	0.387	3685	0.184	0.388	2998	0.181	0.385	0.003
4-year college	6683	0.161	0.367	3685	0.164	0.371	2998	0.156	0.363	0.009
Master's degree	6683	0.015	0.120	3685	0.014	0.116	2998	0.016	0.126	-0.002
Doctoral degree	6683	0.001	0.024	3685	0.001	0.029	2998	0.000	0.018	0.000
Panel B: Sample for maternal retirement analyses										
Self-reported health	5579	2.600	1.007	2238	2.374	0.940	3341	2.751	1.023	-0.377***
CES-D depression score	3773	31.021	6.577	1531	30.837	6.215	2242	31.147	6.811	-0.310
Hospital incident	5279	0.053	0.223	2108	0.036	0.186	3171	0.064	0.244	-0.028***
Medical cost	4441	1554.361	9695.539	1808	1136.842	6467.939	2633	1841.059	11,386.572	-610.806**
Drink	5279	0.125	0.331	2108	0.079	0.270	3171	0.155	0.362	-0.076***
Smoke	5279	0.290	0.454	2108	0.205	0.404	3171	0.346	0.476	-0.140***
Age	5590	29.052	7.539	2241	23.261	4.572	3349	32.927	6.590	-9.665***
Male	5590	0.594	0.491	2241	0.535	0.499	3349	0.634	0.482	-0.099***
Married	5590	0.488	0.500	2241	0.216	0.412	3349	0.669	0.470	-0.453***
Urban resident	5590	0.976	0.152	2241	0.957	0.204	3349	0.989	0.103	-0.033***
Educational level										
Illiterate	5590	0.014	0.116	2241	0.005	0.073	3349	0.019	0.137	-0.014***
Primary school	5590	0.051	0.220	2241	0.038	0.191	3349	0.060	0.237	-0.022***
Middle school	5590	0.201	0.401	2241	0.220	0.415	3349	0.188	0.391	0.032***
High school	5590	0.308	0.462	2241	0.388	0.487	3349	0.254	0.435	0.134***
3-year college	5590	0.209	0.406	2241	0.188	0.391	3349	0.222	0.416	-0.034***
4-year college	5590	0.199	0.399	2241	0.149	0.356	3349	0.233	0.423	-0.084***
Master's degree	5590	0.018	0.132	2241	0.011	0.103	3349	0.022	0.148	-0.012***
Doctoral degree	5590	0.001	0.030	2241	0.000	0.021	3349	0.001	0.035	-0.001

Note: The sample for most outcomes is from CFPS 2012, 2014, 2016, and 2018. CES-D depression score is from CFPS 2012, 2016, and 2018. Medical cost is from CFPS 2014, 2016, and 2018. Tests of equal means between the two subsamples are also reported.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .



**FIGURE 1** RD plots of paternal and maternal retirement by legal retirement ages. Regression discontinuity plots of paternal and maternal retirement status against the statutory retirement ages and a linear fit. We use a uniform kernel and set the number of bins to 20 on both sides.

We find no evidence that parental retirement has significant effects on mental health, healthcare utilization, or risky health behaviors of adult children. The point estimates on these outcomes are generally small in magnitude and never statistically significant at traditional levels. However, paternal retirement has a significantly negative effect on the SRH of sons (larger scores representing worse SRH), while maternal retirement does not carry such effects. We also provide RD plots for the health outcomes in Appendix Figures A3–A5. Consistently, these graphs indicate that paternal retirement, instead of maternal retirement, might have effects on their sons' SRH.

To test the robustness of these results, first, we use different bandwidths that are constructed by rescaling the optimal point estimation bandwidth by 75%, 125%, and 150%. As shown in Appendix Tables A1 and A2, these results are largely consistent with our main findings. For 75% of the optimal bandwidth, the effects of paternal retirement on sons' SRH are not significant at the traditional levels, which might be because of a 27% drop in the effective observations, though the coefficient is comparable to that observed with the optimal bandwidth. Second, a so-called “donut-hole” estimation is performed to investigate if the results are sensitive to observations close to the cutoff by excluding observations around the threshold (Cattaneo et al., 2019; Shigeoka, 2014). Specifically, we exclude observations with fathers aged 60 years and mothers aged 50 years, respectively. Appendix Table A3 reports the “donut-hole” estimation results, which are consistent with our main findings. Lastly, we performed the Romano-Wolf multiple hypothesis tests to control for the *familywise error rate* (*FWER*) (Romano & Wolf, 2005a, 2005b) by applying the Stata routine provided by Clarke et al. (2020) and Clarke (2021), with the caution that multiple hypothesis tests may be conservative and fail to reject false null hypotheses (Anderson, 2008; Clarke et al., 2020; Romano & Wolf, 2005a, 2005b). Reported in Appendix Table A4, the results presented some mixed evidence: our results on sons' SRH are robust to Romano and Wolf corrections with 4 outcomes from the same sample (SRH, hospital incident, drink, and smoke), but not the Romano and Wolf corrections with all 6 outcomes which are from different samples. We note this as one limitation of this paper which will require further study with richer data that may enable researchers to conduct similar tests with higher power. But given that our results are robust to different sample specifications and noting that multiple hypothesis tests may be conservative as mentioned above, we believe that our results still open a rather significant possibility that sons' SRH is negatively affected by paternal retirement.



TABLE 2 The effects of parental retirement on adult children's health.

Dependent Variables		(1)	(2)	(3)	(4)	(5)	(6)
		Paternal retirement			Maternal retirement		
		Full sample	Sons	Daughters	Full sample	Sons	Daughters
Self-reported health	Conventional	0.491 (0.329)	0.808* (0.449)	0.047 (0.416)	-0.126 (0.375)	0.045 (0.479)	-0.239 (0.485)
	Robust	0.585 (0.407)	1.040* (0.545)	0.090 (0.516)	-0.306 (0.485)	-0.185 (0.627)	-0.418 (0.628)
	Effective N	2391	1830	851	2434	1536	1221
CES-D depression score	Conventional	0.790 (2.898)	-0.605 (3.438)	3.658 (4.665)	-0.760 (2.395)	-3.267 (3.473)	2.118 (3.225)
	Robust	1.208 (3.471)	0.468 (4.187)	4.129 (5.622)	-1.140 (3.227)	-4.265 (4.702)	2.741 (4.214)
	Effective N	1506	1114	755	1917	1044	873
Hospital incident	Conventional	-0.001 (0.065)	-0.073 (0.089)	0.058 (0.106)	0.035 (0.066)	-0.031 (0.093)	0.052 (0.095)
	Robust	-0.001 (0.080)	-0.082 (0.111)	0.062 (0.127)	0.040 (0.084)	-0.059 (0.123)	0.103 (0.122)
	Effective N	2512	1563	956	2473	1339	1304
Medical cost	Conventional	-3662.096 (4269.825)	-6061.954 (7127.758)	27.570 (2074.560)	2884.495 (1891.015)	1459.562 (1586.418)	2610.604 (3134.187)
	Robust	-5348.533 (5234.300)	-8702.985 (8649.541)	330.251 (2678.481)	3229.423 (2271.471)	777.771 (1911.659)	3504.011 (3491.599)
	Effective N	2249	1454	885	2080	1091	1025
Drink	Conventional	0.024 (0.086)	0.041 (0.150)	-0.001 (0.051)	-0.012 (0.088)	0.271 (0.181)	-0.045 (0.070)
	Robust	0.011 (0.103)	0.043 (0.183)	-0.013 (0.064)	0.026 (0.117)	0.397 (0.242)	-0.053 (0.094)
	Effective N	2513	1564	696	2473	1241	1127
Smoke	Conventional	-0.034 (0.112)	-0.039 (0.178)	-0.047 (0.065)	0.056 (0.146)	0.081 (0.252)	0.068 (0.077)
	Robust	-0.051 (0.138)	-0.021 (0.222)	-0.082 (0.073)	0.133 (0.195)	0.160 (0.342)	0.096 (0.095)
	Effective N	2241	1460	745	1924	1140	886

Note: The sample for most outcomes is from CFPS 2012, 2014, 2016, and 2018. CES-D depression score is from CFPS 2012, 2016, and 2018. Medical cost is from CFPS 2014, 2016, and 2018. Covariate-adjusted local linear fuzzy RD estimation with (robust) and without (conventional) bias-adjustment of point estimation and inference (Calonico et al., 2014a, 2014b, 2019). Covariates include adult children's age, gender, marital status, urban/rural residence, and educational level. Standard errors are clustered by the individual and shown in parentheses. Bandwidths are selected based on the MSE-optimal bandwidth selector developed in Calonico et al. (2014a, 2019).

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

## 5 | MECHANISM EXPLORATION

As discussed earlier, we examine four potential mechanisms of intergenerational transfer through which parental retirement might affect adult children's health, namely, upward monetary transfer, downward monetary transfer, upward time transfer, and downward time transfer. Appendix B Tables B1 and B2 report the results for paternal retirement and maternal retirement, respectively.

Interestingly, Table B1 shows that the likelihood of upward monetary transfer and the total amount of transfer from daughters to fathers increase significantly due to paternal retirement, but the likelihood and the amount of monetary transfers from

sons do not increase significantly. This is consistent with the findings of Xie and Zhu (2009), showing that married daughters provide more financial support to parents than married sons do. As for upward time transfer, we find no significant effects due to paternal retirement. Table B2 also shows no evidence that parental retirement significantly affects downward money or time transfers. As for maternal retirement, we generally find no evidence of any significant changes in intergenerational monetary or time transfer, upward or downward, due to maternal retirement.

These findings provide no evidence that the observed deterioration of sons' SRH comes from upward money or time transfers. However, this does not exclude the possibility that social gender norms put more pressure on sons following parental retirement in China. Specifically, sons are expected to carry major responsibility of supporting their parents, especially providing financial support as parents age (Sun, 2002; Yang, 1996). Failing to meet expectations from retired parents could cause conflicts or stress (Remnet, 1987; Szinovacz & Davey, 2001). Therefore, such conflict or stress could disproportionately affect the sons (and their self-rated health) adversely. Second, it is possible that because sons are more likely to live with their parents, they may experience more pressure from higher household living costs following parental retirement, which would not be captured by the upward money transfer measurement in CFPS.

## 6 | CONCLUSION AND DISCUSSION

This paper is motivated by the gap in research on the intergenerational health effects of retirement. Because retirement may result in a decrease in health stock but an increase in disposable time for the retirees, it may affect their adult children's health through intergenerational time and money transfers. Such potential effects may be of interest to policymakers, healthcare providers, and older adults and their children, especially in countries (e.g., China) in which informal support from children plays a crucial role in elder care. Our results suggest that paternal and maternal retirement have no significant effects on most dimensions of adult children's health outcomes, including mental health, healthcare utilization, and risky health behaviors, at least in the short term. However, we do find that paternal retirement has a statistically significant negative effect on sons' SRH, while maternal retirement has no such effect, suggesting that the genders of both parents and children play a role in the effects of parental retirement on the children's SRH.

Our paper makes the following contributions. First, we examine a novel hypothesis and provide the first piece of evidence on the intergenerational health effects of retirement, as previous literature has only focused on the health effects of retirement on retirees and their spouses. Because adult children constitute most of the workforce and face pressure to support their parents and raise their children, understanding the effects of parental retirement on the health of adult children is of great interest. Second, by estimating the effects of paternal and maternal retirement independently on both male and female adult children's health, we identify the heterogeneous effects of retirement by gender.

Our study has several limitations. First, the design of our identification strategy (regression discontinuity) dictates that the results of this study capture only short-term effects. Future research is needed to examine the long-term effects of parental retirement. Second, due to limited data availability, we are not able to test all the possible mechanisms. For example, one untested possible reason why paternal retirement leads to a decrease in sons' SRH is the social expectation in China that sons are principally responsible for supporting aging parents, especially financially (Sun, 2002; Yang, 1996; Yuan et al., 2021), with failure to meet these expectations potentially causing conflict that could adversely affect sons' SRH. Future studies are needed to unpack this potential mechanism. Third, because our sample primarily consists of parent-child dyads living in the same household, the external validity of our conclusions only extends to those adult children who are more likely to live with their parents when the parents retire. Expanding the generalizability of our results requires future studies that use more representative datasets (and potentially larger sample sizes) from countries with various economic and cultural settings. Finally, we note that the results of the multiple tests are not perfect. We hope our paper, as the first stepping stone, can motivate future studies to provide richer and more robust evidence on the intergenerational health effects of retirement.

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## CONFLICT OF INTEREST STATEMENT

The authors have no conflict interest to declare.



## DATA AVAILABILITY STATEMENT

The data used in this paper, 2012–2018 CFPS, is available through application via <http://www.issp.pku.edu.cn/cfps/en/index.htm>.

## ETHICS STATEMENT

This study uses secondary anonymized data with minimal risk. There was no requirement for ethical review.

## ORCID

Zhuang Hao  <https://orcid.org/0000-0001-5027-3574>

Simiao Chen  <https://orcid.org/0000-0003-0555-2157>

## ENDNOTES

- <sup>1</sup> To our knowledge, there are only two such studies. With data from Germany, Eibich and Siedler (2020) found that parental retirement positively influences the fertility of their adult children mainly because of the intergenerational time transfer from the retired parents. Using data from China, Wu and Gao (2020) found that parental retirement reduces children's annual hours of labor supply.
- <sup>2</sup> The CES-D score is recorded in CFPS 2012, 2016, and 2018. Specifically, a 20-question version of the CES-D questionnaire (CES-D 20) is used in CFPS 2012, an 8-question version of the CES-D questionnaire (CES-D 8) is used in CFPS 2018, and both CES-D 8 and CES-D 20 are used in CFPS 2016. The CES-D 8 scores are then translated into CES-D 20 scores by the CFPS team to make sure that they are comparable.

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