

**Supplementary Table 1.** Health outcomes between empty-nest households from no children and departed children in Shandong, China

Health outcomes	Empty-nest households		$\chi^2$	P
	No children (%)	Departed children(%)		
<b>One or more elderly members with NCDs</b>			0.020	0.889
Yes	35(68.6)	1087(69.5)		
No	16(31.4)	476(30.5)		
<b>One or more elderly members admitted to hospital</b>			2.411	0.120
Yes	5(9.8)	286(18.3)		
No	46(90.2)	1277(81.7)		
<b>Total</b>	51	1563		

**Supplementary Table 2.** Descriptive statistics of sample households and prevalence of CHE <sup>a</sup> in different study sites of Shandong, China

Characteristic	Urban areas <sup>b</sup>			Rural areas <sup>c</sup>			All (%)
	DC (%)	HY (%)	ZD (%)	QF (%)	CP (%)	LL (%)	
<b>Observations</b>	495	460	477	478	396	455	2761
<b>Household composition</b>							
Empty-nest single	9.6	12.5	16.6	14.6	20.7(2.2)	13.6(1.6)	14.9
Empty-nest couple	40.1	45.5	54.2	34.0	49.2(2.8)	44.2(2.3)	44.2
Non-empty-nest elderly	50.4	42.1	29.2	51.3(2.4)	30.1(2.6)	42.2(2.3)	40.9
<b>One or more elderly members with NCDs <sup>d</sup></b>							
Yes	66.3	62.9	79.8	62.6	64.2	70.2	63.4
No	33.7	37.1	20.2	37.4	35.8	29.8	32.6
<b>One or more elderly members admitted to hospital</b>							
Yes	15.7	20.6	22.1	11.1	19.0	8.5	15.7
No	84.3	79.4	77.9	88.9	81.0	91.5	84.3
<b>CHE</b>							
Yes	35.8	43.1	51.2	41.2	54.6	48.8	46.1
No	64.2	56.9	48.8	58.8	45.4	51.2	53.9

a. CHE: Catastrophic health expenditure.

b. DC: Dongchangfu District; HY: Huaiyin District; ZD: Zhangdian District.

c. QF: Qufu County; CP: Chiping County; LL: Leling County.

d. NCD: Non-communicable chronic disease.

**Supplementary Table 3.** Health outcomes and household income among different types of elderly households in Shandong, China

<b>Variables</b>	<b>Empty-nest singles (%)</b>	<b>Empty-nest couples (%)</b>	<b>Non-empty-nest elderly (%)</b>	$\chi^2$	<b><i>P</i></b>
<b>Observations</b>	398	1216	1147		
<b>Household income</b>				314.5	<b>0.000</b>
Q1	211 (53.6)	285 (23.6)	151 (13.3)		
Q2	100 (25.4)	324 (26.8)	279 (24.6)		
Q3	66 (16.8)	281 (23.2)	351 (30.9)		
Q4	17 (4.3)	320 (26.4)	355 (31.2)		
<b>One or more elderly members with NCD</b>				16.69	<b>0.000</b>
Yes	300 (75.4)	822 (67.6)	737 (64.3)		
No	98 (24.6)	394 (32.4)	410 (35.7)		
<b>One or more elderly members admitted to hospital</b>				10.51	<b>0.005</b>
Yes	72 (18.1)	219 (18.0)	154 (13.4)		
No	326 (81.9)	997 (82.0)	993 (86.6)		