Capturing Vulnerability Beyond Expenditure Burden: A Comparison of Financial Risk Protection Indicators in China

HPR12

Danyang Wei[1], Yifan Fu[1], Min Hu[1]
[1]Fudan University, Shanghai, China

OBJECTIVE

- Conventional financial risk protection indicators, such as catastrophic health expenditure (CHE), primarily reflect realized out-of-pocket burden, but may fail to capture financial vulnerability arising from limited residual capacity after health payments.
- As China advances UHC, this study examined whether the revised SDG 3.8.2 indicator identifies households differently from conventional measures.

METHODS

- **Data source:** Six waves of the nationally representative China Family Panel Studies (CFPS), 2012–2022. Repeated cross-sectional analysis of 7,846–13,102 households per wave.
- **Financial risk protection indicators:**
  - **Revised SDG 3.8.2 indicator**: Positive Out-of-pocket (OOP) payments exceeding 40% of the household budget net of China's poverty line
  - **Catastrophic health expenditure (CHE)**: OOP payments ≥40% of non-food expenditure.
  - **Impoverishing health expenditure (IHE)**: Households pushed below the poverty line after OOP.
- **Statistical analysis:**
  - Trends and inequality: Estimated prevalence and concentration indices across survey waves.
  - Identification patterns: Cross-classified households across the three indicators.
  - Group comparisons: Compared household characteristics using t-tests for continuous variables and chi-square tests for categorical variables.

RESULTS

- **Financial risk disproportionately affected disadvantaged households:** In 2022, 12.48% of 8,288 households were identified by the revised indicator. Among them, 66.05% were rural and 47.97% were in the lowest income quintile, compared with 41.38% and 14.50% among households not identified (Table 1).
- **The revised indicator revealed a persistent burden overlooked by CHE:** From 2016 to 2022, prevalence declined for the revised indicator (21.51% to 12.48%), CHE (15.62% to 9.65%), and IHE (3.98% to 1.42%). However, the revised indicator remained consistently higher than CHE, indicating that conventional CHE alone captures only part of financial hardship (Figures 1–3).
- **The revised indicator revealed greater socioeconomic inequality :** Its concentration index became more negative from −0.231 in 2012 to −0.448 in 2022, compared with a smaller change for CHE (−0.188 to −0.229), indicating a stronger concentration of risk among poorer households (Figure 4).

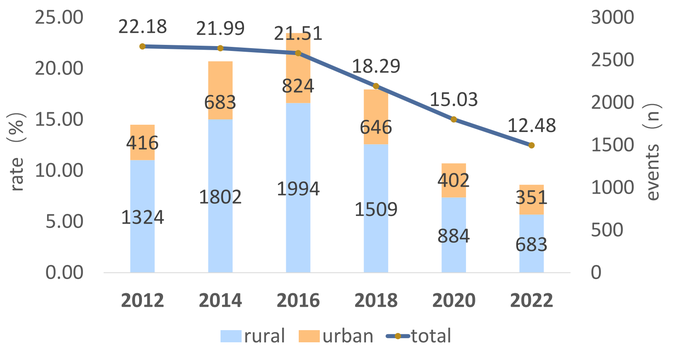

Fig.1 Prevalence and Trends of the Revised Financial Risk Indicator

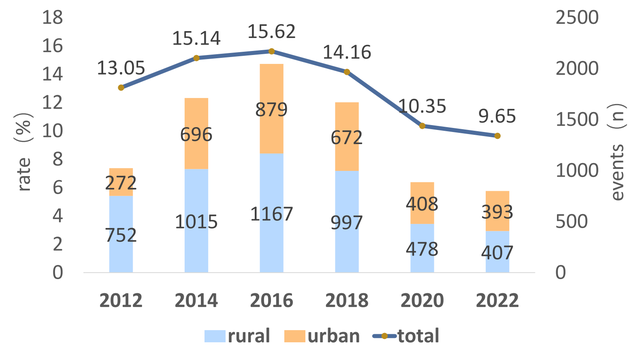

Fig.2 Prevalence and Trends of CHE

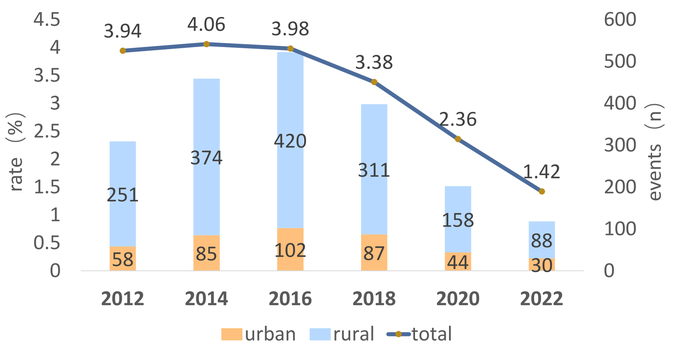

Fig.3 Prevalence and Trends of IHE

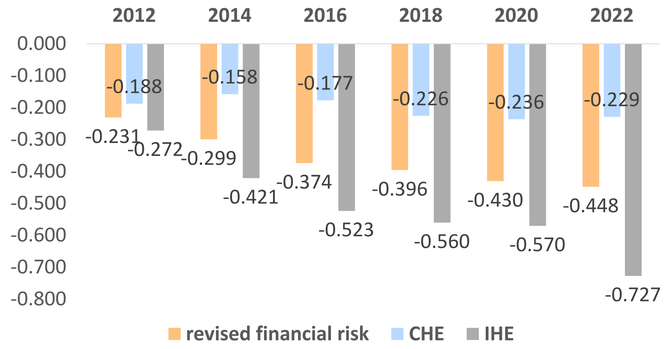

Fig.4 Concentration Indices of financial risk indicators

Tab.1 Characteristics by the Revised Indicator, 2022

Characteristic	Overall (N = 8,288)	With financial risk (n = 1,034)	Without financial risk (n = 7,254)	P value
Age				<0.001
<45	3,497 (42.19)	170 (16.44)	3,327 (45.86)	
45–59	2,866 (34.58)	370 (35.78)	2,496 (34.41)	
≥60	1,925 (23.23)	494 (47.78)	1,431 (19.73)	
Gender				0.223
Male	4,575 (55.20)	589 (56.96)	3,986 (54.95)	
Female	3,713 (44.80)	445 (43.04)	3,268 (45.05)	
Residence				<0.001
Urban	4,603 (55.54)	351 (33.95)	4,252 (58.62)	
Rural	3,685 (44.46)	683 (66.05)	3,002 (41.38)	
Region				<0.001
Eastern	3,702 (44.67)	349 (33.75)	3,353 (46.22)	
Central	2,381 (28.73)	319 (30.85)	2,062 (28.43)	
Western	2,205 (26.60)	366 (35.40)	1,839 (25.35)	
Education				<0.001
Primary school or below	2,489 (30.03)	600 (58.03)	1,889 (26.04)	
Junior secondary school	2,654 (32.02)	280 (27.08)	2,374 (32.73)	
Senior secondary school	1,423 (17.17)	109 (10.54)	1,314 (18.11)	
College or above	1,722 (20.78)	45 (4.35)	1,677 (23.12)	
Per capita household income quintile				<0.001
Q1 (lowest)	1,548 (18.68)	496 (47.97)	1,052 (14.50)	
Q2	1,672 (20.17)	249 (24.08)	1,423 (19.62)	
Q3	1,722 (20.78)	146 (14.12)	1,576 (21.73)	
Q4	1,662 (20.05)	95 (9.19)	1,567 (21.60)	
Q5 (highest)	1,684 (20.32)	48 (4.64)	1,636 (22.55)	
Household poverty status				<0.001
Poor	352 (4.25)	158 (15.28)	194 (2.67)	
Non-poor	7,936 (95.75)	876 (84.72)	7,060 (97.33)	
Any household member with a chronic disease				<0.001
Yes	2,310 (27.87)	466 (45.07)	1,844 (25.42)	
No	5,978 (72.13)	568 (54.93)	5,410 (74.58)	
Healthcare visit in the past 2 weeks				<0.001
Yes	1,335 (16.11)	310 (29.98)	1,025 (14.13)	
No	6,953 (83.89)	724 (70.02)	6,229 (85.87)	
Hospitalization in the past 12 months				<0.001
Yes	894 (10.79)	274 (26.50)	620 (8.55)	
No	7,394 (89.21)	760 (73.50)	6,634 (91.45)	

- **Cross-classification revealed a narrowing but persistent identification gap:** The revised-only share fell by 52% (10.30% to 4.92%), narrowing its gap with CHE-only from 7.76 to 2.30 percentage points. Nevertheless, revised-only households remained nearly twice as prevalent as CHE-only households (4.92% vs. 2.62%) and represented 39% of all revised-indicator cases in 2022, showing that substantial financial hardship remained undetected by CHE and IHE (Figure 5).
- **The two indicators captured distinct but complementary risk profiles:** Revised-only households were more often rural (77.45% vs. 31.80%), in the lowest income quintile (59.56% vs. 14.29%), and had lower median income (CNY 8,679 vs. 25,717), whereas CHE-only households were nearly twice as likely to report hospitalization (31.34% vs. 16.18%; all P < 0.001). This contrast suggests that the revised indicator captures limited capacity to meet basic needs, while CHE reflects hardship following high-cost care; the lower hospitalization rate among revised-only households may also signal constrained healthcare use and potential unmet need (Figure 6).

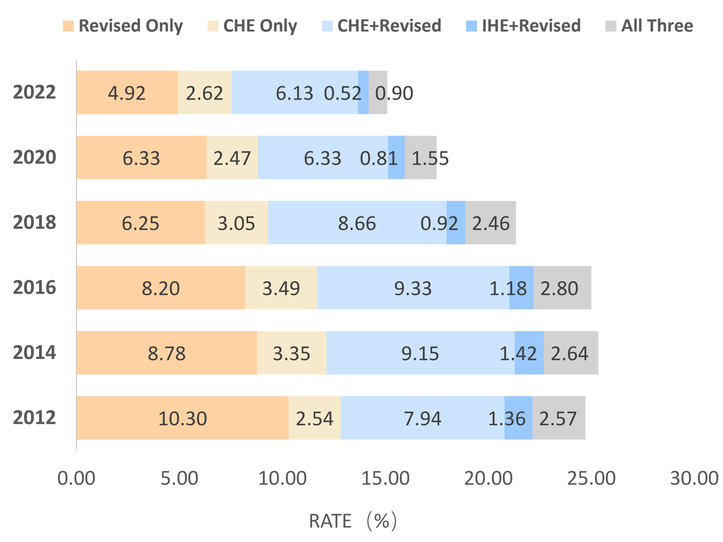

Fig.5 Cross-classification Patterns of Financial Risk Protection Indicators

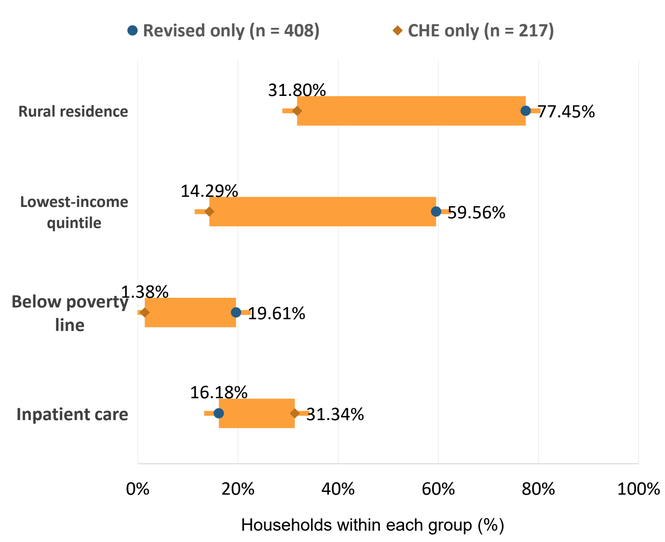

Fig.6 Households Identified Exclusively by the Revised Indicator or CHE

CONCLUSIONS

- **Declining prevalence does not mean equitable financial protection:** Financial risk fell overall but remained increasingly concentrated among poorer households.
- **The revised indicator should complement, rather than replace, CHE:** The revised indicator captures vulnerability arising from limited capacity to meet basic needs, while CHE remains informative about financial hardship following high-cost care.
- **UHC monitoring requires a dual-track approach:** Combining CHE with basic-needs-adjusted measures can reveal both catastrophic spending and financially constrained use. Policies should therefore address high medical expenses while reducing upfront barriers for low-income and rural households.

CONTACT INFORMATION

- Correspondence: Min Hu, PhD, Professor
- E-mail: humin@fudan.edu.cn
- Founding： The National Natural Science Foundation of China (No. 72474053)

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