

Applying the Methodology of Quantitative and Qualitative Changes to Analyze the Impact of Huimin Insurance on the Sustainable Development of Basic Medical Insurance

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Abstract

Marxist and social science methodologies provide scientific conceptual tools and analytical perspectives for research across various disciplines. Among these, the methodology of quantitative and qualitative changes reveals the fundamental laws governing the development of things, offering significant guidance for exploring the relationship between Huimin Insurance and basic medical insurance, and for promoting the sustainable development of the medical security system. Based on this methodology and the practical context of the medical security field, this paper provides an in-depth analysis of the impact of Huimin Insurance on the sustainable development of basic medical insurance.

Keywords: Huimin Insurance, Basic Medical Insurance, Sustainability

Competing interests:

The authors declare that there is no conflict of interest.

1. Introduction

Basic medical insurance, serving as the cornerstone of China's medical security system, covers a vast population, providing essential medical security for citizens. However, amid intensifying population aging, advancements in medical technology, and the continuous rise in medical costs, basic medical insurance faces mounting pressures to maintain its fiscal balance. On one hand, Yin et al. (2025) pointed out the growing elderly population substantially increases medical demand. On the other hand, Lin et al. (2024) found new medical technologies and pharmaceuticals, often highly priced, place a heavier burden on the expenditure of the medical insurance fund.

Huimin Insurance, as a form of supplementary medical insurance, is characterized by low participation thresholds, affordable premiums, and relatively broad coverage. Since its introduction, it has garnered widespread attention. Taking Zibo's Qihui Bao as an example, it provides supplementary medical security for local residents, offering secondary reimbursement for high medical expenses that remain after basic medical insurance reimbursement and must be borne personally. Currently, Wu et al. (2024) pointed out the participation rate for Huimin Insurance products remains relatively low, constituting a limited proportion within the overall medical security system.

2. Analysis of Huimin Insurance's Impact on the Sustainability of the Basic Medical Insurance Fund through the Lens of Quantitative and Qualitative Change Methodology

From the perspective of quantitative change, Huimin Insurance, in its early development phase, while relatively small in scale, begins to exert a positive influence on the medical insurance fund. In terms of revenue, each new enrollee in Huimin Insurance represents an incremental premium contribution to the medical security system. Although the premium per individual is modest, Fei et al. (2022) found the aggregate revenue accumulates progressively as the number of participants grows. For instance, Zibo City, as one of the first pilot cities in Shandong Province to implement inclusive commercial health insurance, launched “Zibo Qi Hui Bao” in 2020. Over five years of operation, cumulative enrollments reached 6 million person-times, with a participation rate maintained at around 30%, consistently ranking first in the province and among the top nationally for similar products. In its initial year (2020), participation stood at 1.21 million individuals, each paying an annual premium of ¥99. Through promotional efforts, participation grew to 1.58 million in 2021, leading to increasing premium revenue. This year-on-year growth in premium income, while its supplementary effect on the basic medical insurance fund is currently not pronounced, represents a positive accumulation of quantitative change.

In terms of expenditure, Huimin Insurance can cover part of the medical expenses falling

outside the basic medical insurance reimbursement catalog, thereby alleviating the payment pressure on basic medical insurance. A concrete example illustrates this: One cancer patient, considering a highly effective new drug not covered by basic medical insurance, opted for a covered drug to save costs. Another patient, enrolled in Huimin Insurance which covered this specific drug, incurred medical expenses of ¥200,000 but received ¥80,000 reimbursement from Qihui Bao. This demonstrates that with Huimin Insurance, patients are more inclined to utilize self-pay diagnostic and treatment items and seek reimbursement through Huimin Insurance. This, to some extent, reduces the expenditure burden of basic medical insurance. While the cost-saving effect of a single case is limited, the accumulation of numerous similar cases establishes a quantitative trend towards reduced expenditures.

When Huimin Insurance reaches a certain scale, it can trigger a qualitative transformation, exerting a significant impact on the sustainability of the basic medical insurance fund. Regarding revenue, if participation in Huimin Insurance increases substantially, reaching a significant proportion of the local basic medical insurance enrollee population, its premium revenue could become a crucial supplementary financial resource for the basic medical insurance fund. For example, in a region with 5 million basic medical insurance enrollees, if Huimin Insurance participation reaches 1 million individuals paying an annual premium of ¥100 each, it would raise ¥100 million annually. This ¥100 million could bolster the basic medical insurance fund, enhancing its risk resilience and enabling it to manage sudden large-scale medical expenditures more effectively.

Concerning expenditure, large-scale Huimin Insurance can more comprehensively cover high-cost medical risk. With sufficient enrollment, Huimin Insurance can reimburse a wider array of high-cost, self-pay medical items, further relieving the burden on basic medical insurance. For instance, in treating critical illnesses, Huimin Insurance could incorporate more advanced therapies and expensive drugs into its coverage, freeing basic medical insurance from bearing these high costs. Consequently, basic medical insurance could concentrate its funds on covering more common illnesses and essential medical services, improving fund utilization efficiency, and achieving a qualitative shift from fiscal pressure towards balance or even surplus.

Within the development of Huimin Insurance, quantitative and qualitative changes interpenetrate. During the quantitative accumulation process, partial qualitative changes occur locally. Huimin Insurance programs in certain regions have achieved notable success in covering specific diseases. While the overall scale may not yet induce a comprehensive qualitative shift, effective supplementation of basic medical insurance has been realized within specific disease coverage areas, enhancing security levels for those patients – representing a localized partial qualitative change.

Conversely, once a qualitative change occurs, it initiates a new process of quantitative change. When Huimin Insurance scales up sufficiently to help basic medical insurance achieve

fiscal balance, the latter can then optimize its coverage scope and benefit levels. This improvement, in turn, could attract more individuals to enroll in Huimin Insurance, driving further growth in participation and forming a new phase of quantitative accumulation. This dynamic fosters the advancement of the medical security system towards higher levels of development.

3. The Unique Value of the Quantitative-Qualitative Methodology in Addressing Professional Problems

The average participation rate of the national welfare insurance in 2023 is only 28%, with 76% of cities having a participation rate below the qualitative change threshold of 35% (according to the “Report on the Development of China's Inclusive Medical Insurance”). For example, the participation rate of Nanjing's “Ninghui Insurance” has been hovering between 26% and 29% for three consecutive years. Although it has accumulated 430 million yuan in funds, it only covers 17% of high-value drug expenses and has not yet triggered a fundamental change in the protection mode. The coexistence of local qualitative changes and overall quantitative changes has led to structural quantitative breakthroughs in some developed regions. Shanghai's “Hu Hui Bao” has included CAR-T therapy (1.2 million yuan/course) in its coverage, reducing the out of pocket ratio for cancer patients from 42% to 19%. After the participation rate of Guangzhou's “Sui Sui Kang” reached 58%, an “automatic deduction system” was established with basic medical insurance, reducing duplicate reimbursement expenses by 120 million yuan annually. These regional qualitative changes suggest the need to establish a “gradient development evaluation model” to divide development stages based on three-dimensional indicators such as participation rate, high cost coverage rate, and institutional connectivity.

Applying the quantitative-qualitative change methodology allows for a clear assessment of Huimin Insurance's current stage within the process of promoting basic medical insurance sustainability. Recognizing that Huimin Insurance is currently in an early stage of quantitative accumulation (small but growing) prevents policymakers and relevant departments from overlooking it due to its presently limited impact. Instead, it encourages continuous promotion of its development, focusing on accumulating quantitative changes in participation rates and coverage scope. Simultaneously, it facilitates preparation for future qualitative shifts, enabling proactive planning for fund utilization and benefit coordination. Based on the spiral upward law of “quantitative accumulation qualitative breakthrough new quantitative change”, a three-stage progressive strategy needs to be implemented:

Expansion of the insured base: Drawing on the model of “linking the insured rate with the activation rate of individual medical insurance accounts” in Zhejiang, the insured rate has been increased by 23 percentage points through automatic deduction from individual medical

insurance accounts.

Risk pool construction: Set up a “healthy body reward mechanism” to refund 30% of the premium to those who have not claimed for three consecutive years, optimize the age structure of the insured population (such as the practice in Shenzhen, which reduced the average age of the insured population from 54 to 48 years old). Security upgrade: 40% of the remaining funds will be used to expand the special drug catalog (such as adding 12 new anti-cancer drugs to “Zibo Qihuibao”). Institutional integration: Establishing a one-stop settlement platform for “basic medical insurance+welfare insurance” (Guangzhou case shows that it can reduce administrative costs by 17%).

Building on the principle that quantitative change is the necessary preparation for qualitative change, rational strategies for Huimin Insurance development can be formulated. These include intensifying publicity to raise awareness and participation rates, and optimizing product design by adjusting coverage and premiums based on market demand and public feedback to attract more enrollees. These measures aim to accelerate quantitative accumulation and hasten the onset of qualitative change. Following a qualitative shift, development directions for Huimin Insurance can be re-evaluated based on new conditions, such as improved fiscal status of basic medical insurance, propelling both into a new phase of synergistic development. Qualitative change trajectory: macro transformation monitoring.

Change in institutional nature: The decrease in the deficit ratio of the basic medical insurance fund (such as Hangzhou Huimin Insurance reducing the fund deficit ratio from 4.8% to 1.2%). Structural qualitative change: high transfer rate of medical expenses. Change in service nature: claims automation rate (Shanghai HuHui Insurance has compressed the average claims processing time to 8 hours through AI review).

Dynamic warning system: If the equivalent variable index is lower than the benchmark value for two consecutive years, the guarantee plan review will be automatically initiated. Qualitative change effect separation model: By regression analysis to eliminate medical inflation factors, accurately calculate the net impact of Huimin Insurance on the sustainability of medical insurance funds (Suzhou calculation shows that its contribution rate reaches 38%).

The quantitative-qualitative change methodology provides scientific criteria for evaluating Huimin Insurance's impact on basic medical insurance sustainability. The extent of quantitative change can be measured through concrete data like participation numbers, premium revenue, and reimbursement amounts. Xue (2020) pointed out the occurrence of qualitative change can be assessed through indicators such as shifts in the fiscal balance status of basic medical insurance or enhancements in overall security levels. This scientific evaluation aids in promptly identifying issues, adjusting development strategies, and ensuring that Huimin Insurance and basic medical insurance evolve towards a mutually beneficial and interactive relationship.

4. Methodological Insights for Understanding Core Issues in Medical Security Studies

Sprout period (2015-2020): Huimin Insurance was piloted in regional areas such as Shenzhen and Nanjing, with a participation scale generally below 100000 people, showing a "point like quantitative change" characteristic. In the initial stage, Shenzhen's critical illness supplementary insurance only covered 2.3% of the population, but the original accumulation of institutional linkage was completed through the "medical insurance personal account deduction" mechanism.

Expansion period (2021-2023): 280 cities across the country will promote the Huimin Insurance, with an average annual growth rate of 67%. The accumulation of quantitative changes will trigger structural and qualitative changes - Shanghai Huibao will include proton heavy ion therapy (single course of treatment of 380000 yuan) in reimbursement, forcing the establishment of a dynamic adjustment mechanism for the basic medical insurance catalog.

Reconstruction period (2024-): Regions with a participation rate exceeding 40% are experiencing a qualitative change in institutional integration. For example, Zhejiang has established a three-tier security structure of "basic medical insurance+welfare insurance+medical assistance", and the personal medical expense burden rate has decreased from 34% to 22%.

The quantitative-qualitative change methodology underscores that the medical security system is dynamically evolving. The relationship between basic medical insurance and Huimin Insurance is not static but continuously evolves over time and with changing circumstances. Huimin Insurance's trajectory—from initial small-scale exploration towards accumulating influence with the potential for significant future impact on basic medical insurance—exemplifies this. This insight compels us to adopt a developmental perspective when researching the medical security system, focusing on the interactions and dynamic changes among various security mechanisms, and continuously adapting the system to new realities.

Basic layer (basic medical insurance): Release protection space by reducing the deductible (such as Guangzhou employee medical insurance from 1600 yuan to 1000 yuan). Supplementary layer (Huimin Insurance): Set up a "tiered premium" system, and impose an additional 20% premium on individuals with a medical insurance account balance exceeding 5000 yuan to supplement the fund.

Practical case: Suzhou "Su Hui Bao" will transfer 3% of the surplus funds of basic medical insurance to the risk adjustment fund, raising the upper limit of reimbursement for high medical expenses from 300000 to 1 million.

Within the medical security field, basic medical insurance and Huimin Insurance are intrinsically linked. The development of Huimin Insurance relies on the foundational support

of basic medical insurance, while the growth of Huimin Insurance can, in turn, bolster basic medical insurance and promote its sustainability. This mirrors the interdependence and mutual reinforcement inherent in quantitative and qualitative changes. Therefore, both academic research and practical implementation should prioritize their synergistic development. Through policy guidance and resource integration, the complementary advantages of both can be leveraged to collectively elevate the overall standard of medical security.

Utilize the fund surplus after the qualitative change to expand the beneficiaries, such as Hangzhou increasing the hospitalization compensation ratio from 85% to 92%.

By legislating to clarify the division of protection responsibilities, the "Regulations on the Administration of Welfare Insurance in Zhejiang Province" stipulate that the basic medical insurance shall bear no more than 70% of the cost. Build a full cycle guarantee of prevention treatment rehabilitation, such as Suzhou increasing the proportion of health management expenditure to 15% of the total fund.

The risk of premature aging due to insufficient quantity: a city blindly expanded its coverage when the participation rate was only 18%, resulting in a payout rate of 147% the following year. Systemic risk of delayed qualitative change: A city in Northeast China failed to establish an intelligent settlement system in a timely manner, resulting in repeated reimbursements and annual losses exceeding 8 million yuan. Three level warning of "red, yellow, and blue" needs to be set: Yellow light (risk germination): When the proportion of healthy individuals decreases by $\geq 3\%$ for two consecutive quarters. Red light (risk manifestation): payout ratio exceeds 100% and lasts for 3 months. Establish a risk reserve fund to cope with system fluctuations.

Perfecting the medical security system is a long-term endeavor requiring a balance between accumulation and breakthrough. In developing Huimin Insurance, the early quantitative work—accumulating participants and expanding coverage—is vital. However, attention must also be paid to opportunities for qualitative leaps, prompting timely strategic adjustments to achieve breakthroughs. Once Huimin Insurance participation reaches a critical scale, it becomes imperative to optimize coverage content and enhance security levels, facilitating the transition from quantitative accumulation to qualitative transformation. Research and practice must carefully manage this balance, avoiding the pitfalls of prioritizing short-term gains over long-term accumulation or pursuing qualitative leaps while neglecting the foundational role of quantitative change.

5. Conclusion

The Marxist methodology of quantitative and qualitative changes provides profound theoretical guidance for studying the impact of Huimin Insurance on the sustainable development of basic medical insurance. By applying this methodology, we gain not only a

deeper analytical understanding of Huimin Insurance's role and developmental patterns within the medical security system but also unique perspectives and effective approaches for solving practical problems. Future research and practice should continue to adhere to this methodology, fostering the synergistic development of Huimin Insurance and basic medical insurance, continuously improving China's medical security system, and providing the people with more reliable and sustainable medical security services.

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