

# The Impact of Medical-Health Trust on Satisfaction with the Healthcare System: Based on Principal-Agent Theory

Jing Xiao<sup>1,\*</sup>, Lijun Wan<sup>2</sup>, Yiming Liu<sup>3</sup>

<sup>1</sup> School of Economics and Management, Harbin Normal University, Harbin 150025, China

<sup>2</sup> School of Economics and Management, Suqian University, Suqian 223800, China

<sup>3</sup> School of Management, Tianjin University of Traditional Chinese Medicine, Tianjin 301617, China

\*Corresponding Author

## Abstract

Based on principal-agent theory, this paper employs CFPS data to investigate how medical-health trust affects satisfaction with the healthcare system. Model construction and empirical results show that medical-health trust exerts a significant positive influence on system-level satisfaction, and such effects vary across different population groups. From the dimensions of information asymmetry and incentive mechanisms within principal-agent theory, this paper puts forward targeted policy suggestions. The findings can provide theoretical reference and practical implications for improving the operational efficiency and public satisfaction of China's healthcare system.

## Keywords

Principal-Agent Theory; Medical-Health Trust; Healthcare System Satisfaction; CFPS Data.

## 1. Introduction

The issue of information asymmetry between doctors and patients constitutes a key research focus within studies on diagnosis and treatment services. Since the reform and opening-up, medical and health services have gradually moved toward market-orientation[1].turning medical-seeking behavior into a special type of consumption relationship. Medical-health services can be regarded as “commodities”, with medical and health institutions acting as the “sellers”, and patients together with their families as the “buyers”. As sellers, medical institutions and medical staff deliver services with certain quality to obtain remuneration for institutional operation and personal livelihood, fulfilling corresponding contractual obligations. As buyers, patients pay financial compensation to obtain medical-health services and likewise perform their contractual duties.

Nevertheless, medical-health services possess distinctive attributes as commodities, which give rise to information asymmetry between doctors and patients. Within the medical-health service market, patients and their families are evidently in a disadvantaged position. Without systematic professional medical training, they have limited understanding of their illnesses, treatment alternatives and medical-seeking options. In practice, clinical activities are complex, and diagnostic errors are practically unavoidable in medical services[2].At the same time, high-quality services supplied by medical providers are limited and hard to substitute. Patients can hardly find alternative options to meet their treatment demands, and medical institutions cannot give full guarantee for patients' treatment outcomes and rehabilitation progress. For the above reasons, patients are generally placed in a vulnerable and passive consumption position in doctor-patient interactions.

Furthermore, constrained by limited and unevenly distributed medical-health resources across China, doctor-patient information asymmetry is further aggravated[3]. Poor medical experience and tense doctor-patient conflicts occur from time to time. Under such background, medical-health trust, as a core indicator reflecting public confidence toward the medical system, has gained growing importance. In healthcare scenarios, trust is reflected in patients' recognition of physicians' professional judgment and their approval of services delivered by medical institutions. From the perspective of principal-agent theory, patients as principals entrust the management of personal health to doctors and medical institutions acting as agents. In this process, agency problems caused by information asymmetry and inconsistent objectives may weaken patients' trust in medical services, and further lower their satisfaction toward the whole healthcare system. Therefore, in-depth research on such correlation is of great practical significance for targeted optimization of medical-health policies, promotion of service quality and improvement of people's well-being.

## **2. Theoretical Basis and Research Hypotheses**

### **2.1. Analysis of Doctor-Patient Relationships from a Principal-Agent Perspective**

Principal-agent theory originated from the late 1960s to early 1970s [4], and constitutes an important component of institutional economics' contract theory. Generally speaking, the party holding information advantages acts as the agent, whereas the party at an information disadvantage serves as the principal. This theory mainly discusses how principals can design optimal incentive contracts for agents under conditions of interest conflicts and information asymmetry. In the doctor-patient principal-agent relationship, patients (principals) lack systematic professional medical knowledge and training [5], so they have to delegate their health-related decision-making power to medical service providers. As agents, doctors possess obvious advantages in professional medical knowledge. They have more adequate information about patients' physical conditions, treatment schemes and drug selections than patients themselves. Doctors undertake dual roles: they are agents safeguarding patients' interests, as well as suppliers delivering healthcare services. Such complex role positioning tends to trigger agency problems. On one hand, driven by self-interest, doctors may take advantage of information superiority to induce excessive demand for unnecessary medical services. On the other hand, medical treatments contain inherent risks and outcome uncertainties, so treatment effects cannot be directly used to fully evaluate physicians' practical work. Accordingly, agency problems in doctor-patient interactions may erode patients' trust in medical services, worsen doctor-patient tensions and even lead to intensified conflicts.

### **2.2. Research Hypotheses**

Within the principal-agent relationship, high levels of patient trust toward doctors and medical institutions mean patients believe agents will deliver services based on patients' best interests. Such trust enables patients to perceive better service quality during medical visits, including adequate doctor-patient communication and reasonable treatment arrangements. For instance, patients who trust physicians' diagnostic conclusions are more willing to cooperate with treatment, and tend to give positive evaluations for the whole medical process, which further raises their satisfaction with the healthcare system. On this basis, this study proposes Hypothesis H1:

H1: Medical-health trust exerts a significant positive impact on satisfaction with the healthcare system.

### 3. Data and Methodology

#### 3.1. Data Sources

This study draws upon the 2022 China Family Panel Studies (CFPS). Its sample covers 25 provinces, municipalities and autonomous regions, collecting multi-layer information at individual, household and community levels. As the dataset contains abundant medical-health related content, it supplies reliable empirical evidence for exploring the effect of trust on healthcare-system satisfaction.

#### 3.2. Variable Selection

Based on principal-agent theory and combined with the actual availability of survey data, this study classifies all variables into three categories: dependent variable, core independent variable, and control variables.

Dependent variable: Satisfaction with the healthcare system is measured by the questionnaire item concerning “overall satisfaction with medical conditions at medical institutions”. This variable adopts a five-point Likert scale for assignment, where 1 represents “very dissatisfied” and 5 represents “very satisfied”.

Core independent variable: Medical-health trust. This indicator is measured through respondents’ self-reported “degree of trust in doctors”. It is an 11-point scale ranging from 0 to 10: a score of 0 means “very distrustful” and 10 means “very trustful”. Higher scores indicate that respondents hold a higher level of trust in medical institutions and medical staff.

Control variables: To mitigate estimation bias resulting from omitted variables, this study sets three groups of control variables. The first group covers individual demographic characteristics, including age, gender and self-rated health status. The second group consists of household characteristics, namely marital status (with or without spouse) and household-registration (Hukou) type. The third group refers to socioeconomic characteristics, which include medical insurance participation, income level and out-of-pocket medical expenditures. Detailed definitions and assignment rules for each variable are presented in [Table 1](#).

**Table 1.** Variable Definitions and Assignments

|                      | Variable Name                  | Assignment Description                                                                   |
|----------------------|--------------------------------|------------------------------------------------------------------------------------------|
| Dependent Variable   | Healthcare System Satisfaction | 1 = Very Dissatisfied, 2 = Dissatisfied, 3 = Moderate, 4 = Satisfied, 5 = Very Satisfied |
| Independent Variable | Healthcare Trust               | Continuous scale: 0 (Very Low Trust) to 10 (Very High Trust)                             |
| Control variables    | Age                            | Continuous variable (years)                                                              |
|                      | Gender                         | 0 = Female; 1 = Male                                                                     |
|                      | Hukou Status                   | 0 = Non-agricultural; 1 = Agricultural                                                   |
|                      | Self-Rated Health              | 1 = Unhealthy, 2 = Average, 3 = Relatively Healthy, 4 = Healthy, 5 = Very Healthy        |
|                      | Spouse                         | 0 = Without Spouse; 1 = With Spouse                                                      |
|                      | Medical Insurance              | 0 = Uninsured; 1 = Insured                                                               |
|                      | Income Status                  | Continuous variable (log-transformed)                                                    |
|                      | Out-of-Pocket Expenditure      | Continuous variable (log-transformed)                                                    |

## 4. Model Construction

Given that the dependent variable, Healthcare System Satisfaction, is measured on a five-level ordinal scale, we employ an Ordered Logit model to estimate the impact of healthcare trust on satisfaction levels. The econometric equation is constructed as follows:

$$\text{logit}[P(Y_i \leq j)] = \alpha_j - (\beta_1 \text{Trust}_i + \sum_{k=2}^K \beta_k X_{ki}), \quad (j = 1, 2, 3, 4) \quad (1)$$

Where:  $Y_i$ : Satisfaction with the healthcare system of individual  $i$  (ordered categorical variable);  $\text{Trust}_i$ : Core independent variable of medical-health trust (continuous variable ranging from 0 to 10);  $X_{ki}$ : The set of control variables, including individual characteristics (age, gender, self-rated health), household characteristics (Hukou type, marital status), and socioeconomic characteristics (medical insurance status, logarithm of income, logarithm of out-of-pocket medical expenses);  $\alpha_j$ : Cut-point parameters, representing threshold values for distinguishing different satisfaction levels;  $\beta_1$ : Estimated coefficient of medical-health trust, with an expected positive sign.

## 5. Empirical Results and Analysis

### 5.1. Descriptive Statistics

**Table 2.** Descriptive Statistics for Main Variables

|                      | Variable                       | Variable Definition                                          | Sample Size | Percentage | Standard Deviation | Mean   | Min | Max    |
|----------------------|--------------------------------|--------------------------------------------------------------|-------------|------------|--------------------|--------|-----|--------|
| Dependent variable   | Healthcare System Satisfaction | 1 = Very Dissatisfied                                        | 41          | 1.04%      | 0.759              | 3.771  | 1   | 5      |
|                      |                                | 2 = Dissatisfied                                             | 319         | 8.07%      |                    |        |     |        |
|                      |                                | 3 = Moderate                                                 | 492         | 12.45%     |                    |        |     |        |
|                      |                                | 4 = Satisfied                                                | 2,755       | 69.69%     |                    |        |     |        |
|                      |                                | 5 = Very Satisfied                                           | 346         | 8.75%      |                    |        |     |        |
| Independent Variable | Healthcare Trust               | Continuous scale: 0 (Very Low Trust) to 10 (Very High Trust) | 3,953       | 100        | 2.158              | 6.862  | 0   | 10     |
| Control Variables    | Age                            | Continuous variable (years)                                  | 3,953       | 100        | 12.012             | 39.558 | 16  | 87     |
|                      | Gender                         | 0 = Female                                                   | 1,808       | 45.74%     | 0.498              | 0.543  | 0   | 1      |
|                      |                                | 1 = Male                                                     | 2,145       | 54.26%     |                    |        |     |        |
|                      | Hukou Status                   | 0 = Non-agricultural                                         | 944         | 23.88%     | 0.426              | 0.761  | 0   | 1      |
|                      |                                | 1 = Agricultural                                             | 3,009       | 76.12%     |                    |        |     |        |
|                      | Self-Rated Health              | 1 = Unhealthy                                                | 420         | 10.62%     | 1.036              | 3.100  | 1   | 5      |
|                      |                                | 2 = Average                                                  | 266         | 6.73%      |                    |        |     |        |
|                      |                                | 3 = Relatively Healthy                                       | 2,181       | 55.17%     |                    |        |     |        |
|                      |                                | 4 = Healthy                                                  | 669         | 16.92%     |                    |        |     |        |
|                      |                                | 5 = Very Healthy                                             | 417         | 10.55%     |                    |        |     |        |
|                      | Spouse                         | 0 = Without Spouse                                           | 929         | 23.50%     | 0.424              | 0.765  | 0   | 1      |
|                      |                                | 1 = With Spouse                                              | 3,024       | 76.50%     |                    |        |     |        |
|                      | Medical Insurance              | 0 = Uninsured                                                | 228         | 5.77%      | 0.233              | 0.942  | 0   | 1      |
|                      |                                | 1 = Insured                                                  | 3,725       | 94.23%     |                    |        |     |        |
|                      | Income Level                   | Continuous variable (log-transformed)                        | 3,953       | 100        | 1.763              | 10.270 | 0   | 13.710 |
|                      | Out-of-Pocket Expenditure      | Continuous variable (log-transformed)                        | 3,953       | 100        | 2.136              | 6.220  | 0   | 12.79  |

Based on the 2022 CFPS dataset, a total of 3 953 valid samples are obtained. [Table 2](#) presents the descriptive statistics for each variable. According to the statistical outcomes, the mean value of satisfaction with the healthcare system is 3.771 with a standard deviation of 0.759. This

suggests public satisfaction stays at a moderate level, while individual-level differences still exist. The average score of medical-health trust reaches 6.862 (SD = 2.158), which reflects a relatively high overall trust level among residents accompanied by considerable sample variation.

For control variables, the demographic features are as follows: the average age of respondents is around 40 years old; male respondents account for 54.26 % of the total sample, and respondents with agricultural Hukou make up 76.12 %. In respect of health-related conditions and social security, most respondents rate their self-rated health status as “relatively healthy” (55.17 %), and the medical insurance coverage rate is as high as 94.23 %. From the perspective of economic burden indicators, the logarithmic mean of out-of-pocket medical expenditures is 6.220 (SD = 2.136), and the logarithmic mean of personal income stands at 10.270 (SD = 1.763).

## 5.2. Analysis of Empirical Results

Table 3 displays the estimation results derived from the Ordered Logit Model.

Empirical findings provide strong support for the core hypothesis H1. The regression coefficient of medical-health trust is positive and statistically significant at the 1 % level ( $\beta = 0.244$ ,  $p < 0.01$ ), with the corresponding odds ratio (OR) equal to 1.276. Holding other variables constant, a one-unit rise in medical-health trust increases the odds of respondents reporting higher-tier satisfaction with the healthcare system by 27.6 %. This finding aligns with the analytical logic of principal-agent theory. Trust acts as both a vital psychological contract and institutional capital. In doctor-patient interactions, information asymmetry creates subjective uncertainty for individuals, and trust can effectively mitigate such uncertainty so as to improve public evaluations of healthcare system performance.

The estimates of control variables show individual and household-level factors exert multi-dimensional impacts on satisfaction. Age brings a significant positive effect ( $\beta = 0.009$ ,  $p < 0.01$ ), indicating that elderly respondents tend to be more tolerant of medical services and hold higher satisfaction. The gender coefficient is significantly negative ( $\beta = -0.176$ ,  $p < 0.05$ ). Compared with females, male respondents' odds of higher satisfaction are only 0.839 times that of female counterparts.

Taking the “unhealthy” group as the reference, self-rated health presents an obvious gradient effect. As self-assessed health improves, respondents' odds of higher satisfaction rise gradually: the OR is 1.476 for the “relatively healthy” group and 2.869 for the “very healthy” group. Higher personal health capital lowers friction costs in seeking medical care and helps form positive subjective perceptions. For household characteristics, respondents with a spouse have significantly lower odds of high-satisfaction outcomes than those without a spouse ( $\beta = -0.211$ , OR = 0.810,  $p < 0.05$ ). This difference may come from heavier family care-giving burdens and greater economic sensitivity to household medical expenses among this group.

Economic and insurance-related variables show no statistical significance. Hukou type, medical-insurance participation status, income level and out-of-pocket medical expenditures all fail to meet the  $p < 0.05$  significance threshold. Combined with China's current medical governance reality, public satisfaction evaluation depends more on subjective trust and personal medical-seeking experience rather than objective economic conditions or insurance status. It highlights the practical value of building doctor-patient trust to optimize the domestic healthcare governance system.

**Table 3.** Ordered Logit Estimates of Healthcare Trust on System Satisfaction

| Variable Group             | Independent Variables              | Regression Coefficient (β) | Odds Ratio (OR)      |
|----------------------------|------------------------------------|----------------------------|----------------------|
| Core Explanatory Variables | Healthcare Trust                   | 0.244 ***<br>(0.17)        | 1.276 ***<br>(0.17)  |
| Respondent Characteristics | Age                                | 0.009 ***<br>(0.003)       | 1.009 ***<br>(0.003) |
|                            | Gender                             | -0.176 **<br>(0.071)       | 0.839 **<br>(0.071)  |
|                            | Hukou                              | -0.139<br>(0.082)          | 0.870<br>(0.082)     |
|                            | Self-Rated Health (Ref: Unhealthy) |                            |                      |
|                            |                                    | -0.309 **<br>(0.156)       | 0.735 **<br>(0.156)  |
|                            |                                    | 0.389 ***<br>(0.116)       | 1.476 ***<br>(0.116) |
|                            |                                    | 0.682 ***<br>(0.141)       | 1.978 ***<br>(0.141) |
|                            |                                    | 1.054 ***<br>(0.159)       | 2.869 ***<br>(0.159) |
|                            | Spouse                             | -0.211 **<br>(0.091)       | 0.810 **<br>(0.091)  |
|                            | Health Insurance                   | 0.069<br>(0.150)           | 1.071<br>(0.150)     |
|                            | Income Level (Log)                 | -0.015<br>(0.020)          | 0.985<br>(0.020)     |
|                            | Out-of-Pocket Expenditure (Log)    | -0.031<br>(0.017)          | 0.969<br>(0.017)     |

Notes: Standard errors in parentheses are robust standard errors. \*\* p<0.05, \*\*\* p<0.01.

## 6. Discussion based on Principal-Agent Theory

### 6.1. Theoretical Mechanism Validation

#### 6.1.1. Trust Mitigates Information Asymmetry

Empirical results indicate that medical-health trust exerts a positive boosting effect on satisfaction at the 1 % significance level ( $\beta = 0.244$ ). This finding supports the core proposition of principal-agent theory: patients acting as principals can partly offset their disadvantaged position caused by medical knowledge barriers when they trust physicians as agents. If patients recognize doctors' professional diagnostic and therapeutic judgments, they are more willing to accept the whole medical service process. Such trust relieves anxiety and doubts arising from insufficient information, and consequently lifts overall satisfaction.

#### 6.1.2. Practical Reflection Of Incentive Compatibility

Trust encourages patients to actively cooperate with diagnosis and treatment and raises treatment compliance. It helps form a positive doctor-patient interaction loop and optimizes practical medical-seeking experience. The empirical outcomes of this study offer statistical evidence for this logical pathway, which accounts for the improvement in public satisfaction.

## **6.2. Deep Drivers of Group Heterogeneity**

### **6.2.1. Moderating Role of Health Status**

Self-rated health serves as a critical factor shaping individual satisfaction with medical services. Regression results show that respondents rating themselves “very healthy” have 2.869 times higher odds of reporting high satisfaction compared with those in the “unhealthy” group. This reflects the moderating role of health status within the principal-agent relationship. People in good health seldom face complicated treatment decisions and rely less on medical agents, so they tend to generate positive evaluations. By contrast, vulnerable patient groups bear dual pressures of treatment risks and information disadvantages. Their satisfaction is therefore more sensitive to the level of medical-health trust.

### **6.2.2. Constraints From The Institutional Environment**

Medical-insurance and economic-related variables show no statistical significance. It suggests that current major doctor-patient conflicts do not mainly stem from financial burden, but from agency problems triggered by insufficient trust, such as public worries over excessive medical services. Given the wide coverage of universal medical insurance, constructing trust-oriented governance carries greater urgency than merely adjusting medical expenses. Raising medical information transparency and improving physicians’ reputation evaluation mechanisms can help enhance public medical-health trust.

## **6.3. Policy Implications**

Drawing on the analytical framework of principal-agent theory, this study puts forward four reform approaches:

### **6.3.1. Mitigate Information Asymmetry Through Information Transparency**

Regulatory authorities should establish a sound framework for medical information disclosure. Standardized public platforms ought to release treatment protocols, medical service prices, clinical quality indicators and practitioners’ qualification information [6]. Transparency enables competent physicians to demonstrate their service quality, and meanwhile pushes under-performing medical providers to improve services[7].

### **6.3.2. Construct Incentive-Compatible Contractual Arrangements**

Health authorities should integrate patient trust and satisfaction metrics into physician performance reviews and compensation structures, ensuring that the agent’s objectives are better aligned with the principal’s welfare.

### **6.3.3. Targeted Trust-Building For Vulnerable Groups**

Medical institutions need to formulate standardized doctor-patient communication procedures for elderly people and patients suffering from chronic diseases. Such measures can lower patients’ perceived agency risks and strengthen mutual understanding and empathy between doctors and patients.

### **6.3.4. Introduce Third-Party Evaluations to Foster Market Competition**

Market-based mechanisms can mitigate moral hazards arising from benefit-distribution rules under the traditional administrative system. Giving full play to the functions of mobile internet, policymakers may introduce a third-party evaluation mechanism and set up patient-feedback platforms. These measures can boost competition within the medical-supply market and activate the mechanism for selecting high-performing physicians while eliminating under-performing ones[8].

## 7. Conclusion

Trust acts as a core lubricant for resolving doctor-patient principal-agent dilemmas. This empirical study confirms that medical-health trust improves satisfaction by reducing information frictions and realizing incentive compatibility. It provides theoretical foundations and practical references for China's medical governance that aims to raise system efficiency through trust building.

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