

## Article

# The Impact of Urban Health Care on Migrants' Settlement Intention: Evidence from China

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**Abstract:** Improving migrants' settlement intention is of great importance in the process of China's new urbanization. By exploiting the data from the China Migrants Dynamic Survey conducted by the National Health and Family Planning Commission of China, this study empirically explores the effects of urban health care on migrants' settlement intentions. Urban health care is measured by the establishment of migrants' health records in this article. Additionally, marginal effect analysis, propensity score matching, the random sampling method, the placebo test, and the two-stage least squares method are adopted to tackle potential selection bias and endogeneity concerns. As indicated by the empirical results, urban health care could significantly improve the migrants' settlement intention. After controlling for the influence of individual characteristics, household characteristics, and migration characteristics, urban health care still plays a significant role in promoting settlement intention. As revealed by the heterogeneity analysis, urban healthcare effects are significantly larger for migrants with agricultural *hukou* registration, a spouse, younger age, higher income level, and moving into the first and second-tier cities. Meanwhile, considering the impact of housing pressure on migrants' settlement intentions, this study uses household housing expenditure as a moderator to further analyze the relationship between urban health care and settlement intention. It is found that housing pressure can weaken the positive effect of urban health care on migrants' settlement intention. The research conclusions contribute to a comprehensive understanding of the migrants' settlement decisions and provide rich implications for city managers and policymakers.

**Keywords:** urban health care; migrants; settlement intention; China

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## 1. Introduction

In April 2022, the State Council of China issued the National Health Plan for the Fourteenth Five-Year Plan. It stressed that people's safety and health should be put first, and the construction of a healthy China should be promoted in an all-around way. It is the common pursuit of the Chinese people to realize the health of the whole people through co-construction and sharing. In May 2021, the National Bureau of Statistics of China released the seventh national census. The data show that the number of migrants in China reached 376 million in 2020, accounting for 26.6% of the total population of 1.412 billion. In the next few years, the absolute scale of China's migrants will be larger, and its internal structure will become more complex [1]. Focusing on the health management of migrants is key to achieving nationwide health. Influenced by subjective and objective factors such as unstable work, low income, poor living environment, lack of awareness of self-health and safety, low levels of knowledge, and imperfect social security and public service policies, China's migrants have higher health costs and face higher health risks while making great contributions to social and economic development [2,3]. In recent years, during the COVID-19 pandemic, the health service management problems of China's migrants have been exposed. The pandemic highlighted the inequalities that already existed in access to and use of health services. Migrants have also been affected by the negative economic consequences of self-isolation and restrictions on passenger traffic. Labor migrants have

been particularly affected by the loss of livelihood and health care. They may also have faced health and economic inequality due to delays in recognition of their migration status or cuts in employment. Migrants' health is not only related to the overall quality of China's labor force but also affects the health of their family members and residents in destination cities and can have a negative impact on the whole society [4,5].

With improvements in social and economic development, health has become an important consideration for people to measure their quality of life [6,7]. For some migrants, the importance of health and livability has surpassed economic factors when making settlement decisions [8]. This means that the status of urban healthy culture development in the minds of contemporary migrants is constantly improving. Good health is conducive for migrants to find stable and well-paid jobs, improve their quality of life, and obtain sustainable happiness [9]. On the contrary, migrants may have economic difficulties such as poverty caused by illness. Moreover, lacking urban health care may cause psychological problems such as anxiety, inferiority, depression, and difficulty integrating into social groups. It also causes social problems such as theft, robbery, and affray [10]. At present, most of the migrants in China are agricultural registered residents, and their migration range is mostly between urban and rural areas. Restricted by the urban–rural dual system, these migrants still do not enjoy the same treatment as the registered residence permanent population in social welfare and public services such as employment, housing, medical security, and children's education [11,12]. In the process of the continuous improvement of China's economy, it has become a trend for large-scale populations to flow to economically developed areas. The migrants provide human resources support and talent for the optimization and upgrading of China's industrial structure, urbanization construction, industrialization development, etc. [13,14]. Compared with the existing economic status, the social health resources enjoyed by migrants have been in an unbalanced state [15]. These undesirable phenomena can be changed by cultivating and improving the health culture of cities and residents. This means that compliance with the basic rights in the system of social and economic protection of migrant workers should not allow subjectivity in employment regarding their personal labor potential characteristics—level of health, intelligence, education, qualifications, and psychological qualities. Therefore, it is of great practical significance to study the health status of migrants to achieve the goal of equalizing public services and nationwide health [16]. On the one hand, the attention paid to the health of migrants and their families at the national strategic level can provide timely health assistance to the migrants, reduce health loss, make them feel valued and cared for, enhance their sense of social integration, and improve their settlement intention. On the other hand, it can effectively promote the rational allocation of medical resources, push forward the equalization of basic public health services, and alleviate the imbalance between urban and rural residents' health [17–19].

How to take reasonable and effective incentive measures to change the temporary residence characteristics of migrants and enhance their willingness to settle down has always been a topic of general interest for scholars and policymakers [20–22]. Many scholars have carried out research on the influencing factors of the migrants' willingness to settle down and have made great achievements. Some scholars explained the main influencing factors in the settlement decision of migrants from the macro-level perspective. They believed that the economic development level, policies, social environment, and other factors had certain impacts on the choice of destination cities and the settlement intention of the migrants [23–26]. First of all, according to the “push and pull theory”, the migrants prefer to move from a place with low income to a place with high income when making migration decisions [27]. More employment opportunities and higher labor remuneration are provided in areas with higher economic development levels. For instance, due to the high level of economic development, the eastern coastal urban agglomerations and some inland provincial capitals in China are more attractive to migrants [28]. Secondly, the migrants' settlement intentions will be different under different policy backgrounds. The reform of the household registration system, the implementation of the national new

urbanization plan, and the high-level talents introduction plan have created opportunities for the migrants to settle down in cities [29]. With the reform of the registered residence system, the relative values of urban and rural household registration have fluctuated, and the influence of the registered residence system has greatly decreased [30]. In the process of promoting China's new urbanization, "people-centered urbanization" is emphasized. To a certain extent, following the rule of migration and taking multiple measures simultaneously to let the migrants "take root" are helpful in improving migrants' settlement intentions [31]. In fact, many cities in China have introduced a large number of talent introduction policies to attract talent. For instance, highly educated groups are given preferential treatment in terms of house purchase, medical care, children's education, etc. This approach has significantly improved the willingness of beneficiary residents to settle down [32,33]. Finally, the social environment also plays an important role in determining migrants' settlement intention [34]. As residents pay more attention to the environment and health, livability has become one of the important factors influencing the settlement decision of migrants [35]. The living conditions, working environment, public service supply level, and cultural and custom characteristics of the destination cities may significantly affect migrants' settlement decisions [36,37]. These factors exert an invisible and formative influence on migrants' settlement intention by influencing their sense of social belonging, sense of urban integration, and sense of identity of surrounding groups [38,39]. Generally speaking, the more urban benefits and concerns the migrants enjoy, the higher their social identity and sense of social integration will be [40].

In addition, the settlement decision is the rational choice of migrants, which will undoubtedly be affected by individual and household characteristics. Therefore, a large number of studies have demonstrated the influence mechanism of individual characteristics, household characteristics, and other aspects on the settlement choice of migrants from the micro level [41–43]. The studies found that gender, age, marital status, political membership, nationality, education level, household *hukou* registration, employment type, income, physical and mental health, and other individual characteristics may affect the migrants' willingness to settle down [44–46]. Generally, young and healthy groups with higher education levels and stable work prefer to live in destination cities [47]. From the perspective of the household, the settlement decision of migrants is related to each family member. Therefore, when choosing destination cities, the migrants should maximize the expected benefits as much as possible while diversifying family risks [48,49]. Basically, families with larger migration scales and larger "income–expenditure" differences are more willing to settle down [50].

Overall, the existing research has found that the level of economic development, policies, social environment, and other factors are the main macro factors affecting the migrants' settlement intention. Moreover, some scholars analyze the micro factors affecting migrants' willingness to settle down from individual and household characteristics.

As for the research on the relationship between the health of migrants and their settlement intention, scholars have mainly focused on the physical and mental health of migrants. There is little literature that has analyzed the influential mechanism of urban health care on the settlement intention of migrants. To compensate for these shortcomings, this paper studies the role of urban health care in improving the migrants' settlement intention by using data from the China Migrants' Dynamic Survey conducted by the National Health and Family Planning Commission. In addition, this study analyzes the heterogeneity of the migrants' settlement intention from the aspects of household *hukou* registration, marital status, age, income, and destination cities. At the same time, this study pays attention to the moderating effect of housing expenditure on the impact of urban health care on migrants' settlement intention. Based on the results of empirical analysis, it draws relevant research conclusions and puts forward targeted policy recommendations.

Compared with previous studies, the marginal contributions of this study are, first, perspective innovation. This paper enriches the research on the influencing factors of migrants' settlement intention from the perspective of urban health care. Second, multiple

research methods, such as marginal effect analysis, propensity score matching, random sampling, placebo tests, and moderating effect analysis, are used to verify the research hypothesis. The combination of theoretical analysis and empirical analysis enhances the credibility and robustness of the conclusions. Third, in the analysis of heterogeneity, the key influencing factors are identified from the individual level, household level, and city level, respectively, for grouping and comparative analysis, which can better reveal the internal mechanism of the impact of urban health care on migrants' settlement intention.

The remainder of this study is organized as follows. The second part is the theoretical analysis of the impact of urban health care on migrants' settlement intention. The third part is the research design from the three aspects of data source, variable selection, and model setup. The fourth part is full sample regression analysis, marginal effect analysis, robustness checks, and endogenous tests. The fifth part is further analysis based on the moderating effect of housing expenditure. The last part is the research conclusions and suggestions.

## 2. Research Hypothesis

With the continuous development of society and the economy, migrants pay more attention to the consideration of health and livability when making settlement decisions [6–8]. If migrants can obtain more health care and rights in destination cities, their quality of life and work stability will increase [51]. Nowadays, while making great contributions to the economic development of various regions, migrants face many social welfare exclusions and endure health risks [2–4]. These difficulties further increase the living burden and health pressure of migrants. If residents enjoy a higher degree of health care in the destination cities, it will significantly improve the stability of the migrants' work, reduce their economic burden, and facilitate obtaining economic support [51]. Constantly raising the quality of urban health care can effectively prevent migrants from returning to poverty due to illness and enhance their perception of mutual benefit and symbiosis in urban integration and development [40,50]. Furthermore, raising the quality of urban health care will also help to promote the acquisition of subjective well-being of migrants, thereby enhancing the migrants' willingness to settle down. Consequently, this study puts forward hypothesis 1.

**H1 (Hypothesis 1).** *Urban health care can improve migrants' settlement intention.*

As described earlier, the migration behavior of migrants is affected by many factors, such as registered permanent residence, destination cities, individual characteristics, etc. [52]. In the process of migration, migrants try to fit in with the local community and strive for settlement. However, due to different ethnic beliefs, language and cultural barriers, and the discrimination of residents in the destination areas, the migrants' willingness to settle down will be greatly reduced [13]. At present, the migrants are no longer a highly homogeneous group, and their internal structure is more complex. With the rapid urbanization process in China and the continued expansion of city size, immigration activities have become progressively more frequent. For instance, young, rural, and married people often choose to enter large and medium-sized cities with better economic development. The purpose of their migration is to seek more job opportunities and higher income and improve their quality of life [53]. In the decision-making process of choosing a city to settle in, migrants with different characteristics will consider different factors, such as income, public services, and medical and health security in the destination cities [13]. Therefore, the migrants' settlement intention differs under different circumstances. Additionally, marital status, education level, income, household migration scale, and destination city also have a profound impact on migrants' future settlement intention [1]. According to the above analysis, this paper proposes hypothesis 2.

**H2 (Hypothesis 2).** *Urban health care has a heterogeneous impact on migrants' settlement intention in terms of individual, household, and urban characteristics.*

With the continuous improvement in China's urbanization level, soaring house prices have become an indisputable fact [54]. Housing-related factors such as house price, housing expenditure, and housing support have become important considerations for migration [25,55]. Some studies show that changes in housing prices will affect the ability of migrants to settle down in destination cities. That is, housing prices are negatively related to migrants' settlement intention [23,56]. If the housing prices in the destination cities continue to rise, it will increase rent and the living burden of the migrants. When the benefits obtained from migration are not enough to compensate for their migration costs [57], the quality of migrants' life will decline. Therefore, even though urban health care will improve residents' settlement intention, high living costs will have a negative impact on their willingness to settle down [58,59]. Based on the above analysis, this paper forms hypothesis 3.

**H3 (Hypothesis 3).** *Housing expenditure plays a negative moderating role in the impact of urban health care on migrants' settlement intention.*

### 3. Research Design

#### 3.1. Data Sources

The data used in this paper come from the 2018 edition of the China Migrations Dynamic Survey (CMDS), conducted annually by the National Health and Family Planning Commission in China since 2009. Each year, a stratified random sample of 100,00 to 200,000 migrants are interviewed. Stratified and multi-stage probability proportionate to size sampling is adopted as the sampling method from province to city, towns/districts, and communities. Migrants are asked to answer questions about demographic characteristics, employment conditions, household earnings and consumption, access to public health services, and medical services. The research sample in this paper is selected from the personal questionnaire (Volume A) in the CMDS. In the survey, migrants are defined as those who have registered in a non-local area and have lived in the destination area for more than one month.

In order to make the study more standardized, this paper has performed some pre-treatment on the samples before analysis. First, the outliers of the variables involved in this study, such as gender, age, education level, and the samples with no clear answers, were eliminated. Second, the two indicators of household income and household expenditure were right-shrunk (97.5%). Third, the ages in the sample were limited to 18–65, which helped to mitigate errors that may be caused by age. After the above data preprocessing, 59,447 sample observations were finally obtained.

#### 3.2. Variable Selection

##### 3.2.1. Explained Variable

The explained variable in this paper is the Migrants' Settlement Intention (MSI), which is measured based on their answer to the question, "If you intend to stay in the local area, how long do you expect to stay in the local area?". If the migrant answered "Permanent settlement", MSI equals 1, otherwise equals 0. The undecided answers and missing samples were eliminated.

##### 3.2.2. Explanatory Variable

The core explanatory variable of this study is Urban Health Care (UHC), which is measured based on their answer to the question, "Do you have a local resident health file?". If the migrant answered, "Yes, it has been established", UHC equals 1, otherwise equals 0.

##### 3.2.3. Control Variables

According to studies conducted over the past decade, this paper subdivides the control variables into three categories: individual characteristics, household characteristics, and migration characteristics. To be specific, individual characteristics of the respondents

include gender, age, education level, nationality, *hukou* registration, political membership, marital status, industry category of employment, health status, and job nature. The household characteristics include the total monthly income, total monthly expenditure, and household population size. The migration characteristics include the migration duration and migration distance. The definitions of variables involved in the empirical analysis and their descriptive statistics are shown in Tables 1 and 2, respectively.

**Table 1.** Variable definition.

Dimension	Variable Name	Variable Definition
Explained variable	Migrants' settlement intention (MSI)	1 = Stable permanent settlement intention, 0 = Otherwise
Explanatory variables	Urban Health Care (UHC)	1 = Establishment of health records in the destination city, 0 = Otherwise
Individual characteristics	Gender	1 = Male, 0 = Female
	Age	Age of respondents in years
	Education	0 = Respondents have never been to school, 6 = Primary school, 9 = Junior high school, 12 = High School/Secondary specialized school, 14 = College, 16 = Bachelor degree, 19 = Postgraduate students
	Nation	1 = Han Chinese, 0 = Otherwise
	<i>Hukou</i> status	1 = Agricultural <i>hukou</i> registration, 0 = Otherwise
	Political membership	1 = Member of the Communist Party of China, 0 = Otherwise
	Marry	1 = First married or remarried, 0 = Otherwise
	Industry	1 = Primary industry; 2 = Secondary industry; 3 = Tertiary industry
	Health	1 = Can't look after themselves; 2 = Unhealthy, but can take care of themselves; 3 = Basically healthy; 4 = Healthy
Household characteristics	Job	1 = Working in departments, government-sponsored institutions, and state-owned and state-controlled enterprises, 0 = Otherwise
	Income	Ln (Total monthly household income of household)
	Expenditure	Ln (Total monthly household expenditure of household)
Migration characteristics	Family size	Number of family members living together
	Migration duration	Migration duration(years)
Moderator	Migration distance	1 = Inter-county, 2 = Inter-city, 3 = Inter-provincial
	Housing expenditure	Ln (Average monthly housing expenditure of household)

**Table 2.** Descriptive Statistics.

Variable	N	Mean	St. D.	Min	Max
MSI	59,947	0.559	0.497	0	1
UHC	59,947	0.359	0.480	0	1
Gender	59,947	0.511	0.500	0	1
Age	59,947	36.355	10.01	18	65
Education	59,947	10.934	3.283	0	19
Nation	59,947	0.922	0.267	0	1
<i>Hukou</i>	59,947	0.620	0.485	0	1
Political membership	59,947	0.069	0.254	0	1
Marry	59,947	0.862	0.345	0	1
Industry	59,947	2.806	0.429	1	3
Health	59,947	3.861	0.395	1	4
Job	59,947	0.095	0.293	0	1
Income	59,947	8396.351	5561.047	0	30,000
Expenditure	59,947	4381.838	2580.169	100	13,000
Family size	59,947	3.221	1.124	1	12
Migration duration	59,947	7.171	6.194	1	57
Migration distance	59,947	2.242	0.757	1	3
Housing expenditure	59,947	1086.432	1242.903	0	5000

### 3.2.4. T-Test

Table 3 lists the migrants' settlement intention by resident health records, which indicates that migrants with resident health records are more likely to settle down compared with those migrants without resident health records. However, the mentioned differences do not directly indicate a causal relationship between urban health care and migrants' settlement intentions, and more efforts are required to test the causal relationship.

**Table 3.** Result of *t*-Test.

	Mean of MSI	Obs	Difference	<i>p</i> Value	T Statistics	Significant Level
With resident health records	0.587	21,517				
			0.044	0.000	10.3211	***
Without resident health records	0.543	38,430				

Note: \*\*\* represents significance at a 1% significance level.

### 3.3. Econometric Model

In order to study the impact of urban health care on migrants' settlement intention, this paper constructs the following econometric regression model:

$$MSI_{i,j} = \alpha + \beta UHC_{i,j} + \gamma_1 I_{i,j} + \gamma_2 H_{i,j} + \gamma_3 M_{i,j} + \delta_j + \epsilon_{i,j} \quad (1)$$

In the model, MSI represents migrants' settlement intention and is the explained variable. UHC in the model represents the establishment of individual health records, which is a proxy variable of urban health care and a core explanatory variable. I, H and M refer to the collection of individual characteristics, household characteristics, and migration characteristics, which are all control variables. The subscripts *i* and *j* refer to the individual respondent and the destination of the respondent, respectively. The  $\delta$  refers to urban fixed effect. The  $\epsilon$  represents the error term.

In addition, because the explained variable is a 0,1 binary variable, the probability of event occurrence depends on the explanatory variable UHC. That is,  $P(MSI = 1) = f(UHC)$ . Therefore, the probit model is used for analysis.

## 4. Empirical Strategy

### 4.1. Basic Regression Analysis

This sub-section examines the effect of UHC on MSI. Table 4 lists the results estimated by using multiple linear regression. This part of the article added control variables step by step. In Table 4, Column (1) presents the most parsimonious effects specification controlling nothing, Column (2) adds individual characteristics, Column (3) adds household characteristics, and Column (4) illustrates the whole specification, including individual characteristics, household characteristics, migration characteristics, and city fixed effect. Column (1) shows that UHC significantly increases MSI. Adding the control variables sequentially in Column (2), Columns (3) and (4) do not significantly change the magnitude and significance of identity effects. Accordingly, the regression results show that the coefficient of urban health care is still significantly positive, which indicates that the positive impact of urban health care on residents' settlement intention is stable. That is, urban health care can improve the migrants' willingness to settle down, which is significant at the 1% level. The improvement in urban health care can enhance migrants' settlement intention by increasing their happiness and satisfaction.

**Table 4.** The effect of UHC on MSI.

Variables	Explained Variable: MSI			
	(1)	(2)	(3)	(4)
UHC	0.081 *** (6.616)	0.040 *** (3.191)	0.048 *** (3.816)	0.038 *** (3.020)
Gender		−0.214 *** (−19.022)	−0.224 *** (−19.823)	−0.232 *** (−20.215)
Age		0.006 *** (9.296)	0.008 *** (12.380)	0.003 *** (3.695)
Nation		−0.188 *** (−8.252)	−0.198 *** (−8.562)	−0.136 *** (−5.840)
Education		0.062 *** (28.549)	0.052 *** (23.391)	0.055 *** (24.391)
<i>Hukou</i>		−0.193 *** (−13.961)	−0.177 *** (−12.692)	−0.165 *** (−11.686)
Political membership		0.076 *** (3.237)	0.058 ** (2.459)	0.072 *** (3.011)
Marry		0.345 *** (20.442)	0.140 *** (7.118)	0.155 *** (7.804)
Industry		0.119 *** (8.789)	0.103 *** (7.556)	0.101 *** (7.312)
Health		−0.063 *** (−4.221)	−0.066 *** (−4.392)	−0.053 *** (−3.477)
Job		0.048 ** (2.378)	0.080 *** (3.940)	0.040 * (1.931)
Income			0.357 *** (26.469)	0.341 *** (24.914)
Expenditure			−0.010 (−0.798)	0.014 (1.153)
Family size			0.027 *** (4.397)	0.008 (1.348)
Migration duration				0.034 *** (32.197)
Migration distance				−0.262 *** (−27.696)
City FE	YES	YES	YES	YES
Pseudo R <sup>2</sup>	0.095	0.125	0.139	0.162
Observations	59,947	59,947	59,947	59,947

Notes: Robust z-statistics in parentheses; \*, \*\* and \*\*\* represent significant at 10%, 5%, and 1% significance levels, respectively.

#### 4.2. Marginal Effect Analysis

In order to investigate the impact of each unit of the above core explanatory variable UHC on the MSI, this paper conducts a first-order differential of the equation and marginal effect benefit analysis through the probit model. Table 5 lists the results of the marginal effect analysis. Overall, having urban health care will increase the settlement intention of migrants compared to those without urban health care. As shown in column (4), the coefficient of urban health care is 0.013. That is to say, when urban health care increases by one unit, migrants' willingness to settle down increases by 0.013 units.

**Table 5.** Marginal effect analysis.

Variables	Explained Variable: MSI			
	(1)	(2)	(3)	(4)
UHC	0.029 *** (6.62)	0.014 *** (3.19)	0.016 *** (3.80)	0.013 *** (3.02)
Individual characteristics	NO	YES	YES	YES
Household characteristics	NO	NO	YES	YES
Migration characteristics	NO	NO	NO	YES
City FE	YES	YES	YES	YES

Notes: Robust z-statistics in parentheses; \*\*\* represents significance at a 1% significance level.

#### 4.3. Robustness Checks

In order to ensure the reliability of the benchmark regression results obtained in Table 4, this study conducts robustness checks to enhance the credibility of the research results. This paper discusses the impact of urban health care on migrants' settlement intention once again using alternative measures, propensity score matching, random sampling, placebo tests, and other methods. The specific analysis results are as follows.

##### 4.3.1. Replacing Estimating Method and Variables

To exclude the adverse effects of the estimating method on the experimental results, the Logit model is used for robustness checks, and the results are shown in Column (1) of Table 5. It can be seen that urban health care still has a significant positive impact on the migrants' settlement intention. Subsequently, considering that the explanatory variables in this paper are both binary variables (0,1), the representation of urban health care and intensity of settlement intention is relatively weak. Therefore, this sub-section sets the MSI' and UHC' as variables at different levels to further analyze the relationship between them. MSI' in this section is measured based on their answer to the question, "If you intend to stay in the local area, how long do you expect to stay in the local area?". If the answer was "Permanent settlement", the MSI' equals 4. If the answer was "10 years and above", it equals 3. If the answer was "5–9 years", it equals 2. If the answer was "0–4 years", it equals 1. UHC' in this section is measured based on their answer to the question, "In the past year, have you received the following health education in your current community/unit?". There are seven options for this question: "Prevention and treatment of occupational diseases; Prevention and treatment of infectious diseases; Reproductive health and maternal and child health; Prevention and treatment of chronic diseases; Mental health (including prevention and treatment of mental disorders); Self-rescue in public emergencies; Others." The more types of health education respondents received, the greater the assigned value of the UHC' variable. As shown in Column (2) of Table 6, the interpreted variable is replaced by MSI' for analysis. The results show that urban health care can significantly promote the willingness of migrants to settle down. On the basis of the model in the second column, Column (3) of Table 6 further replaces the explanatory variable with UHC', and its coefficient is still significantly positive. It shows that the results of this study are robust.

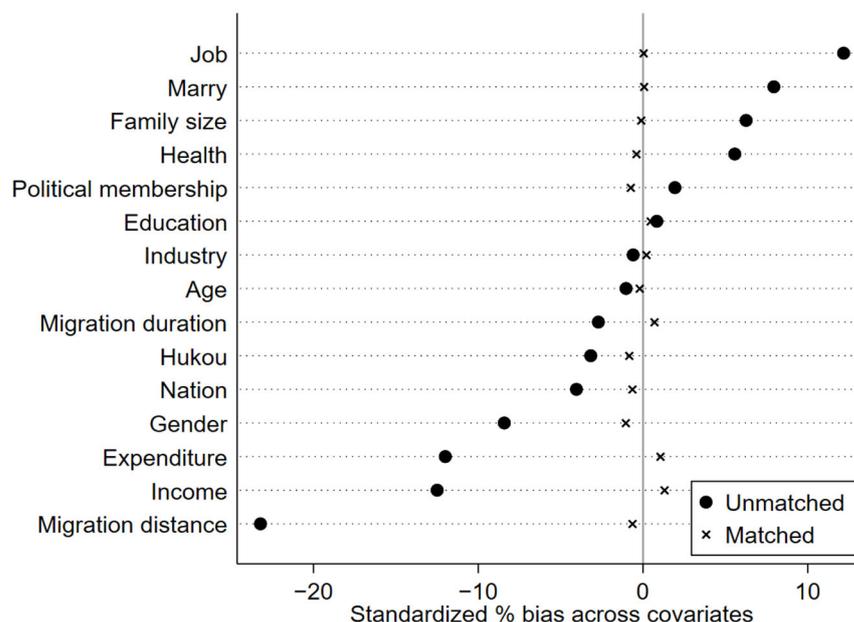
**Table 6.** Replacement of estimating method and variables.

Variables	Logit	Oprobit	
	MSI	MSI'	
	(1)	(2)	(3)
UHC	0.064 *** (0.021)	0.061 *** (0.011)	
UHC'			0.008 *** (0.003)
Individual characteristics	YES	YES	YES
Household characteristics	YES	YES	YES
Migration characteristics	YES	YES	YES
City FE	YES	YES	YES
Pseudo R2	0.163	0.113	0.112
Observations	59,947	59,947	59,947

Notes: Robust standard error in parentheses; \*\*\* represents significance at a 1% significance level.

#### 4.3.2. Propensity Score Matching Results

To ensure the robustness of the conclusions, this paper uses propensity score matching for the analysis. The Propensity Score Matching (PSM) method is exploited to address this selection bias issue. The critical point of propensity score matching is to make treatment (migrants with urban health care) and control (migrants without urban health care) groups more similar. First, a Logit regression model is adopted to estimate the likelihood of migrants to form urban health care, which includes all observed characteristics. Based on the Logit regression results, a propensity score can be determined for each migrant. Subsequently, the most similar control group is found for the treatment group by propensity score. At the same time, this paper uses k-nearest neighbor matching and kernel matching to estimate the robustness of the results. Specifically, k-nearest neighbor matching searches for k individuals in different groups with the closest propensity score. Kernel matching matches an estimated effect calculated from the intervention group samples and all samples of the control group. As shown in Figure 1, the standardization deviation of most covariates shrinks after matching.



**Figure 1.** Standardized deviation of all control variables.

Table 7 shows the results of propensity score matching. The coefficients of interest are significantly positive at the 1% level, which again indicates that the baseline results of this study are robust. Hence, the study finds that urban health care has a significantly positive effect on migrants' willingness to settle down.

**Table 7.** Result of propensity score matching.

Variables	Explained Variable: MSI				
	One-to-One Matching	One-to-Two Matching	One-to-Three Matching	One-to-Four Matching	Kernel Matching
	(1)	(2)	(3)	(4)	(5)
UHC	0.070 *** (0.020)	0.054 *** (0.017)	0.046 *** (0.016)	0.049 *** (0.015)	0.048 *** (0.013)
Individual characteristics	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES
Migration characteristics	YES	YES	YES	YES	YES
City FE	YES	YES	YES	YES	YES
Pseudo R <sup>2</sup>	0.175	0.171	0.169	0.168	0.166
Observations	29,612	42,748	49,471	53,322	59,945

Notes: Robust standard error in parentheses; \*\*\* represents significance at a 1% significance level.

#### 4.3.3. Random Sampling

To verify the representativeness of the regression results, this part employs the random sampling method to test the impact of urban health care on migrants' settlement intention. Random sampling is conducted in full accordance with the principle of equal opportunity. Each part of the survey population has the same probability of being selected. In order to enhance the persuasiveness of the study, this paper uses two methods of non-replacement random sampling and replacement random sampling to sample 30%, 50%, and 70% of the total samples, respectively. The probit model is used again to conduct the robustness tests based on new-generated subsamples, and the results are shown in Table 8. It can be seen from Table 8 that the impact of urban health care on migrants' willingness to settle down is significantly positive, with only a slight difference in coefficient significance, suggesting that the results of this study are stable and robust.

**Table 8.** Results of Random Sampling.

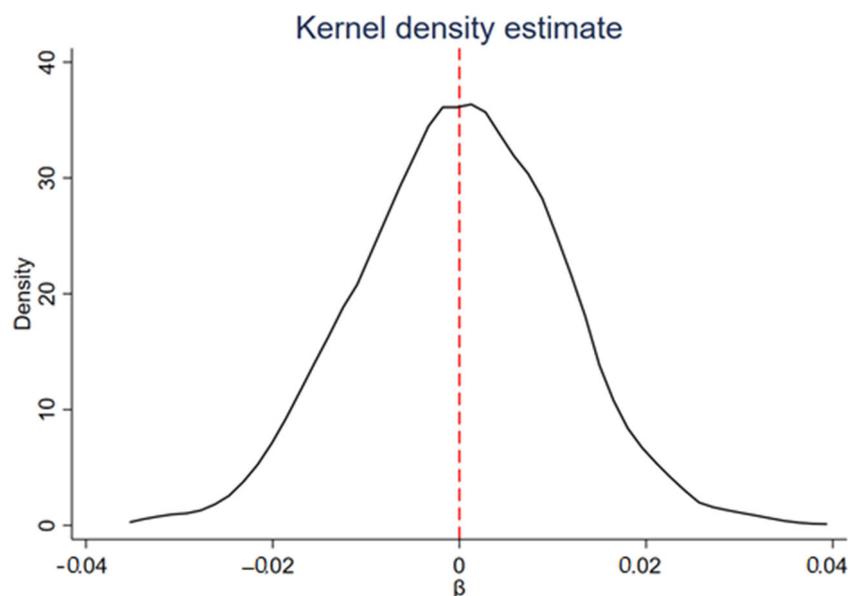
Variables	Explained Variable: MSI					
	Random Sampling without Replacement			Random Sampling with Replacement		
	30%	50%	70%	30%	50%	70%
	(1)	(2)	(3)	(4)	(5)	(6)
UHC	0.049 ** (2.102)	0.041 ** (2.301)	0.050 *** (3.257)	0.045 * (1.907)	0.040 ** (2.234)	0.061 *** (4.011)
Individual characteristics	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES
Migration characteristics	YES	YES	YES	YES	YES	YES
City FE	YES	YES	YES	YES	YES	YES
Pseudo R <sup>2</sup>	0.172	0.166	0.162	0.185	0.177	0.162
Observations	17,984	29,974	41,963	17,984	29,974	41,963

Notes: Robust z-statistics in parentheses; \*, \*\* and \*\*\* represent significant at 10%, 5%, and 1% significance levels, respectively.

#### 4.3.4. Placebo Test

The economic development level and other regional characteristics of China's provinces and autonomous regions are quite different. Although this article has added urban dummy variables and used city-fixed effects, it still cannot avoid that regional heterogeneity may have an impact on the estimation. For example, some groups prefer to enjoy a quiet, comfortable, and slower pace of life, while the fast pace and noise of the city will greatly affect their settlement intention. In this case, this paper conducts the placebo test by randomly generating the experimental group. It avoids the influence of missing variables on the above conclusions and further verifies the robustness of the research conclusions in this paper.

The specific process of the placebo test is as follows. First, the explanatory variable UHC in this paper is randomly entered into Equation (1) for regression, and an estimation coefficient is generated. Secondly, the process is repeated 1000 times, resulting in 1000 estimation coefficients. The distribution of these 1000 estimation coefficients is shown in Figure 2. It can be seen from Figure 2 that the distribution is close to the standard normal distribution, and the mean value is close to 0. This shows that the estimation model excludes the interference of other unconsidered factors on the research results and passes the placebo test.



**Figure 2.** Placebo test.

#### 4.3.5. Endogenetic Test

To better analyze the impact of urban health care on migrants' settlement intention, this paper selects a series of factors that may affect migrants' willingness to settle down as control variables. Although this method eliminates the interference of some factors to some extent, there may still be missing variables. The existence of missing variables will lead to the correlation between explanatory variables and disturbance terms, which will lead to endogenous problems. Therefore, this paper takes the inter-group mean value of the explanatory variables at the city level as the tool variable and uses the Two-Stage Least Square method (2SLS) for regression analysis. The results are shown in Table 9. This paper uses the Hausman test to analyze whether urban health care is an endogenous variable. As shown in Table 9,  $\chi^2(2) = 65.93$ , and  $\text{prob} > \chi^2 = 0.000$ , which indicates that urban health care is an endogenous variable. In the first stage of regression, the estimated coefficient of the instrumental variable is significant at the 1% level. The F statistic is 986.50, which is much larger than the critical point of 10. Furthermore, the  $p$ -value of the F statistic is 0.000. Therefore, it can be considered that the selection of tool variables is effective. The second-stage regression results show that the influence coefficient of UHC in the regression

model is 0.102, which is significant at the 1% level. This shows that the increase in urban health care can indeed enhance migrants' settlement intention.

**Table 9.** Results of endogenous test (2SLS).

Variables	(1) The First Stage UHC	(2) The Second Stage MIS
Mean(UHC)	0.991 *** (0.010)	
UHC		0.102 *** (0.010)
Individual characteristics	YES	YES
Household characteristics	YES	YES
Migration characteristics	YES	YES
Hausman test $\chi^2$ values	65.93	
Hausman test <i>p</i> -value	0.000	
Observations	59,947	59,947
R <sup>2</sup>	0.169	0.100

Notes: Robust standard error in parentheses; \*\*\* represents significance at a 1% significance level.

#### 4.4. Heterogeneity Test

##### 4.4.1. Considering Different Individual Characteristics

This study groups the migrants according to their registered permanent residence, marital status, and age for comparative analysis. The results are shown in Table 10. The migrants in Columns (1) and (2) are grouped by household *hukou* registration. The regression results show that for the migrants with agricultural *hukou* registration, urban health care can significantly improve their settlement intention. For the migrants with non-agricultural *hukou* registration, urban health care has a negative impact on their willingness to settle down. Compared with rural areas, the urban education environment, medical conditions, and other public service resources are better. In order to enable their children to enjoy a better education level and health security, migrants with agricultural *hukou* registration often have a strong desire to settle down in cities. However, for migrants with non-agricultural *hukou* registration, their outflow places also have better health security and education. In addition, the current housing price in China is relatively high. The migrants have great living pressure to settle down in destination cities. Therefore, the migrants with non-agricultural *hukou* registration are not willing to settle down in the inflow places. The migrants in Columns (3) and (4) are grouped by marital status. The regression results show that for migrants with spouses, urban health care has a significant positive impact on their settlement intention. The influence on migrants without a spouse is not significant. Compared with the migrants without a spouse, the group with a spouse has a relatively stable life and a clearer expectation for the future. The migrants in the model in Columns (5) and (6) are grouped by age. The regression results show that migrants aged 35 and below are more willing to settle down than those over 35. The reason for this phenomenon may lie in the intergenerational differences between populations. As older migrants are affected by the concept of "returning to their roots" in traditional culture, the desire to return to their hometown becomes stronger as they grow older. However, young people have a strong ability to accept new things. As they grow older, their living habits will be gradually affected, and their settlement intention will be relatively stronger.

**Table 10.** Heterogeneity analysis based on individual characteristics.

Variables	Explained Variable: MSI					
	Hukou Status		Marital Status		Age	
	Agricultural	Non-Agricultural	Married	Unmarried	35 or Younger	Over 35
	(1)	(2)	(3)	(4)	(5)	(6)
UHC	0.067 *** (0.016)	−0.008 (0.020)	0.038 *** (0.014)	0.001 (0.036)	0.037 ** (0.018)	0.035 * (0.019)
Individual characteristics	YES	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES	YES
Migration characteristics	YES	YES	YES	YES	YES	YES
City FE	YES	YES	YES	YES	YES	YES
Pseudo R <sup>2</sup>	0.178	0.147	0.154	0.227	0.193	0.149
Observations	37,162	22,785	51,646	8301	32,111	27,836

Notes: Robust standard error in parentheses; \*, \*\* and \*\*\* represent significant at 10%, 5%, and 1% significance levels, respectively.

#### 4.4.2. Considering Income Level and City Level

In order to reflect the impact of urban health care on migrants' settlement intention at different income levels, this study ranks the total sample according to the total monthly household income from low to high. The last 40% of the samples ranked are low-income groups, the top 40–70% are middle-income groups, and the top 70% and above are high-income groups. The research results are shown in Columns (1), (2), and (3) of Table 11. It can be seen that urban health care has a positive and significant impact on the willingness of high-income migrants to settle down. For low-income and middle-income migrants, the impact is not significant. High-income groups have higher requirements for quality of life after meeting their basic survival needs. Cities with good health care will also have higher social security levels, which can increase their willingness to settle down. For low-income and middle-income migrants, meeting survival needs is the first prerequisite. The level of urban health care has a limited impact on these groups, so it has no significant impact on their willingness to settle down. Considering that the urban infrastructure levels of different development levels are also quite different, the migrants in this part are grouped according to the city level. Ni Pengfei (2019) used Gross Domestic Product, population size, and per capita disposable income as key indicators to determine the city level in previous studies [60]. He divided 285 cities in China into 4 groups, namely 4 first-tier cities, 30 second-tier cities, 70 third-tier cities, and 181 fourth-tier cities. Based on the above urban classification, this study divides the first-tier and second-tier cities into one group and other cities into another group. The analysis results are shown in Columns (4) and (5) of Table 11. It can be seen that when the migrants flow into the first- and second-tier cities, urban health care can significantly enhance their willingness to settle down. The reason is that large cities can provide more income and better basic public services, such as a complete medical security system and higher health knowledge popularity.

**Table 11.** Heterogeneity analysis based on income level and city level.

Variables	Explained Variable: MSI				
	Income Level			City Level	
	Low	Medium	High	First- and Second-Tier	Third-Tier and Below
	(1)	(2)	(3)	(4)	(5)
UHC	0.023 (0.019)	0.033 (0.026)	0.061 ** (0.024)	0.042 ** (0.018)	0.028 (0.018)
Individual characteristics	YES	YES	YES	YES	YES
Household characteristics	YES	YES	YES	YES	YES
Migration characteristics	YES	YES	YES	YES	YES
City FE	YES	YES	YES	YES	YES
Pseudo R <sup>2</sup>	0.178	0.195	0.163	0.169	0.160
Observations	26,647	14,818	18,482	29,152	30,795

Notes: Robust standard error in parentheses; \*\* represents significant at a 5% significance levels.

## 5. Further Discussion

It is one of the important measures to promote the construction of new urbanization by encouraging the migrants to work and settle down in destination cities. With the process of urbanization, the real estate market has achieved rapid development, which has promoted an increase in housing prices. The high housing prices increase the living pressure on migrants, which may have an impact on their settlement intention. For this reason, this paper designs indicators to measure the respondents' housing expenditure in destination cities according to the questionnaire item, "How much is your household's average monthly housing expenditure (only rent/mortgage) in the past year". In order to eliminate the influence of abnormal value and missing value of data, this paper first removes the missing value of this indicator and winsorizes the data at 97.5% quantile. Then, the obtained data is logarithmized and recorded as Lnhome. The regression results are shown in Table 12. Housing expenditure plays a negative role in moderating the impact of urban health care on the migrants' settlement intention. That is, housing expenditure weakens the impact of urban health care on the willingness of migrants to settle down. When the housing price in destination cities is high, the migrants are forced to migrate again.

**Table 12.** Results of moderating effect.

Variables	Explained Variable: MSI	
	(1)	(2)
UHC	0.033 *** (0.013)	0.070 *** (0.022)
Lnhome	−0.067 *** (0.002)	−0.065 *** (0.002)
UHC×Lnhome		−0.007 ** (0.004)
Individual characteristics	YES	YES
Household characteristics	YES	YES
Migration characteristics	YES	YES
City FE	YES	YES
Pseudo R <sup>2</sup>	0.178	0.178
Observations	59,947	59,947

Notes: Robust standard error in parentheses; \*\* and \*\*\* represent significant at 5%, and 1% significance levels, respectively.

## 6. Conclusions

This study uses the 2018 edition of CMDS to quantitatively analyze the impact of urban health care on the migrants' settlement intention. The main conclusions are as follows.

(1) Urban health care has a significant positive impact on the settlement intention of migrants. In order to exclude the adverse effects of model setting deviation, core variable selection error and endogenous problems, this study used propensity score matching, random sampling, placebo test, two-stage least squares, and other methods to test the robustness of the model. The regression results show that the conclusions of this study are robust. (2) Urban health care has a heterogeneous impact on the migrants' settlement intention in terms of household hukou registration type, marital status, age, income, and destination cities. Specifically, the urban health care effects are more significant for migrants with agricultural hukou registration, a spouse, younger age, higher income level, and flowing into large and medium-sized cities. (3) This paper takes the monthly housing expenditure as a moderator. It is found that housing expenditure plays a negative moderating role in the impact of urban health care on migrants' settlement intention.

### *6.1. Policy Implications*

The results of this paper carry many policy implications for the Chinese government. First of all, the relevant government departments in China should start from the grass-roots level to improve urban health care. For example, by strictly regulating the management of health records and improving health care and health education publicity services, relevant departments can effectively solve the problems of institutional exclusion and social welfare exclusion existing in medical security in other places. Secondly, considering the characteristics of individual households and cities, the policy should be implemented according to the specific demands of different migrants to settle down in destination cities. Finally, the government, communities, enterprises, and other social organizations should be encouraged to participate together so as to ensure that migrants enjoy more equitable health care, promote the orderly settlement intention of migrants in destination cities, and promote China's urbanization process. The representative structure of public medical organizations and national authorities should establish close cooperation with migrants to ensure their basic health rights.

### *6.2. Limitations and Further Research*

This study also has some limitations. First, sample limitation. The data used in this paper comes from the 2018 edition of China's Migrations Dynamic Survey. The sample time is limited to 2018, and the scope of the survey is limited to China's migrants. Therefore, the conclusions and policy recommendations are not generalizable. Second, measuring deviation. The indicator measurement of UHC is only replaced by individual questions of the 2018 questionnaire, which may lead to measurement deviation. Third, the influence mechanism in this paper needs to be further improved. The model constructed in this paper only analyzes the impact of urban health care on the migrant population's settlement intention, and the impact path has not been verified by empirical analysis, which needs further improvement.

In order to have an all-around understanding of the urban health and sustainable development of the national economy and society in China, this study tries to explain the influence of urban health care on the settlement intention of migrants. The findings of this work not only help to solve the problem of health improvement among the migrants in China but also help to promote the economic and psychological integration of migrants in destination cities. In the process of urban integration of migrants, policymakers and city managers should not only liberalize household registration, alleviate employment inequality, and increase the supply of public services but also implement more urban health care for migrants so that they can complete their identity transformation. Improving the health culture of migrants is also an effective way to improve urban health care. It is important to consider the possibility of a healthy culture among migrants and what will be the information channel for them. In future research, scholars can conduct relevant research on the impact of migrants' settlement intention from the perspective of improving migrants' health culture.

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