Is social capital the secret weapon of happiness?

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Abstract

This paper investigates whether social capital is the secret weapon of happiness. Despite economic growth and increased personal income, life satisfaction has not correspondingly improved. By integrating data from the China Family Panel Studies (CFPS) and employing Exploratory Factor Analysis (EFA), Ordinary Least Squares (OLS), and LASSO methods, this study constructs a social capital scale suitable for China and analyzes its impact on individual life satisfaction. The findings reveal that social belonging, social trust, and social interaction significantly influence life satisfaction. Additionally, the study identifies disparities in the influence of social capital on well-being between urban and rural areas and regions with varying population densities. This research provides new insights into the role of social capital in enhancing the happiness of residents and offers valuable references for policymakers.

Keywords: Social Capital, Life Satisfaction, Labor Market Dynamics, Rural Development

JEL classification:I31, Z13, R23, J62, J64

1. Introduction

In contemporary society, people's pursuit of the growing needs for a better life is increasing, which is not only related to personal physical and mental health, but also the "automatic stabilizer" of social harmony (Leung et al., 2013). From an economic perspective, GDP per capita has long been has long been considered the key indicator of a country's quality of life (Oishi and Schimmack, 2010). But Easterlin (1974) shows that eco-

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nomic growth does not bring more happiness. According to the survey data of Gallup World Poll, Share of people who say they are happy was 66.6% in 1993, 83.6% in 1998, but dropped to 76.7% in 2010, following the greater economic development. China's economy is experiencing a period of rapid growth, yet there is a discrepancy between the rising levels of economic prosperity and the fluctuating levels of life satisfaction among its citizens. So we want to know what influences life satisfaction other than income. At a time when policymakers are proposing to improve the well-being of the Chinese people, what perspectives would be more effective?

In order to gain insight into this phenomenon, it is necessary to examine historical cases of similar economic development. In the process of European integration, social capital may offset the personal income and employment welfare happiness because the conflict between economic "hard" environment and social capital "soft" environment Crowley and Walsh (2024). According to Helliwell and Putnam (2004), social capital that was measured by the strength of family, neighborhood, religious and community relationships was found to support physical health and subjective well-being. However, Bartolini et al. (2017) proposed that social capital may also create informal networks, leading to corruption and inefficiency so that GDP growth is dispelled by the negative effects of social capital.

Traditionally, the strong "human feelings" and the concept of land relocation in rural China make social capital become an indispensable intangible asset. The Chinese society is characterised as a "society of connections" and "society of acquaintances" (Li and Chen, 2012), serving as a form of social capital that played an important role in Chinese society (Zhang, 2022). The majority of Western research indicates that the social capital resources derived from religious practice are associated with higher levels of wellbeing among adherents (Lim and Putnam, 2010). Despite China being home to a fifth of the world's population, there has been a paucity of research conducted in the country on the relationships between social capital and health, with even less research conducted on

overall well-being (e.g. Knight et al., 2009; Zhang and Jiang, 2019).

This article makes two main contributions. On research methodology, firstly, it combines existing indicators of social capital scales, filtering out a scale suitable using ECA, OLS and LASSO methods for measuring social capital in China through validated factor analysis. This addresses the lack of social capital scales in China. Secondly, it compares the mechanisms of the influence of social capital on life satisfaction between China and the West was examined, and it was found that being within one's own social circle has a greater influence on life satisfaction. This implies that grid governance based on the strong ties of small circles is more effective for social governance. Thirdly, we use micro-survey data from CFPS, which contributes to the empirical data on the impact of social capital on life satisfaction.

This research presents significant theoretical contributions in the realm of social belonging, social capital, and population density. Firstly, it may challenges the conventional wisdom that social belonging invariably enhances life satisfaction, suggesting that an excess of social belonging could potentially increase individual stress, thereby reducing life satisfaction. This offers a fresh perspective on the complexities of social belonging. Secondly, our research underscores the importance of social capital in augmenting the happiness of rural residents. This could prompt policymakers and researchers to pay greater attention to community building and the accumulation of social capital in rural areas. Lastly, it reveals that in low population density and urban areas where social interactions are more difficult to leverage through social capital, individuals may feel more isolated and dissatisfied. This could stimulate new strategies in urban planning and community development to promote the construction and utilization of social capital. These theoretical contributions provide valuable insights into the intricate dynamics of social belonging, social capital, and population density in relation to life satisfaction and happiness.

The following arrangements of this paper are as follows: the second part is the literature review in terms of social capital, life satisfaction; the third part is the data source and

descriptive statistics; the fourth part is the main empirical analysis results; the fifth part is the robustness test and further discussion; and the sixth part is the conclusion and policy enlightenment.

2. Literature Review

2.1. Social Capital

Bourdieu (1986) first proposed the concept of social capital and he believed that the relationship between people should be understood in the social network to which he belongs, and that social capital is the energy and resources brought by the network identity of the actor. Nahapiet and Ghoshal (1998) proposed a tripartite classification of social capital, comprising structural, relational, and cognitive dimensions. In order to provide an accurate representation of the relational social situation in China, it seems that the first two options would be the most appropriate(Zhang and Jiang, 2019). Structural social capital can be defined as the overall pattern of connections between actors(Burt, 1992). The concept of relational social capital is concerned with the characteristics of the connection between individuals and other objects, including respect, friendship, trust, and obligations(Nahapiet and Ghoshal, 1998).

Although the World Bank has earlier given a systematic social capital measurement tool SCAT (Social Capital Assessment Tools) (Grootaert and van Bastelaer, 2002), it has not yet become recognized due to its complexity, and has since been improved by a number of scholars (Harpham, 2007). Some scholars have synthesized and analyzed the measurement systems in different articles in order to identify common measures of social capital (e.g. De Silva, 2006; Kawachi et al., 2004). These include social interaction, sense of social trust, sense of social belonging, social networks, and local groups. Consequently, this paper also attempts to construct social capital from these perspectives.

2.2. Life Happiness

The determinants and correlates of subjective wellbeing have emerged as a pivotal policy objective for numerous countries in recent years(Chen and Williams, 2016). According to Zhang and Ma (2007), they identified seven factors that contribute to the experience of happiness: intensity, duration, certainty, proximity, multiplicity, purity and extension. Besides, on 17 March 2013, China's new leader, Xi Jinping, introduced a new slogan,"the China Dream", at the Party Congress. This was accompanied by the following statement: The China Dream is about strengthening the state and making it powerful and prosperous; achieving a renaissance of the Chinese nation; and promoting the happiness of the people (Xi, 2013). It is important for policymakers to survey what can measure happiness.

The degree of satisfaction with life standards is a factor in attaining happiness (Borooah, 2006). Furthermore, general satisfaction with life is the best predictor of happiness (Lyubomirsky et al., 2006).To measure subjective well-being, Hsu et al. (2017) compares between subjective well-being measures that fit China, including self-scoring, social status, income, which are also supported by (Zhang, 2022).

2.3. Hypothesis

In the past, scholars have typically focused their research on factors that influence life satisfaction, including income(Ferrer-I-Carbonell, 2005), higher education(Nikolaev, 2016), health status(Graham et al., 2017). As posited by Gundelach and Kreiner, social capital represents the most significant predictor of subjective well-being, with the two variables exhibiting a high degree of correlation.

Some Western scholars have found a positive effect of social capital on life satisfaction, but there are significant differences between Chinese and Western social capital. According to Zhang and Jiang (2019), Chinese has two significant uniqueness: Confucianism, which emphasizes social norms and reciprocity, and undergoing a transformation from the central-planned economy to a market economy. They also found Chinese use informal guanxi that is very different from West. And in the transition to a market economy,

there are large differences between urban and rural areas and regions with high and low population densities. Therefore, we formulate hypotheses from the following three aspects (Zhang et al., 2023).

The influence between social belonging and life satisfaction. For example, China is distinguished by a proclivity for clannishness and the absence of overarching norms for society as a whole (Fukuyama, 1995). Additionally, the Chinese tend to place greater importance on close and strong relationships(Wu and Leung, 2005). Social belonging involves feeling deeply connected to, belonging to and integrated with a social group or community (Allen et al., 2021). Therefore, we use political participation and assessment of government to measure social belonging. Some scholars believe that residents and democratic political relations increase life satisfaction (e.g. Loubser and Steenekamp, 2017; Liu et al., 2020). Additionally, the presence of unions in the workplace can have a positive impact on the lives of employees. Unions can protect workers' jobs, provide a comfortable working environment and enhance job security, which in turn can lead to higher levels of life satisfaction(Pfeffer and Davis-Blake, 1990).

In advanced democracies, the quality of the democratic process is a more significant determinant of happiness than in less developed countries (Helliwell and Huang, 2008). However, Grass-roots democracy in China is shorter than in the West, the democratic process is more costly and decisions are made mainly to satisfy the demands of powerful groups, and a high level of participation is associated with a high level of life satisfaction (Tang et al., 2020). Besides, life satisfaction was lower among citizens involved in non-institutionalized political participation. Ma et al. (2022) also been pointed out that the Chinese tend to view democracy in terms of substantive results or outcomes, rather than process, and thus substantive participation is not high. Wenfang (2024) argued that restrictions on worker participation limit the ability of Chinese employers' associations to coordinate industrial relations, leaving workers not only unable but also unable to improve their well-being through greater job satisfaction. In particular, it is frequently ob-

served that citizens exhibit a higher level of satisfaction with the central government than with lower-level administrations. However, this satisfaction tends to decline with each subsequent level of government (Saich, 2016). The level of government that is most relevant to the life satisfaction of people at the grassroots level tends to be the lowest level of government, and thus the actual government ratings are not considered to be particularly high. Based on this, we propose the following hypothesis:

H1: Social belonging reduces life satisfaction.

In rural areas, people are more closely connected to each other and there is more daily contact and interaction between neighbors (Bourke et al., 2022). Social capital can be defined as the network of relationships based on mutual trust and reciprocity, and the potential resources that arise from them (Claridge, 2004). A high level of social capital means that rural residents have more social support systems and are able to obtain emotional support, practical help and resources from friends and family, according to a study in East Asian (Lo et al., 2022). This social network not only engenders feelings of safety and esteem, but also alleviates the stress of life by providing assistance in challenging times. Furthermore, robust social capital fosters trust, collaboration, and mutual comprehension, reduces conflict, and maintains a harmonious and orderly community environment (Sharma, 2024). This kind of amicable interpersonal atmosphere enhances life satisfaction and happiness. It can therefore be reasonably assumed that in a more connected environment, such as the countryside, the level of social capital will be higher, leading to a greater sense of well-being. In light of the aforementioned considerations, this paper evaluated the following hypotheses:

H2: Social capital increases more happiness of rural residents.

In areas of low population density, limited population size and long distances between people, the potential for the establishment of strong social networks is reduced (201, 2014). This can subsequently hinder the potential for collective action, resource sharing and information exchange (Khan and Khan, 2021). Similarly, in urban environments character-

ized by a fast pace of life, anonymity of interpersonal interactions and mobility of people, the establishment of lasting social bonds and mutual trust is hindered(Mpanje et al., 2018). The absence of a solid social structure impairs the ability to utilize social capital effectively, as shared norms, reciprocity and mutual support, the necessary foundations for the utilization of social capital, are diminished(Zhang et al., 2021). Furthermore, the absence of social cohesion serves to exacerbate existing inequalities(Cook, 2014). Those with poor access to social capital will face greater barriers in accessing resources, opportunities and support systems. The following hypotheses were examined:

H3: Low population density and urban areas where social interactions are more difficult to leverage through social capital.

3. Data

3.1. Data Sources

The data of this paper are from 2010 to 2020 China Family Panel Studies(CFPS). We choose this dataset based on two main benefits: Firstly, CFPS is provided by the China Social Science Survey Centre of Peking University, which is one of the most authoritative and largest survey data in China at present, and it can provide a good guarantee for the validity and credibility of this study; Secondly, CFPS investigates the respondents' basic personal information, family, employment, social security, and attitudes, and it can provide rich variable information for this study.

All the data needed for this study come from both the individual and family datasets. Since the individual pool includes data on adolescents aged 9 to 15 and data on surrogate responses due to physical and other reasons, this part of the sample is not applicable to the analysis of fertility intentions, and its information has more missing on some key variables, so this part of the non-compliant data is removed. Based on privacy and different regional differences, such as voting, membership of labor associations and other overwhelmingly inapplicable, this part of the data was also removed. The final number

of observations in the sample after clearing was 13,936 in 2020.

3.2. Method

3.2.1. EFA

In this study, the observed variables of social capital extracted from the CFPS questionnaire were initially subjected to Exploratory Factor Analysis (EFA) to identify their underlying dimensions. The fundamental principle of exploratory factor analysis is to reduce the original observed variables to a smaller number of potential common factors through linear combination. Each observed variable can be represented as consisting of both common and unique factors. The common factor reflects the common variation among the observed variables, while the unique factor represents the specific variation of the variable. By estimating the factor loadings of each observed variable on the different factors, it is possible to determine which variables are attributable to the same underlying factor. We chose Principal Component Analysis (PCA) to extract the factors and then performed orthogonal rotation of the factors to obtain a simpler and easier to interpret factor structure. The model is following:

$$X = \Lambda F + \epsilon \tag{1}$$

where X is the matrix of variables for the social capital construct, F is the matrix of common social capital fitting factors, Λ is the matrix of factor loadings, and ϵ is the matrix of unique factors. The objective of the model is to estimate Λ and F such that the overall variation in the observed variables is maximally explained by the social capital fitted factors.

3.2.2. Questionnaire Validity

Cronbach's alpha is a widely used measure that is applicable to the case of several results with several values, and it is especially suitable for subjective research, as is the case here. The formula for Cronbach's alpha coefficient is as follows,

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum S_i^2}{S_t^2}\right) \tag{2}$$

where k is the number of questions included in the questionnaire, S_i^2 is the within-question variance of the data obtained from each question, and S_t^2 is the total variance of the data obtained from all the questions in the questionnaire, Cronbach's α coefficient takes the value of 0 sim 1, and the higher the value is, the higher is the reliability and the better is the internal consistency of the questionnaire.

The validity of a questionnaire is used to assess the degree of correspondence between the results of a measurement and the objective it is attempting to measure. This is typically evaluated through factor analysis, which aims to identify whether different questionnaire items belonging to the same concept are clustered in the same common factor. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy represents a statistical test for determining the suitability of original variables for factor analysis. This is achieved by means of a comparison between correlation and partial correlation coefficients of observed original variables. Values for KMO lie between zero and one, with higher values indicating stronger correlation between original variables and thus greater suitability for factor analysis. The greater the value, the stronger the correlation between the original variables and the more suitable for factor analysis. Based on practical experience, a KMO measure greater than 0.8 indicates that the results of factor analysis are highly satisfactory. Additionally, Bartlett's sphere test can be employed to ascertain the independence of the original variables. In practice, factor analysis requires that the chi-square test value of Bartlett's test must reach the significant level, and the corresponding p-value should be less than 0.05.

3.2.3. Model

Following the extraction of potential theoretical factors from the original observed variables through the use of exploratory factor analysis, this study employs Ordinary Least Squares (OLS) to construct a linear regression model with the objective of testing the effect of social capital on a dependent variable. The OLS linear regression model can

be formally expressed as follows in this study:

$$X = \Lambda F + \epsilon Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_2 + \epsilon \tag{3}$$

The dependent variable, Y, is a function of the independent variables,X_1, X_2, $\cdots$ X_k represents the independent variable, which in this case is the social capital correlation factor extracted by EFA. β_0 is the constant term, while β_1, β_2, and so on represent the regression coefficients of each independent variable. The regression coefficient of each independent variable is denoted by β_k, while ϵ represents the residual term. The objective of this study is to quantify the degree of influence of social capital on life satisfaction and to deepen the understanding of the mechanism of social capital. To this end, an OLS linear regression model has been constructed.

One concern is that the individual in question is a member of the household. Therefore, it is necessary to include household-level variables in the analysis. Additionally, it is important to consider the impact of social change on the reliability of the data collected through questionnaires. Finally, it is essential to ensure that the variables selected for analysis are statistically robust. In order to further explore the scale design and the explanations that influence life satisfaction, a study will be conducted utilising the LASSO method of nonlinear effects. Given that happiness is a subjective feeling that arises from an individual's overall evaluation of their emotional experience and is relatively stable, this paper employs self-assessed happiness as the sole explanatory variable in the empirical analysis. As an ordered random variable, this variable is modelled using the continuous proportional regression model with a fixed-order dependent variable.

Assuming that the ordinal dependent variable Y has K ordered classes and X denotes a p-dimensional covariate, the continuous proportionality model models the logarithmic ratio (logit) of the conditional probability $\delta_k(x) = P(Y = k \mid Y \leqslant k, X = x)$ as follows, for

any k=2,3, $\cdots$,K , there are,

$$\text{logit}[P(Y = k \mid Y \leqslant K, X = x)] = \log\left[\frac{P(Y = k \mid Y \leqslant K, X = x)}{P(Y < k \mid Y \leqslant K, X = x)}\right] = \alpha_k + \beta^T x \tag{4}$$

therefore,

$$\delta_k(x) = P(Y = k \mid Y \leqslant K, X = x) = \frac{\exp\left(\alpha_k + \beta^T x\right)}{1 + \exp\left(\alpha_k + \beta^T x\right)} \tag{5}$$

Equation (4) represents the conditional probability that a sample belongs to exactly k categories, given that the sample belongs to k categories and lower than k categories. Further, the likelihood function of the continuous proportionality model is expressed as follows.

$$L\left(\alpha_2, \cdots, \alpha_k, \beta \mid Y = y, X = x\right) = \prod_{i=1}^{n}\left\{\prod_{k=2}^{K}\left[\delta_k(x)\right]^{y_{ik}}\left[1 - \delta_k(x)\right]^{1-\sum_{j=k}^{K} y_{ij}}\right\} \tag{6}$$

In Eq. (5), if the ith sample belongs to the Kth category, then $y_{ik} = 1$; otherwise, $y_{ik} = 0$. The extremely large likelihood estimate of the regression coefficients can be obtained from the extremely large likelihood function in equation (5) if variable selection is not required and when the number of samples n is larger than the covariate dimension p. When the significant covariates of the model cannot be determined or $p > n$, a great likelihood estimation method with a penalty term is needed to screen the significant variables. To address this problem, Tibshirani (2018) proposed the well-known LASSO method, and Archer and Williams (2012) further extended the LASSO method to continuous proportional models with ordinal dependent variables by estimating the regression coefficients and selecting variables by maximizing the likelihood function with the LASSO penalty term as follows, namely.

$$\max_{\alpha_2, \cdots, \alpha_k, \beta}\left[L\left(\alpha_2, \cdots, \alpha_k, \beta \mid Y = y, X = x\right) - \lambda \sum_{j=1}^{p}\left|\beta_j\right|\right] \tag{7}$$

In Equation (6), λ represents the moderating coefficient, which controls the degree of

compression of the variables. The advantage of the LASSO method is that the regression coefficients of the unimportant variables are directly estimated to be 0 by adding a penalty term, thus achieving the purpose of eliminating the unimportant variables. When the moderation coefficient is 0, Equation (6) becomes a general maximum likelihood estimation. Conversely, when the moderation coefficient is large enough, the maximisation of Equation (6) will force all the regression coefficients to be estimated as 0. In the actual data analysis, the optimal moderation λ can be selected by the model selection criteria, such as Bayesian Information Criterion (BIC), Akaike Information Criterion (AIC), or generalized cross-validation value (GCV). (6) becomes a general maximum likelihood estimation; when the moderation coefficient is sufficiently large, the maximisation of Eq. (6) will force all the regression coefficients to be estimated as 0. In the actual data analysis, the optimal moderation λ can be selected by the model selection criteria, such as the Bayesian Information Criterion (BIC), the Akaike Information Criterion (AIC), or the generalized cross-validation value (GCV). In this paper, the BIC method is employed to select the adjustment factor. Furthermore, the regression coefficient estimates are subject to bias due to the LASSO penalty term, which penalises each regression coefficient (Fan and Li, 2001).

In order to effectively eliminate the estimation bias under limited samples, this paper utilises the following two-stage estimation method. In the first stage, the likelihood function method with LASSO penalty term is used to screen out the important variables. In the second stage, a continuous proportionality model without penalty term is built for the selected variables. The general great likelihood estimation method is then utilised to obtain consistent regression coefficients estimation as well as regression coefficients' significance results.

3.3. Descriptive Statics

According to the literature and the questionnaire setting using the 2020 questionnaire as an example, the following variables were selected to measure social capital.

The Table 1 selected the 17 questions in the questionnaire as variables to measure social

capital to facilitate data processing. In ”Who to tell trouble”, the 2-5 option as ”relatives”, 6-9 as ”acquaintances”, ”counseling personnel”, so discard the option to create virtual variables; in the ”Main channels to obtain jobs”, 4 as ”relatives”, 2,3,5 as ”social channels”, and then create virtual variables.

We measures personal life happiness through self-rated happiness (see Table 2), life satisfaction, social status and income status, thus selecting the above questionnaire questions following as Table 2. This article also chooses Sex (1 is male, 0 is female), Education (0. uneducated 3. primary school 4. junior high school 5. high school / technical secondary school / technical school / vocational school 6. junior college 7. University undergraduate 8. Master 9. PhD), Age, Nature (if 0 points represent the lowest, 10 points represent the highest, how good do you think your popularity relationship?) , Religious belief (1 for yes, 0 for no), Self-rated health (1. very healthy 2. very healthy 3. relatively healthy 4. general 5. unhealthy) as control variables.

We screened the factors using the EFA factor screening method, a process shown in detail in the next section. Table 3 reports the descriptive statistics of the variables with 13936 samples on 2020 samples. As gender is a virtual variable, it can be known that 51.5% of the samples are male, and the average education was 2.669. It can be seen that most of the samples had a low education level and the average personality was 7.015, indicating that most of the samples thought that they were relatively popular, the other 1.9% had religious beliefs, and most of the samples thought that they were in good health.

To eliminate the effect of dimension, the normalization of the variables of the normal distribution independence and the linear combination of the core variables. In addition, due to the lack of data of ”mobile device Internet duration”, which has a great impact on the results, this variable is ignored here and only ”sharing frequency of friends circle” is used to measure social interaction. According to the table, the standard deviation of social belonging was 1.762 and social interaction was 1.306, while the standard deviation of social trust was 3.418, and the standard deviation of life happiness was 2.524, with a

Table 1: **Indicator of Social Capital**

Social Communication	1	[Mobile device Internet access time (minutes)] Normally, how long do you use mobile devices to surf the Internet every day?
	2	[Contact Frequency] In the past 6 months, how have you often contacted your children by phone, text messages, letters or e-mail? 1. almost every day 2. 3-4 times a week 3. 1-2 times a week 4. 2-3 times a month 5. once a month 6. once every few months 7. never
	3	[Frequency of Moments] In the past year, how often did you share your work or life in Moments? 1. almost every day 2. 3-4 times a week 3. 1-2 times a week 4. 2-3 times a month 5. once a month 6. once every few months 7. never
	4	[Most people are helpful or selfish] Do you think most people are helpful or selfish?1. Most people are helpful. 0. Most people are selfish.
	5	[Who to tell trouble] when you encounter trouble, the main to tell who?1. Never tell others 2. Parents 3. Brothers and sisters 4. Grandpa / grandma 5. Others at family 6.Others
Social Trust	6	[Trust in your neighbors] How much do you give your trust in your neighbors)? (0 means great distrust, 10 means great trust.?
	7	[Like trust or doubt others] Generally speaking, do you think most people can trust, or be more careful the better?1. Most people can trust 0. The more careful you are with people, the better
	8	[Trust in strangers] your strangers (how much can you trust)? (0 means great distrust, 10 means great trust.?
	9	[The importance of others] the importance of others to your information? (1 Represents very unimportant, 5 represents very important.?
	10	[Trust in local government officials] How can you trust local government officials)? (0 Points represents great distrust, and 10 means great trust.?
Social return feel	11	[Evaluation of the county and municipal government] Your overall evaluation of the work of the county or county city / district government last year is: 1. Great achievements 2. certain achievements 3. no much achievements 4. no results 5. worse than before
	12	[Family relationships] How important are family social relationships to children's future achievements (0 is the least important, 10 is the most important)?
	13	[Village / neighborhood committee election voting] In the last five years, have you ever voted in the village / neighborhood committee election?1. Yes, 0. No
Social Network	14	[Main channels to obtain jobs] Among these job-hunting channels you just mentioned, which channel has played the most important role in getting this job?1. Contact the employer directly. 2. Employment introduction agencies, recruitment advertisements, job advertisements, or participate in talent exchange meetings / job fairs. 3. State assignment/organizational transfer 4. referral by relatives, friends or acquaintances 5. school career guidance agency, or school recommendation
	15	[Relations is more important than ability] In today's society, social relationship is more important than individual ability. 1. strongly disagree 2. disagree 3. agree 4. strongly agree 5. neither agree nor disagree
	16	[Have you get help from others] Have you been helped by others in this job?1. Yes, 0. No
Local groups	17	[Are you a member of the self-employed Association] Are you currently a member of the self-employed Association?1. Yes, 0. No

Table 2: **Indicator of Life Happiness**

Life Happiness	18	[How happy (score)] If 0 is the lowest and 10 is the highest, how happy do you feel that you are?
	19	[To your life satisfaction] 1 very dissatisfied, 5 very satisfied, do you give your life satisfaction?
	20	[Your status] 1 is very low, 5 is very high, how do you give yourself your local social status?
	21	[Your income is local] 1 is very low, 5 is very high, do you give your income in the local position?

large deviation.

Table 3: **Descriptive Statistics**

	Num	Ave	S.D		Num	Ave	S.D
Sex	13936	0.515	0.500	Health	13936	2.715	1.091
Education	13936	2.669	1.364	Social Belonging	13936	0.000	1.762
Age	13936	37.705	13.455	Social Trust	13936	0.000	3.418
Nature	13936	7.015	1.718	Social Interaction	13936	0.000	1.306
Religion Belief	13936	0.019	0.136	Happiness	13936	0.000	2.524

Table 4 shows the correlation analysis matrix between the three measures of social capital, showing the correlation between the four variables of Social Belonging, Social Trust, Social Interaction and Happiness. The correlation coefficient between social belonging and social trust was-0.135, -0.095, and-0.076, indicating a mild negative correlation between them. Represents a mild negative correlation between them. The correlation coefficient of social trust and well-being was 0.243, indicating a certain positive correlation between them. Moreover, the absolute values of these correlations are small, indicating that there is no mutual substitution between these variables.

Table 4: **Indicator of Social Capital**

	Social Belonging	Social Trust	Social Interaction	Happiness
Social Belonging	1.000			
Social Trust	-0.135	1.000		
Social Interaction	-0.095	-0.023	1.000	
Happiness	-0.076	0.243	-0.030	1.000

4. Results

4.1. Factor Screening

Table 5 reports the results of the factor analysis of the above preset items, marking the value exceeding 0.6 under each factor (Gorsuch, 1988). We sought to find the underlying factors behind the observed variables, each representing a set of correlated variables. Here there are five factors, and each variable has a load on each factor, indicating the degree to which that variable is correlated with that factor. The larger the absolute value of the load, the stronger the association of the variable with the factor. For example, "mobile device Internet duration" has a payload of 0.7380 on Factor 3, which means that "mobile device Internet duration" is highly related to Factor 3."Uniqueness" indicates the part of that variable that cannot be explained by other factors. For example, the uniqueness of "mobile device Internet access duration" was 0.4310, which means that 43.10% of the variation cannot be explained by these five factors.

Table 5: **First Confirmatory factor analysis**

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Uniqueness
Internet Time For Mobile Devices	0.0821	0.1280	0.7380	-0.0307	0.0139	0.0080	0.4310
Contact Frequency	0.1110	-0.1675	-0.6599	-0.0814	0.0151	0.0632	0.5133
Moments To Share The Frequency	0.1259	0.1770	0.7843	-0.0223	-0.0041	-0.0473	0.3350
Most People Are Still Helpful Or Selfish	0.6527	0.6140	-0.0803	0.0089	0.0079	0.0012	0.1903
Who To Tell The Trouble _ Relatives	-0.4248	0.4883	-0.1113	0.6930	-0.2144	-0.0408	0.0408
Who To Tell The Troubles _ Acquaintances	-0.3755	0.4483	-0.0030	-0.7227	-0.3047	0.0227	0.0425
Who To Tell The Trouble _ Yourself	-0.2293	0.2441	-0.0061	-0.0625	0.9291	0.0526	0.0179
Trust In Your Neighbors	0.5530	0.4643	-0.2367	0.0001	-0.0254	0.0112	0.4218
Like To Trust Or Doubt Others	0.6629	0.6022	-0.0820	0.0088	0.0093	0.0014	0.1910
Trust In Strangers	0.4694	0.3996	0.0994	-0.0158	0.0028	0.0118	0.6097
Others Tell The Importance	0.4747	0.4699	0.0810	0.0081	0.0154	-0.0215	0.5466
Trust In Local Government Officials	0.3829	0.5345	-0.1791	-0.0290	-0.0271	0.0305	0.5331
Evaluation Of The County Government	0.8141	-0.4958	0.0802	0.0067	0.0011	-0.0095	0.0849
There Is A Relationship At Home	-0.4557	0.6484	0.1128	0.0107	0.0096	-0.0046	0.3591
Neighborhood Committee Election Voting	0.8429	-0.4899	0.0221	-0.0009	-0.0006	-0.0079	0.0489
Main Channel Of Work _ Relatives	0.0090	-0.0029	0.0368	0.0478	-0.0400	-0.5271	0.7168
Main Channel Of Work _ Social Channel	0.0122	-0.0010	0.0701	0.0819	-0.0800	0.8385	0.2788
Relations Is More Important Than Ability	0.6451	0.4339	-0.0653	0.0160	0.0321	-0.0158	0.3898
Whether To Get Help From Others	0.1140	-0.0660	0.4341	0.1151	-0.0441	0.0901	0.7709
Whether a member of individual workers' association	0.8494	-0.4884	0.0520	0.0016	-0.0008	-0.0078	0.0372

Visualizing the results as shown in Fig 1, it is determined that three factors should be retained as appropriate. Because "contact frequency", "who to tell troubles _ acquain-

tance", "main channel _ relatives" and "whether to get help from others" are less than 0.4 on any factor load, these three variables do not provide effective factor information, so these variables are discarded. It is worth noting that although "trust in strangers", "tell the importance of others" factor load is less than 0.4, noticed that the same problem in the different factor analysis process results may be different, and the two problems for social capital construction, so keep and continue the second factor analysis.

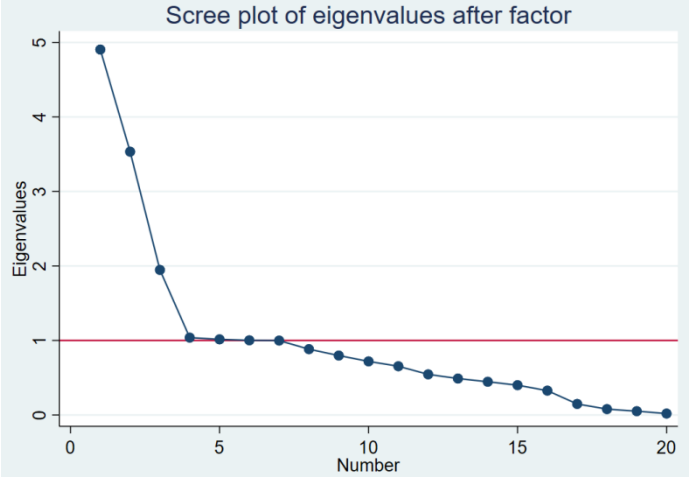

Figure 1: Scree Plot of Eigenvalues after Factor

Table 6 reports the results of the second factor analysis, which filters the four problems of "who to tell your troubles _ acquaintances", "family relationship", "main channels to work _ social channel" and "whether to get help is less than 0.4 from others". Since the optimal number of factors obtained in the factor analysis is 3, while in Factor 4, only one variable is included, this variable was filtered.

In summary, the final analysis results are as follows: We use "Evaluation of the county government""Village neighborhood committee election voting""Whether he is a member of the individual workers' association" to measure "Social Belonging", and use""Trust in your neighbors""Trust in local government officials"" Relations is more important than ability""Trust in strangers""Others tell the importance""Most people are still helpful or selfish""Like to trust or doubt others" to measure "Social Trust", and use "Moments to share the frequency""Internet time for mobile devices" to measure "Social Interaction".

Table 6: **Second Confirmatory factor analysis**

Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
Internet Time For Mobile Devices	0.0032	0.0249	0.8210	-0.0268	0.3246
Moments To Share The Frequency	0.0141	0.0895	0.8055	-0.0456	0.3408
Most People Are Still Helpful Or Selfish	0.0942	0.8932	0.0535	-0.0033	0.1905
To Who To Tell The Trouble _ Relatives	-0.7382	0.1273	-0.0598	0.5859	0.0920
To Whom To Tell The Troubles _ Acquaintances	-0.5007	0.0773	0.0234	-0.8021	0.0995
Trust In Your Neighbors	0.1092	0.7427	-0.1362	-0.0049	0.4179
Like To Trust Or Doubt Others	0.1088	0.8908	0.0562	-0.0002	0.1915
Trust In Strangers	0.1012	0.5851	0.1965	-0.0180	0.6084
Others Tell The Importance	0.0572	0.6439	0.1918	-0.0037	0.5454
Trust In Local Government Officials	-0.0606	0.6737	-0.0689	-0.0480	0.5353
Evaluation Of The County Government	0.9343	0.1477	0.0585	0.1111	0.0894
There Is A Relationship At Home	-0.7586	0.1684	0.1822	-0.0860	0.3556
Village Neighborhood Committee Election Voting	0.9497	0.1792	0.0114	0.1073	0.0544
The Main Channel Of Obtaining Work _ Social Channel	-0.0077	-0.0032	0.1001	0.1540	0.9662
Relations Is More Important Than Ability	0.2061	0.7517	0.0396	0.0201	0.3904
Whether To Get Help From Others	0.1248	-0.0449	0.4739	0.1503	0.7352
Whether a member of individual workers' association	0.9544	0.1801	0.0397	0.1095	0.0431

4.2. Baseline Regression

According to the sample data, Table 7 is the 2020 cross-section data regression results. Column(1) reports the baseline regression result. It can be seen that, after controlling for individual characteristics, the influence of social belonging, social trust, and social interaction on life satisfaction was significant at the 1% level. The target variable was life well-being, and the explanatory variables included gender, education, age, personality, religion, health, social belonging, social trust, and social interaction. The coefficient of each explanatory variable represents how life well-being would change for each additional unit of that variable when the other variable remains constant.

Social Belonging is the individual's identification and satisfaction with the community. The sense of social belonging has a significant impact on life satisfaction shows that the individual's behavior and decision-making. A strong sense of social belonging may promote individuals to participate more in community activities and be more willing to abide by community norms, thus affecting the economic development of the community and the welfare of individuals. Social trust coefficient is 0.1564, and social trust can promote the cohesion of the community to reduce transaction costs and promote cooperation, thus improving social efficiency and individual well-being. Social interactions are the foundation

of social networks that can provide information, resources and support that can affect the welfare of the individual. Social interaction coefficient of 0.0013, the coefficient at 1% significance level is not significant, this may be because the effect of social interaction may be affected by the quality of interaction and individual personality, because the circle of friends frequency mainly reflected in the mobile media communication, and this is often out of the nature of work, or release their perceptual information and don't care about others, and lack of realistic evidence, this may be social interaction in the data set significance level slightly lower than the cause of social trust and social sense of belonging.

From other influencing factors, the coefficient of gender is-0.0749, indicating that men may be 0.0749 units lower than women, which may be due to the influence of socioeconomic structure and gender role; the coefficient of education is-0.0519, indicating that education may bring higher expectations that may not be met. The coefficient of personality is 0.1950, and better individuals will increase their happiness. The coefficient of health was-0.1867, noting that the lower the health score, the better the self-rated health, confirming that health problems may lead to lower quality of life, thus reducing happiness.

4.3. Analysis of urban-rural disparities

Due to the existence of urban-rural dual structure in China, there is a great difference between social capital in urban and rural areas. For the consideration of rural Chinese cultural tradition, the role path of social capital is different in the urban and rural social connection. Cities often have more complex social networks, more social organizations, and more opportunities for social interaction. While rural communities may be more dependent on family and kinship, social networks may be simpler, and there may be less opportunities for social organization and interaction, in addition, urban culture may emphasize more individualism and competition, while rural culture may emphasize more collectivism and cooperation, cities may be affected by more public services and social security policies, rural may be more influenced by land and agricultural policies, cities usually have more abundant material resources, such as education and medical facilities,

and more employment opportunities, while rural areas may lack these resources, which may affect the formation and use of social capital.

Table 7 (2)& (3) reports the regression results of the relationship between life happiness and social capital in different urban (2) and rural (3) households. In both models, gender, education, personality, health were similar and the same regression results in the whole sample. Interestingly, in cities and towns, the influence of religious belief on life satisfaction is significant at the 5% level, which may be that the urban life is more stressful, and the people with religious beliefs seek spiritual sustenance, which can improve the individual sense of gain and spiritual comfort, and then improve the individual happiness. In the town model, social sense of belonging has a significant negative impact on life happiness (coefficient of 0.0673), and in the rural model, the effect is not significant (coefficient of 0.0171), this may reflect the cultural differences between urban and rural, for example, urban residents may pay more attention to individual freedom and diversity, and rural residents may pay more attention to the cohesion of the community, and tradition. In rural model, social interaction on life happiness has a significant positive effect (coefficient is 0.0269), and in the urban model, the effect is not significant (coefficient is 0.0161), this may be because in the countryside, community relations and interaction may be more closely, life circle and daily circle, friends share frequency can spread to the object in real life, so the impact on life happiness may also be greater. In both models, the influence of social trust on life happiness was significant, and the coefficients were similar (0.1486 in town and 0.1672 in village), confirming that social trust can promote community cohesion and improve individual happiness.

4.4. The population density is divided into samples

Population density may influence the formation and operation of social capital, and the impact of social capital on life satisfaction. In places with high population density, people have more opportunities to conduct social interaction, and the quality of social interaction may vary according to the population density, individuals may be more difficult to obtain

resources due to competition pressure, and due to space tension and resource competition, social pressure and conflict may increase, which may affect the operation and effect of social capital.

According to the results of the provincial administrative area and the seventh census of the Ministry of Civil Affairs and the National Bureau of Statistics, the population density is calculated, and the results are obtained as Fig 2.

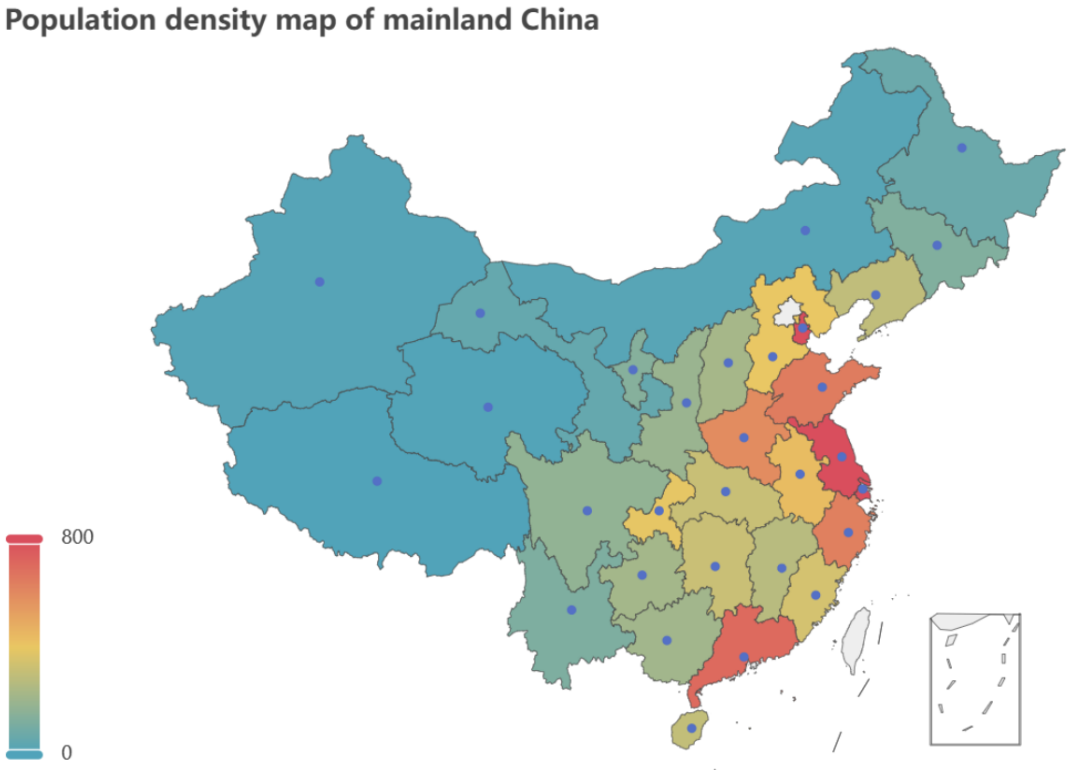

Figure 2: Population density map of mainland China

Except for Hong Kong, Macao and Taiwan, ranking 1 to 17 were classified as provinces with high population density, and 18 to 34 were classified as provinces with low population density. There were 7,234 samples from areas with high population density and 6,311 samples from areas with low population density.

Table 7(4) & (5) reports the regression results of the sample divided based on the population density. In the control variables of the model, there was little difference between high and low population density, but the two varied significantly in social interaction. In

the model with high population density, social interaction had a significant positive effect on life well-being (coefficient 0.0238), while in the model with low population density, this effect was not significant (coefficient 0.0102). This may be because in places with high population density there are greater opportunities for social interaction and potentially greater effects on life wellbeing. In both models, the impact of social trust on life happiness was significant, and there was a significant negative impact of social belonging on life happiness (high population density is-0.0380, and low population density is-0.0462), confirming the previous conclusion on the significant impact of social capital on life satisfaction.

Table 7: **Second Confirmatory factor analysis**

	Life Satisfaction				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Sex	-0.0782***	-0.0521***	-0.0986***	-0.0686***	-0.0919***
	(-5.0377)	(-2.6211)	(-4.0161)	(-3.3708)	(-3.9686)
Education	-0.0507***	-0.0538***	-0.0456***	-0.0653***	-0.0340***
	(-8.7895)	(-7.0139)	(-4.3991)	(-8.0711)	(-3.9755)
Age	0.0001	0.0007	-0.0013	0.0003	0.0001
	(0.1600)	(0.9174)	(-1.2072)	(0.3907)	(0.1491)
Nature	0.1954***	0.1949***	0.1924***	0.2028***	0.1857***
	(38.9430)	(31.7076)	(27.4587)	(32.4698)	(27.6947)
Religious Faith	0.0663	0.1700**	-0.0015	0.0707	0.0480
	(1.1827)	(2.3492)	(-0.0169)	(0.9571)	(0.5762)
Health	-0.1873***	-0.1896***	-0.1851***	-0.1894***	-0.1840***
	(-23.0553)	(-19.4088)	(-16.3594)	(-18.8864)	(-17.0480)
Sense of social belonging	-0.0434***	-0.0673***	-0.0171	-0.0380***	-0.0462***
	(-5.1105)	(-6.3323)	(-1.4123)	(-3.5897)	(-3.9101)
Social Trust	0.1565***	0.1486***	0.1672***	0.1424***	0.1687***
	(18.0205)	(14.5305)	(13.2585)	(13.5042)	(14.3384)
Social Interaction	0.0176**	0.0161	0.0269**	0.0238**	0.0102
	(2.3133)	(1.6406)	(2.1505)	(2.3415)	(0.8844)
_cons	-0.6920***	-0.7117***	-0.6110***	-0.7136***	-0.6683***
	(-13.5579)	(-11.2162)	(-8.2450)	(-11.1690)	(-9.5409)
N	13936	7570	5462	7234	6311
adj. R^2	0.230	0.228	0.234	0.237	0.221

4.5. Robustness test

4.5.1. LASSO Method

One concern is that national well-being is closely related to the household. The CFPS data provide a measure of the social capital of the household in which an individual lives.

Indeed, households differ significantly from the individual level, mainly in terms of social interactions. Therefore, it is more appropriate to use the social interactions of households instead of those of individuals (e.g., Chen, 2024; Furstenberg and Kaplan, 2007). In this instance, we selected neighbourhood relations, neighbour help, preferred borrower, and affection for the neighbourhood to align with the social interactions. In order to select the most pertinent variables and minimise estimation bias, we employed the LASSO method for variable selection with the 2020 CFPS data. Unlike previous studies, we initially manually adjusted the indicators measuring social capital by incorporating responses to the household questionnaire, which enabled the questionnaire to pass the validity test. We then proceeded to perform variable selection using LASSO, and empirically analysed the collected data using the likelihood function method with the LASSO penalty term.

Since the questions in the questionnaire are divided into four dimensions, the Cronbach α coefficients for each dimension are calculated first, and then the total Cronbach α coefficients are calculated. Table 8 shows the Cronbach's α coefficients for each of the six dimensions of the questionnaire and the total. The Cronbach α coefficients of the six dimensions are all above 0.65, while the overall Cronbach α coefficient is as high as 0.81, indicating that the internal consistency of the questionnaire is high.

Table 8: **Internal consistency plausibility test**

Dimension	Cronbach α	Num
Social Belonging	0.81	3
Social Trust	0.74	5
Social Interaction	0.67	4
Life Satisfaction	0.74	3

Table 9 demonstrates that the KMO measure of the questionnaire results is 0.85, with a corresponding p-value of Bartlett's ball test that is close to 0. This indicates that the original variables are suitable for factor analysis and further indicates that the questionnaire has good reliability.

Table 9: **Internal consistency plausibility test**

KMO Measure of Sampling Adequacy	Bartlett test of sphericity
KMO=0.857	Chi-square = 2.58e+05 Degrees of freedom = 105 p-value=0.000

In this study, we applied the LASSO regression method to investigate the relationship between various socio-economic and community-related factors and life satisfaction. Our dataset comprises 24,494 observations, with 12 covariates under consideration. The LASSO algorithm selects the optimal lambda value based on the Bayesian information criterion (BIC). BIC balances model fit and complexity, aiming to prevent overfitting. The LASSO algorithm identified this lambda 0.00887 as optimal. Nine covariates remained in the model, maintaining the same high R-squared value. Notably, factors related to trust (both for neighbors and local officials), family relationships, and community involvement play a crucial role in determining life satisfaction. The horizontal axis (x-axis) represents the L1 norm of the vector of normalized coefficients, which ranges from 0 to 4. The vertical axis (y-axis) represents the magnitude of the normalized coefficients, which ranges from 0 to 2.5. Fig. 3 illustrates the process of variable compression.

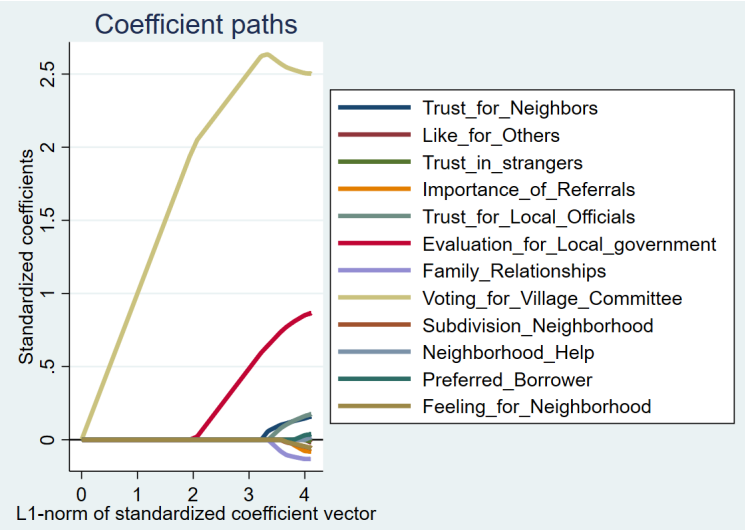

Figure 3: coefpath

The concept of national happiness is influenced by a multitude of subjective and objective factors, which collectively contribute to its multifaceted nature. The results are reported as Table 10. All variables subjected to statistical analysis demonstrated statistical significance following the incorporation of control variables. In contrast to the EFA method, age and religious belief emerged as significant factors, while the remaining variables yielded results consistent with those observed in the baseline regression. This evidence supports the existence of social issues such as gender inequality, social status, and the ability to live a fulfilling life as a consequence of educational advancement. It is noteworthy that individuals with religious beliefs tend to be less happy in life, which may be related to some restrictions and obligations imposed by religious beliefs. Ten variables in the three dimensions were selected by the LASSO method to explain the mechanisms of social capital influences and life satisfaction at the micro level.

The LASSO method identified three dimensions of social trust as statistically significant. The degree of trust in neighbours was found to have a positive correlation with well-being, indicating that the higher the level of trust in neighbours, the higher the level of well-being. Conversely, the importance of referrals was found to have a negative correlation with well-being, suggesting that over-reliance on referrals may potentially reduce well-being. The importance of referrals is negatively correlated with well-being, which may imply that over-reliance on referrals reduces well-being. Conversely, trust for local officials is significantly positively correlated with well-being, suggesting that the credibility and transparency of the local government also affects the well-being of residents.

The dimensions of Social Belonging were also selected by the LASSO method and demonstrated statistical significance. Evaluation for Local Government exhibited a significant positive correlation with the sense of well-being, suggesting that when individuals hold a more favourable evaluation of the local government, the sense of well-being is also The correlation between family relationships and well-being is negative, which may reflect the complex influence of family relationships on well-being. Conversely, the cor-

relation between voting for village committees and well-being is positive, indicating that individuals' participation in grassroots political processes also enhances their well-being.

The LASSO method was employed to select four variables for analysis in Social Intersection. The results indicated a negative and statistically significant correlation between Subdivision Neighborhood and Feeling for Neighborhood and well-being. This suggests that the segregation of residential environments and excessive integration into local communities may have a detrimental impact on overall well-being. In contrast, the variable "Neighborhood Help" demonstrated a positive correlation with well-being. This suggests that mutual care and support among neighbours, and an individual's status within their social network, are conducive to an improvement in well-being.

Table 10: **Total Sample Regression Results**

Factor	Variables	Coefficient
Control Variables	Sex	-0.1440***(-10.5846)
	Education	0.0169***(4.3516)
	Age	0.0073***(12.9492)
	Nature	0.0689***(19.1611)
	Religious_Belief	-0.0521***(-3.9542)
	Health	-0.1747***(-30.0738)
Social Trust	Trust_for_Neighbors	0.0548***(15.7801)
	Importance_of_Referrals	-0.0154***(-3.0819)
	Trust_for_Local_Officials	0.0586***(20.5742)
Social Belonging	Evaluation_for_Local_government	0.2805***(47.0764)
	Family_Relationships	-0.0078***(-3.9085)
	Voting_for_Village_Committee	1.0234***(124.6525)
Social Interaction	Subdivision_Neighborhood	-0.0359***(-4.2228)
	Neighborhood_Help	0.0218**(2.4476)
	Preferred_Borrower	0.0122***(3.4577)
	Feeling_for_Neighborhood	-0.0347***(-4.0807)
Num	24494	

4.5.2. Multi-period sample test

In consideration of the variable of social interaction, given that the CFPS questionnaire only added mobile media use to the questionnaire in 2018, a robustness test was conducted using the CFPS 2014, 2016, and 2018 data after excluding the social interaction variable. The results are presented in the Appendix. In the cross-period sample test, the social belongingness coefficient may turn from positive to negative. This may be in-

fluenced by China's economic transition period, including social change, family structure change, and urbanisation. There may be differences in the impact of social capital on well-being in urban and rural areas. Urban social capital may be more diverse, including social networks, organisational involvement, and so forth. In contrast, social capital in rural areas may be more dependent on kinship and neighbourhood relationships. The impact of social capital on well-being may also differ between urban and rural areas due to the different ways in which they interact socially. For example, urban social capital may be more easily translated into employment opportunities, resource sharing, etc. Low population density areas, urban areas may be socially segregated and have less social interaction, thus affecting the development of social capital. This may lead to reduced well-being. In conclusion, almost all results were able to correspond to the previous analyses.

5. Discussion

The concept of social belonging, often seen as a fundamental human need and a source of motivation, has a dual nature that is both intriguing and complex. On one hand, social belonging, as posited by Abraham Maslow's Hierarchy of Needs (Block, 2011), is a crucial element for psychological health. It provides individuals with a sense of identity and acceptance, fostering self-esteem and contributing to overall life satisfaction. This is further supported by the Social Identity Theory (Ellemers, 2024), which suggests that individuals derive their self-esteem from their membership in social groups. However, on the flip side, an excessive sense of social belonging could potentially lead to negative outcomes. There is a discrepancy between the political opinions Chinese face or the effects of policy implementation and their personal expectations, and this discrepancy may be an explanation for their greater pressure to belong in society. The pressure to conform to group norms, as suggested by the Social Conformity Theory (Feldman, 2003), can lead to stress, stifling individuality and personal growth. This could, in turn, reduce life satisfaction as individuals might feel compelled to suppress their true selves to maintain their

social belonging. Furthermore, the Social Comparison Theory (Festinger, 1954) posits that individuals have an inherent drive to evaluate themselves, often in comparison to others. As China opens up to the world, people perhaps comparing themselves to other countries on social networks also influences how Chinese citizens rate their sense of social belonging. In a context where social belonging is high, this comparison can become more prevalent, potentially leading to feelings of inadequacy or dissatisfaction, especially if individuals perceive that they do not measure up to the group's standards or expectations. In conclusion, while social belonging can provide a sense of community and contribute to self-esteem and life satisfaction, an overemphasis on social belonging can lead to stress, reduced individuality, and decreased life satisfaction. Therefore, it is crucial to strike a balance, promoting a sense of belonging while also encouraging individuality and personal growth. This nuanced understanding of the dual nature of social belonging can inform interventions and policies aimed at enhancing life satisfaction and well-being.

Social capital is a significant factor in the happiness and well-being of individuals, particularly in rural areas. Social capital provides a sense of belonging and mutual trust among community members. According to Putnam's theory (Häuberer, 2011) of social capital, these social networks have value, and the reciprocal nature of social interactions within these networks can lead to a sense of satisfaction and happiness. In rural areas, where residents often live in close-knit communities, the impact of social capital on happiness can be particularly profound. Social capital can lead to improved access to resources and support. In the context of rural communities, this could mean access to information, financial aid, emotional support, or even tangible goods and services. This access can significantly improve the quality of life and contribute to overall happiness. However, building social capital in rural areas can be challenging due to factors such as geographical isolation and lack of infrastructure. Therefore, policies and community practices should focus on promoting social interactions and cooperation among residents. This could involve organizing community events, improving transportation and communication in-

frastructure, and implementing educational programs that emphasize the importance of community involvement and cooperation. Moreover, the role of technology in enhancing social capital should not be overlooked. With the advent of digital technology and social media, virtual communities can supplement physical ones, providing additional platforms for interaction and cooperation. This can be particularly beneficial in rural areas, where physical distance can hinder social interaction.

Urban design and planning play a pivotal role in the construction and utilization of social capital. The way a city is designed can significantly influence the opportunities for social interaction and the formation of social networks, which are key components of social capital. The concept of "Third Places" proposed by urban sociologist Ray Oldenburg (Mehta and Bosson, 2010) emphasizes the importance of informal public spaces such as cafes, parks, and community centers in promoting social interactions and building social capital. These places, distinct from the 'first' and 'second' places of home and work, provide neutral ground for individuals to meet, interact, and form social bonds. Therefore, urban design that incorporates such spaces can facilitate the growth of social capital. "New Urbanism" (Garde, 2020) advocates for walkable, mixed-use neighborhoods that promote interaction among residents. Compact, pedestrian-friendly urban design encourages casual encounters and fosters a sense of community, thereby enhancing social capital. In low population density and urban areas where social interactions are more difficult to leverage through social capital, individuals may feel more isolated and dissatisfied. This is where the principles of "Placemaking" can be applied. Placemaking (Huang and Roberts, 2019) is a multi-faceted approach to the planning, design, and management of public spaces that capitalizes on a local community's assets and potential to create public spaces that promote people's health, happiness, and well-being. By creating more inviting and engaging public spaces, we can facilitate more social interactions and build stronger social networks.

6. Conclusion and Policy recommodations

Through different dimensions of social capital on life satisfaction, concluded as follows: one is a large number of sample data regression analysis found that social belonging, social trust, social interaction for life satisfaction has a significant impact on punishment effect, social sense of belonging on life satisfaction, social trust and social interaction can promote the improvement of life satisfaction, and through the robustness test. Second, the impact of social interaction in urban areas is not significant, while the influence of social belonging is not significant in rural areas, indicating that the rural complex is weakened, the mobile media social and real social overlap is low, and the constraints are smaller in rural areas, and people are more dependent on families rather than modern organizations; third, the impact of social interaction in areas with low population density, the economy in these areas is often underdeveloped, and the traffic is weak. Therefore, according to the current population distribution and mobility characteristics and people's life happiness, several policy suggestions are put forward.

6.1. Unite the new-quality productive forces and develop a new type of urbanization

New quality productive forces have been spawned by revolutionary technological breakthroughs, innovative allocation of factors of production, and deep transformation and upgrading of industries. They are characterized by innovation, the key in high quality, and advanced productive forces in essence. People are the decisive factor in the relations of production. According to the economic growth model of Solo and Sargent, labor force and capital factors directly determine the economic output. The education and skill level of labor force can improve human capital, thus improving production efficiency and promoting economic growth. Therefore, under the new system of new quality productivity, cannot improve the residents 'comparative advantage, enhance residents' social ownership, social trust, social interaction to participate in the socialization of production, improve the economic efficiency and quality of life, the development of urban economy,

urban and rural integration, let urban affinity rural, rural urbanization, improve the attraction and competitiveness of the city, this is the population reduction through social capital intensity to improve the economic efficiency and people's life satisfaction.

6.2. Grassroots organizations should move from management to service

The two sessions in 2024 pointed out that there are deficiencies in the work of the government, and some cadres lack the spirit of responsibility. Therefore, we should improve the incentive and protection mechanism for cadres to encourage them to dare to think and act and not be afraid of making mistakes under limited rules. The implementation of grass-roots organizations is an important force in social governance, introducing a multi-subject dispute resolution pattern to maintain community stability, and providing community services in accordance with the residents' wishes. Due to the different interests of individuals at the grass-roots level, it is difficult to agree in practice, and cadres refuse to take responsibility because doing this will lead to bad consequences, making people "listen" rather than "opinions" to government organizations. At the same time, we should also enhance the consistency of macro policy orientation, avoid the implementation at the grass-roots level, and effectively implement the national social security policy and grass-roots distribution pattern, so as to better meet the needs of community residents and improve people's happiness and security.

6.3. Establish a friendly and clear social individual relations

Pro-friendly relationship is a social relationship based on mutual assistance, mutual trust and mutual understanding, which helps to reduce transaction costs, promote cooperation, and improve social efficiency and overall welfare level. Using modern communication tools, can be established based on block chain and big data technology information identification system, in the residents privacy situation, through the data depicting the trust of counterparties, promote through education to cultivate the mutual assistance, mutual trust and mutual spirit, and the government lead by example, not a set, do a set, re-

duce the degree of information asymmetry in the market, so as to improve the efficiency of the market. According to Ostrom's public choice theory, the friendly relationship between social capital can reduce the information asymmetry and agency cost in the government decision-making process, so as to improve the overall decision-making efficiency of the government and the overall welfare level of the society.

6.4. Continuous improvement of the infrastructure and home environment

Infrastructure construction and maintenance is a form of public goods, public goods with non-competitive and non-exclusive, strengthen transportation infrastructure communication and interpersonal relations and social relations, government subsidies to help improve the residential ecological and cultural environment, enhance residents express will, effective allocation of resources, promote social support and social network, and meet the demand of maslow hierarchy theory of social, respect and self-realization high-level demand, improve life happiness.

6.5. The pursuit of social development and people's identity synchronization

The social layout track should be consistent with the people's orientation. The goal of social development is not only economic growth, but more importantly, the recognition of the people. Only when people identify with the development direction of the society, their position and role in the society, and the social environment and humanistic relations they live in, their happiness in life will be improved. This sense of identity can be realized through fair opportunity distribution, just social governance and inclusive social policies. Economic growth can bring to the improvement of material life, but if the development direction of society, policy and resource allocation can't get widely recognized by the people, it also requires fully considering the interests of different groups and demand, establish and perfect the social security system, provide public services, safeguard people's basic life, as far as possible to achieve fair distribution and the results of fair distribution. In addition, when people face living difficulties, they can get social help and support, so as to

enhance their sense of social identity. This is in the pursuit of social development process, we must pay attention to and strive to achieve the goal.

Appendix A. Table 1

Table A.11: **Empirical Analysis in 2014**

	Life Satisfaction				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Sex	-0.1602***	-0.1491***	-0.1761***	-0.1580***	-0.1682***
	(-15.3285)	(-9.7645)	(-11.8690)	(-11.1920)	(-10.3772)
Education	0.0010	-0.0016	0.0053**	0.0012	-0.0001
	(0.6238)	(-0.7119)	(2.0693)	(0.5310)	(-0.0191)
Age	-0.0004	-0.0007	-0.0003	0.0003	-0.0020***
	(-1.2165)	(-1.4296)	(-0.6264)	(0.7225)	(-3.6668)
Nature	0.1699***	0.1702***	0.1727***	0.1715***	0.1644***
	(57.2845)	(37.8314)	(42.4828)	(40.6673)	(37.7475)
Health	-0.1026***	-0.0995***	-0.1054***	-0.0950***	-0.1089***
	(-22.3689)	(-14.1400)	(-16.8869)	(-15.0026)	(-15.6401)
Social Belonging	0.0417***	0.0358***	0.0447***	0.0286***	0.0535***
	(7.9740)	(4.6477)	(6.1948)	(3.9171)	(6.8159)
Social Trust	0.1205***	0.1164***	0.1241***	0.1150***	0.1269***
	(22.3855)	(14.7525)	(16.2550)	(15.6735)	(15.4406)
_cons	-0.8330***	-0.8348***	-0.8310***	-0.8727***	-0.7301***
	(-29.2336)	(-19.3539)	(-21.2033)	(-22.0271)	(-16.9544)
N	31054	14681	15863	16378	13667
adj. R^2	0.167	0.157	0.175	0.157	0.172

Appendix B. Table 2

Table B.12: **Empirical Analysis in 2016**

	Life Satisfaction				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Sex	-0.1676***	-0.1461***	-0.1890***	-0.1704***	-0.1566***
	(-15.3027)	(-9.6579)	(-11.8555)	(-8.6147)	(-9.2987)
Education	-0.0073***	-0.0057**	-0.0075**	-0.0032	-0.0154***
	(-3.7058)	(-2.2572)	(-2.3669)	(-0.9643)	(-5.0235)
Age	0.0055***	0.0053***	0.0057***	0.0071***	0.0033***
	(15.5800)	(10.7611)	(10.9970)	(11.2960)	(5.9419)
Nature	0.0256***	0.0358***	0.0170***	0.0305***	0.0267***
	(10.9230)	(10.7414)	(5.1097)	(6.7517)	(7.8058)
Health	-0.1250***	-0.1348***	-0.1175***	-0.1368***	-0.1186***
	(-25.8550)	(-19.2919)	(-17.4185)	(-14.8042)	(-16.1237)
Social Belonging	-0.0482***	-0.0575***	-0.0430***	-0.0510***	-0.0478***
	(-8.8444)	(-6.7311)	(-5.9851)	(-5.4634)	(-5.6494)
Social Trust	-0.1191***	-0.1237***	-0.1143***	-0.1231***	-0.1232***
	(-21.7173)	(-16.2372)	(-14.4143)	(-12.3234)	(-14.6319)
_cons	0.4179***	0.5013***	0.3589***	0.4685***	0.4696***
	(17.6921)	(14.8268)	(10.7646)	(10.3244)	(13.4305)
N	32160	15800	16141	9496	14688
adj. R^2	0.050	0.058	0.044	0.058	0.047

Appendix C. Table 3

Table C.13: **Empirical Analysis in 2018**

	Life Satisfaction				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Sex	-0.0902***	-0.0687***	-0.1099***	-0.0784***	-0.0981***
	(-6.1150)	(-3.7581)	(-4.3870)	(-3.9288)	(-4.3199)
Education	-0.0359***	-0.0334***	-0.0374***	-0.0434***	-0.0289***
	(-6.2234)	(-4.6271)	(-3.3497)	(-5.4091)	(-3.3040)
Age	-0.0059***	-0.0044***	-0.0095***	-0.0049***	-0.0071***
	(-9.9519)	(-6.1842)	(-8.6560)	(-6.0911)	(-7.6181)
Nature	0.1871***	0.1849***	0.1905***	0.1891***	0.1844***
	(43.5180)	(33.5131)	(27.4752)	(31.3315)	(29.0238)
Health	-0.1622***	-0.1673***	-0.1580***	-0.1672***	-0.1591***
	(-23.1333)	(-18.4798)	(-13.9805)	(-17.0946)	(-15.2683)
Religious Belief	0.0548	-0.0550	0.2317***	0.0239	0.0937
	(1.1803)	(-0.9463)	(3.0233)	(0.3517)	(1.3997)
Social Belonging	0.0011	-0.0019	0.0017	0.0046	-0.0015
	(0.1541)	(-0.2005)	(0.1391)	(0.4555)	(-0.1336)
Social Interaction	0.0078	0.0190**	-0.0109	0.0068	0.0058
	(1.0621)	(2.0975)	(-0.8704)	(0.6765)	(0.5095)
_cons	-0.4807***	-0.5193***	-0.3740***	-0.4937***	-0.4529***
	(-10.2563)	(-8.6463)	(-4.6683)	(-7.5944)	(-6.3993)
N	15568	9126	6218	8337	6788
adj. R^2	0.163	0.165	0.166	0.159	0.168

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