

## REGIONAL INEQUALITY AND DEPRESSION IN CHINA: THE MEDIATING ROLE OF INSTITUTIONAL TRUST

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### ABSTRACT

In recent decades, an individual's subject well-being has raised a substantial degree of concerns in the global society. In China, the population suffering from mental problems such as depression is increasing. It has been argued by many research that the income inequality is related with the presence of depression and depressive symptoms. However, there are relatively fewer studies focusing on the associations between income inequality and depression in China than in many other societies. The present research explores the relationship between income inequality and depression with a particular focus on the mediating effect of institutional trust. We used the data from the CGSS 2021 and National Beaur of Statistics. Cronbach's Alpha and Generalized Structural Equation Modeling was used for the analysis. We find that income inequality is positively associated with the degree of depression (indicating a negative effect on subjective well-being). Trust in institutions has a negative mediating effect on this association.

**Keywords:** Income Inequality, Depression, Institutional Trust, China, Generalized Structural Equation Modeling (Gsem).

## 1. INTRODUCTION

### 1.1 Background

#### 1.1.1 Increasing income inequality

During the past few decades, several dramatic changes have happened in Chinese society. Chinese economy has boomed since the reform and opening started. By 2022, China's GDP has exceeded 120 trillion, increasing by 3%, and China's per capita gross national income GINI reached 12,471 dollars, as displayed in figure 1. However, the income inequality has become a more and more severe problem in China at the same time. According to World bank's data, China's Gini coefficient is 0.47 in 2022, as displayed in figure 2. It is much higher than that of some developed countries such as Germany (0.36 in 2022), and the UK. Actually, income inequality is a long-standing issue in China. Since 2012, China's Gini coefficient has crossed the internationally recognized warning line of 0.4, and it continues to climb. Now, minority of individuals are controlling most of resources including housing, educational resources and medical treatment, while the basic living conditions of most common people are hardly guaranteed. (Cheng et al., 2020). Therefore, we can conclude that income inequality is a question that worths in-depth study.

**1.1.2. Increasing depression among Chinese population**

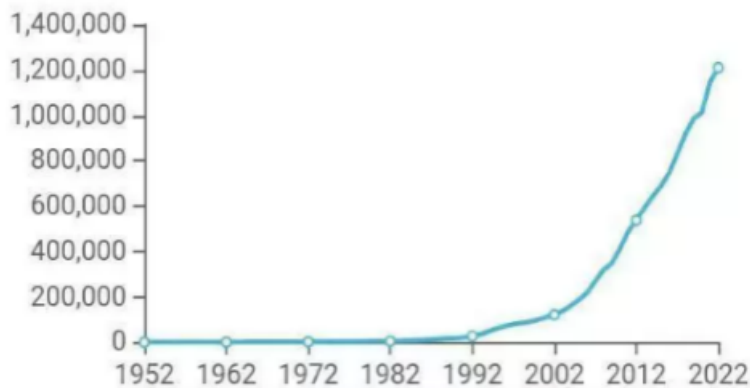
Depression is a kind of public mental health issue, its symptoms usually include being sad for a long and continued time, losing interest to everything, having thoughts about committing suicide and so on. According to Institute of Health Metrics and Evaluation, globally, it is estimated that 5% of adults suffer from depression. Situation is even worse in China. China mental health survey shows that the lifetime prevalence of depression disorders in adults in China is 6.8%, of which 3.4% is depression, the current number of people suffering from depression in China is 95 million, about 280,000 people commit suicide every year, of which 40% suffer from depression in 2022. In the past one decade, the patient growth rate is about 18%. And there are many factors that can make people depressed, such as being divorced, losing stable jobs and tolerating domestic violence. As for factors on macro level, wars, depression and discrimination towards certain groups also play important roles. Among these factors, income inequality is a noneligible one.

**全国：GDP（亿元）**

频度：年

起止：1952至2022

来源：中国统计年鉴



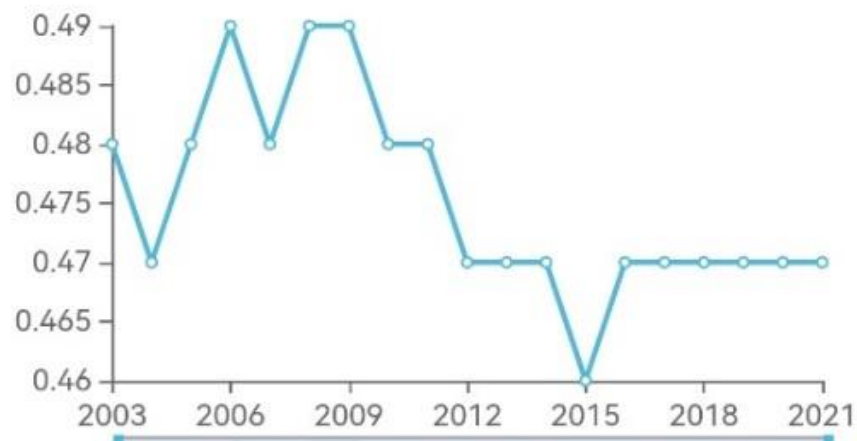
**Figure 2.** GINI coefficients of China

**全国：基尼系数 (-)**

频度：年

起止：2003至2021

来源：金砖国家联合统计手册

**2. LITERATURE REVIEW****2.1. Income inequality and depression**

Nowadays, depression, as a symptom of subjective well-being, is a widespread and serious phenomenon in society. For example, Qin, Wang and Hsieh (2018) found that the overall mental health status in China is worrisome, with about 4.08% of adults suffering from depression and 37.86% frequently experiencing depressive symptoms. And Wang, et al., (2015) found that in 2015 China's average pressure and high-pressure level is higher than most other countries. Income inequality is one of the factors leading to people's depression which is increasing with China's sustained and rapid economic growth. For example, a 2012 study by Sun et al., found that young people with lower incomes suffer the most psychological stress when it comes to depression and stress. And Wang, et al., (2015) also pointed out that in the period of average distribution of resources, a huge income inequality could lead to high stress levels. In fact, income inequality not only affects living conditions, but also exert negative influence on subjective well-being, which sometimes also known as happiness. (Jidong Yang, Kai Liu, Yiran Zhang 2018). In their 2017 study, Ngamaba, Panagioti and Armitage found that the relationship between income inequality and SWB is complex and moderated by the state of national economic development. Therefore this relationship is adjusted by the economic context of different societies.

In China, many researchers have studied the relationship between income inequality and SWB. Zeng and Jian (2019) found that the wealth gap between the richest and the poorest groups in China was widening, and the relative income theory pointed out that income inequality exacerbated the prevalence of depression. In addition, Du, King, and Chi also came to the same conclusion in 2019, and pointed out that the negative relationship between income inequality and SWB can last for four years. In addition, Gou, et al., suggest that in a 2022 study: "Participants in the same province

tend to be more similar, while the variation of participants from different provinces often is larger, "so instead of using normal linear regression, Instead, they used multi-level statistical analysis to examine the influence of provincial factors on depression in China, which makes their findings more credible. What they eventually found: "the respondents living in provinces with lower rural and urban household income inequality and higher people's well-being reported lower depression scores." In addition to China, other researchers have studied the relationship between income inequality and SWB in other countries. For example, a 2014 study by Pabayo, Kawachi, and Gilman found that in the United States, people aged 70 and older are more likely to be depressed in counties with higher income inequality. Rozer and Kraaykamp (2013) found a negative relationship between income inequality and SWB when investigating European countries. And in Chiavegatto et al., (2013) concluded that regional income inequality is associated with depression. Therefore, our first hypothesis is that the increasing income inequality will lead to a high level of depression.

## **2.2. Institutional trust and depression**

Considering the mechanisms behind the associations between income inequality and depression, several factors play mediating role in this process. For example, self-confidence or self-estimate indicate the mechanism. (Cheng, et al., 2012) People may lose confidence toward themselves since they cannot earn as much money as others. Among these factors, institutional trust is a critical one. Why income inequality can affect institutional trust? We can look at the following example. A young man who comes from a low-income family is probably experience different interactions with police compared with wealthy people. As for institutions, they may themselves differ between urban and rural locations and in part these agents may treat different people in different ways, giving more respect to rich people. In this case, people who are poor may receive unfair treatment and then lose institutional trusts (John, 2006). People who have lower institutional trust tend to have lower happiness. (Silva, Loureiro, and Cardoso, 2016) Thus, our second hypothesis is that low institutional trust will lead to people's high level of depression. In this paper, we will take institutional trust as the mediating variable between income inequality and depression degree. Therefore, our third hypothesis is that a high level of income inequality will reduce people's institutional trust and thus increase people's depression degree.

## **2.3. Individual factors that will affect depression**

Except economic inequality, some factors at the individual level also affect people's depression level, involving educational level, residence situation, Hukou . Educational level has a positive implications on mental health because lower educational attainment is associated with higher levels of stress at workplace(Wang ,Cottrell, and Yu, 2015). Meanwhile, in the Chinese context, the residence situation is important for individual's depression level. Research suggests that co-residence in China is important for individuals' happiness, in particular, the happiness of the older. Moreover, Social status also has an impact on people's happiness. For example, Jiang, and Sato found that migrant workers are disadvantaged compared to local residents and thus have lower happiness.

### **3.DATA AND METHOD**

In this analysis, we used data from the survey that CGSS 2021 to measure depression, institutional trust and individual factors. We also got GINI coefficients of provinces across China in 2021 from National Bureau of Statistics. This data includes GINI coefficient of selected cities in China from 1995-2022. We selected 19 out of all the provinces, including: the Nei Monggol Autonomous Region, Beijing, the Ningxia Hui Autonomous Region, Anhui Province, Shandong Province, Shanxi Province, Guangxi Zhuang Autonomous Region (GZAR), Jiangsu Province, Jiangxi Province, Hebei Province, Henan Province, Zhejiang Province, Hubei Province, Hunan Province, Gansu Province, Fujian Province, Liaoning Province, Chongqing Municipality, Shaanxi Province. The method for analysis was Cronbach's Alpha and Generalized Structural Equation Modeling (GSEM). Cronbach's Alpha was used to generate the latent variables of depression and trust based on observed items in the CGSS data. The GSEM was used to build and estimate our regression model. The GSEM is a second-generation technique that enables researchers to simultaneously model and estimate relationships among independent and dependent variables. The concepts that are used in SEM under consideration are usually not observable and measured by several indicators. Using SEM, we can get a more precise result because it accounts error for variables that we observe. (Hair et al. 2021).

#### **3.1. Measurement of variables**

##### **Depression**

Depression was measured by 6 scale variables. In the CGSS survey, there are a set of questions asking the psychological situations and feelings of individual. The items used in this research including: 'In the past 12 months, did you often search information related to anxiety, stress or similar on the internet', 'Do you ever feel unhappy or depressed', 'Have you ever lost faith in yourself', 'Do you feel that you cannot overcome the difficulties you encounter', 'In the past four weeks, how often have you felt depressed' (all rate from 1 to 5), and 'Overall, do you think your life is happy' (rates from 1 to 7).

##### **Institutional trust**

Institutional trust was measured by questions asking respondents their trust about different aspects of the Chinese society. These items are 'Generally speaking, do you think the society today is fair', 'Generally speaking, do you agree that the vast majority of people in this society can be trusted', 'Generally speaking, do you agree that in this society, if you are not careful, others will find a way to take advantage of you', 'In general, China's health care system is inefficient' and 'On the whole, doctors are trustworthy', all rate from 1 to 5.

##### **Inequality**

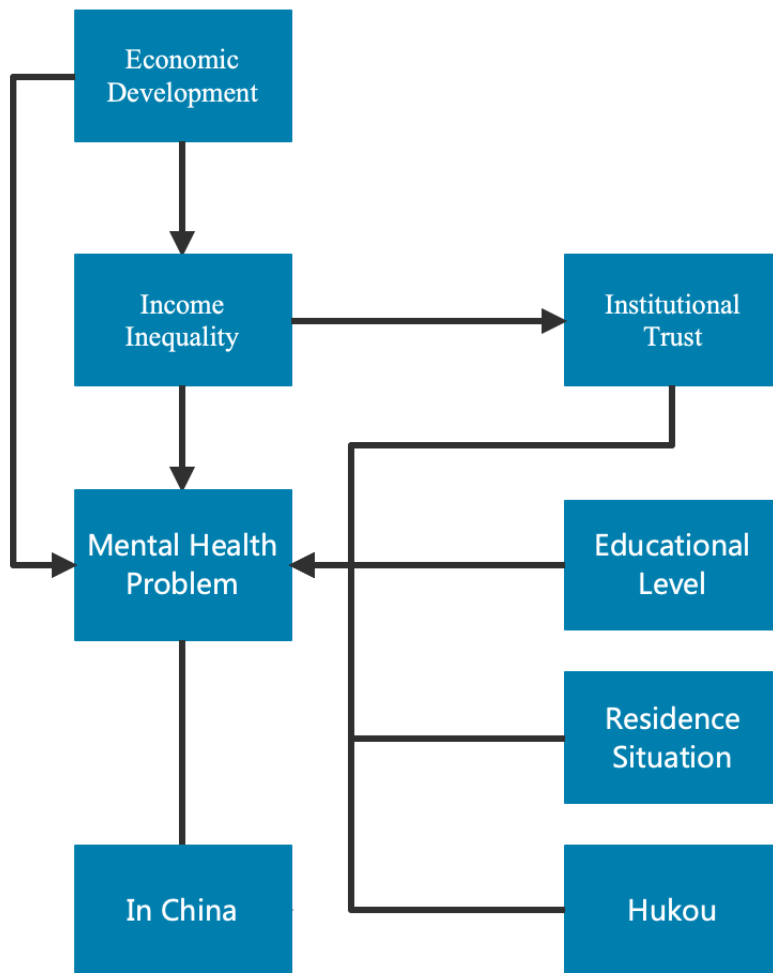
The income inequality was measured by the GINI coefficients. There're many ways to measure the income inequality at the macro level, such as the GINI coefficients or Theil index. This research adopted the GINI coefficients because it is the most commonly used measurement globally, and is highly accepted by the global institutions such as World Bank.

To select the provinces, we considered the GINI coefficients and the economic performance of each province. We divided China into four regions--North region, South region, Northwest region and Southwest region. We divided north region and south region depending on the Qinling-Huai River dividing line, and we divided the west area (one of the three major economic regions) into Southwest region and Northwest region. Based on these four regions of, we selected three provinces from each region. For the North region, we selected Liaoning, Beijing and Shandong.

These three provinces have the best economic development in the North region and thus are highly representative (Bureau of Urban Geography). For the South region, Anhui, Jiangsu and Zhejiang Provinces were selected. These three provinces cover the Yangtze River economic zone. However, according to the GDP statistics, Anhui province is less developed than the Jiangsu and Zhejiang provinces, but has relatively high GINI coefficients. On the contrary, Jiangsu and Zhejiang both have high GDP statistics but relatively low GINI coefficients. These two provinces are also well-known for their advances in technology development and higher education. Therefore, it is a good comparison to involve these three provinces in the analysis. For the Northwest region, we selected the Inner Mongolia Autonomous Region, Ningxia Hui Autonomous Region and Gansu. Inner Mongolia and Ningxia are both regions with a substantial number of residents belonging to minority groups. Yet, Gansu province is the only province that is not administrated by minorities in the Northwest region. Finally, Sichuan Province and Chongqing Municipality were selected to represent the Southwest part of China for their good economic performance. Additionally, they both have relatively high income inequality, considering their GINI coefficients, which are 0.39 and 0.43 respectively. Guangxi Zhuang Autonomous Region was also an object of study for its rapid development since its economic growth rate in 2021 is 7.9%.

#### **Individual factors**

We also controlled for other individual level factors including gender, age, education background and hukou.



**Figure 3.** Flow of modelling

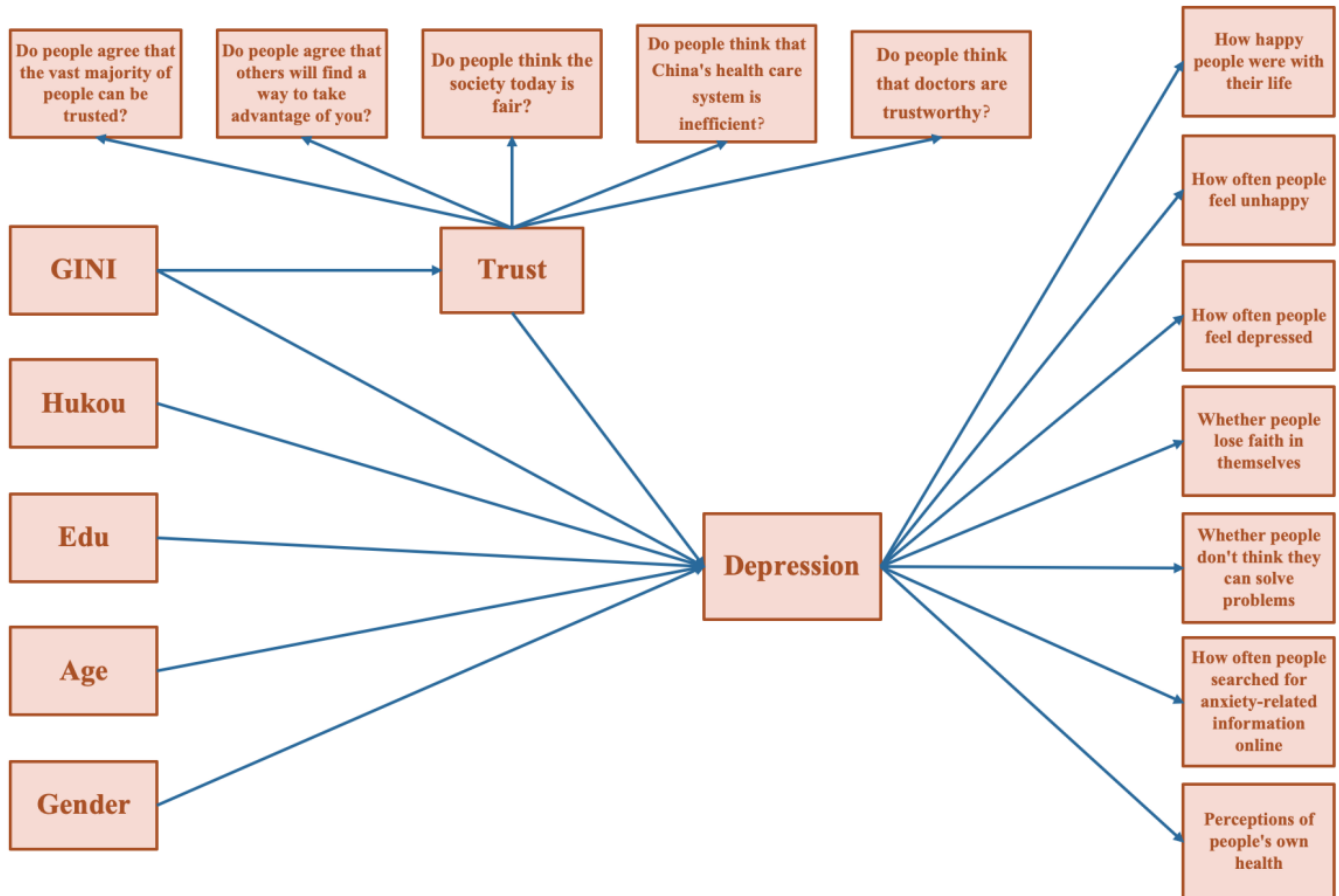


Figure 4. the structure of the modelling



**Table 1. Summary statistics**

Variable	Obs	Mean/Percent	Std. dev.	Min	Max
<b>Depression</b>					
Overall, do you think your life is happy?	1334	4.17	1.00	1	7
In the past 12 months, did you often search information related to anxiety and stress on the internet?	1298	4.39	0.85	1	5
Do you ever feel unhappy or depressed?	1335	2.87	1.16	1	5
Have you ever lost faith in yourself?	1313	4.19	0.96	1	5
Do you feel that you cannot overcome the difficulties you encounter?	1321	4.07	0.98	1	5
In the past four weeks, how often have you felt depressed	3954	3.92	1.09	1	5
<b>Institutional trust</b>					
Do you think the society today is fair?	3938	3.69	0.98	1	5
Do you agree that the vast majority of people can be trusted?	3930	3.11	1.15	1	5
Do you agree that others will find a way to take advantage of you?	3943	3.49	0.96	1	5
In general, China's health care system is inefficient	1307	3.57	0.99	1	5
On the whole, doctors are trustworthy	1331	1.92	0.64	1	5
<b>Explanatory variables</b>					
GINI	3967	0.39	0.06	0	0
Age	3967	52.37	17.34	18	95
Gender					
Male	1,806	45.53			
Female	2,161	54.47			
Hukou					
Agricultural hukou	2,702	69.19			
Non-agricultural hukou	1,203	30.81			
Educational degree					
No education degree	440	11.13			
Primary and middle school education	2,006	50.75			
High school education	658	16.65			
College and above education	849	21.48			
Province					
Inner Mongolia	100	2.52			
Beijing	673	16.96			
Ningxia	101	2.55			
Anhui	414	10.44			
Shandong	608	15.33			
Guangxi	404	10.18			
Zhejiang	502	12.65			
Gansu	300	7.56			
Chongqing	865	21.8			

## 4. RESULTS

### 4.1. Results of Cronbach's Alpha

As we have shown in figure 6, all depression-related variables are positively correlated with depression. Among these variables, variables that test 'how often people feel unhappy', 'how often they feel depressed', 'whether they lose confidence in themselves', and 'whether they don't think they can solve problems' are highly associated to the concepts of depression. The other three variables were also associated with depression: ratings of 'how happy people were with their lives', 'how often people searched for anxiety-related information online', and 'perceptions of their own health' were also good proxies for depression. Moreover, the alpha values of these seven variables are all above 0.70, which proves that they all have high reliability, good consistency and stability as tools to measure depression.

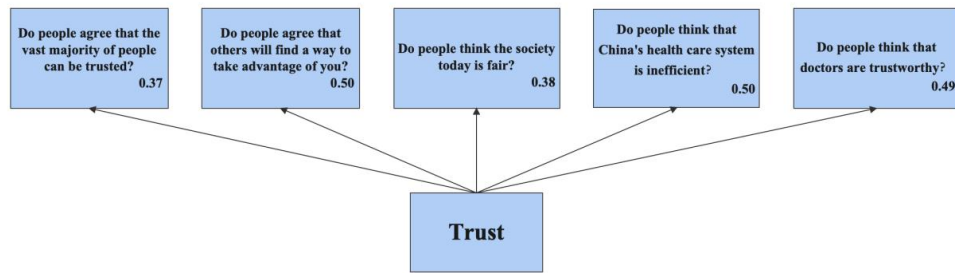
In addition, we selected five trust variables as tools to measure it. In figure 7, the two variables measure respectively: "to what extent people think that others will take advantage of them if they are not careful" and "to what extent people think that China's medical system is not effective" both have alpha with 0.50. And the other three variables measured "how much people agree that most people in society can be trusted," "how much people agree that society is fair," and "how much people agree that doctors are trustworthy," and their alpha was not as high as the first two variables. In addition, of the five variables, only the one measuring the extent to which people agree that doctors are trustworthy was negatively associated with Trust.

**Table 2. Cronbach's Alpha on depression**

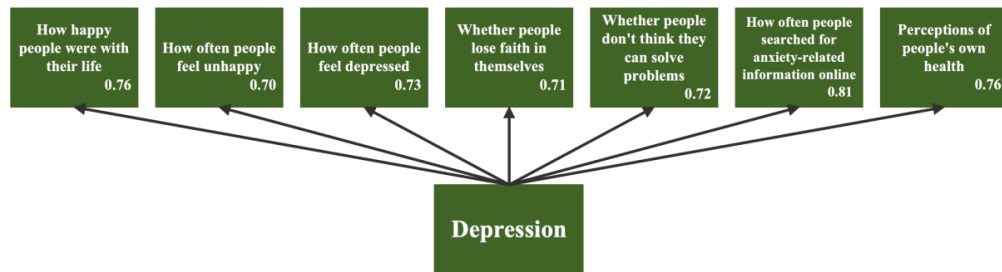
Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average interitem covariance	alpha
Overall, do you think your life is happy?	1334	+	0.59	0.42	0.37	0.76
In the past 12 months, did you often search information related to anxiety and stress on the internet?	1298	+	0.28	0.10	0.46	0.81
Do you ever feel unhappy or depressed?	1332	+	0.79	0.68	0.30	0.70
Have you ever lost faith in yourself?	1313	+	0.76	0.65	0.32	0.71
Do you feel that you cannot overcome the difficulties you encounter?	1321	+	0.76	0.64	0.32	0.72
How do you think of your health?	1335	+	0.62	0.42	0.35	0.76
In the past four weeks, how often have you felt depressed or depressed?	3954	+	0.92	0.61	0.31	0.73
Test scale					0.35	0.77

**Table 3. Cronbach's Alpha on institutional trust**

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average	
					covariance	interitem alpha
Do you agree that the vast majority of people can be trusted?	3938	+	0.56	0.27	0.13	0.37
Do you agree that others will find a way to take advantage of you?	3930	+	0.53	0.16	0.18	0.50
Generally speaking, do you think the society today is fair?	3943	+	0.54	0.25	0.14	0.38
In general, China's health care system is inefficient	1307	+	0.51	0.16	0.20	0.50
On the whole, doctors are trustworthy	1331	-	0.45	0.23	0.20	0.49
Test scale					0.18	0.52



**Figure 5. Alpha of Trust**



**Figure 6. Alpha of Depression**

**4.2. Generalized Structural Equation Modelling**

In our SEM, it is concluded that GINI coefficient, as a variable to measure economic inequality, has a positive influence on institutional trust, and this influence is strong. This is because the

coefficient reaches 0.83. But at the same time, trust also has a negative effect on people's depression levels. As can be seen from figure 6, trust and depression have a direct negative relationship. But the degree of this relationship is not too close, because coefficient is only -0.20. Moreover, the standard error of trust for depression is only 0.02, which means that the variables we chose to measure trust are representative of the overall data. In addition to GINI coefficient, there is an obvious logical relationship between trust and depression, and education level also has a negative effect on depression. Among the three different educational groups, those with a high school education (with coefficient -0.41) were significantly less depressed than those with a primary and secondary education (with coefficient -0.25) or a college and above education (with coefficient -0.24). In addition, non-agricultural hukou is a variable that has a negative impact on depression, and gender being female is a variable that has a positive correlation with depression, but the relationship between these two variables and depression is not that close.

In our study, we used institutional trust as a mediating variable to measure the relationship between income inequality and depression. As we mentioned above: when trust acts as an intermediary between GINI and depression, GINI will first have a positive effect on people's institutional trust, and then trust will have a negative effect on people's depression level. In another word, as income inequality increases, people's trust in institutions increases, but people's depression levels decrease accordingly. However, when the direct relationship between the GINI coefficient and the degree of depression is measured, a strong positive relationship (coefficient of 1.6) is found. This shows that with the increasing GINI coefficient and the greater the income inequality, people's degree of depression will increase. This also confirms our hypothesis. Moreover, after combining the direct and indirect effects, we found that the coefficient of the total effect of GINI on the degree of depression was 1.45, which is still a strong positive correlation.

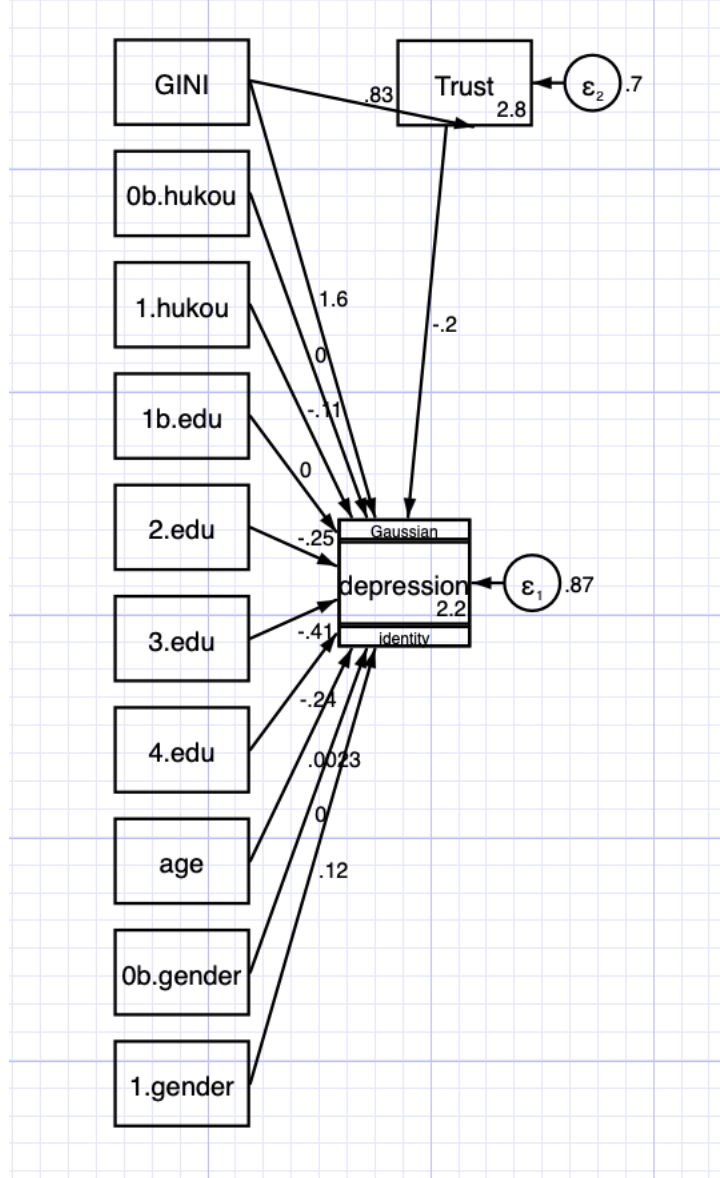
**Table 4. Generalized Structural Equation Model**

Measurement Variable	Depression		
	Coefficient	SE	P-Value
<b>Depression</b>			
Trust	-0.20	0.02	0.00
Hukou			
Non-agricultural hukou	-0.11	0.04	0.00
Educational degree			
Primary and middle school education	-0.25	0.05	0.00
High school education	-0.41	0.06	0.00

College and above education	-0.24	0.07	0.00
Age	0.00	0.00	0.03
Gender			
Female	0.12	0.03	0.00
_cons	2.22	0.16	0.00
var(e.depression)	0.87	0.02	
<b>Trust</b>			
GINI	0.83	0.22	0.00
_cons	2.75	0.09	0.00
var(e.depression)	0.87	0.02	
var(e.Trust)	0.70	0.02	

**Table 5. Indirect and total effect of GINI, trust as mediator**

	Coef.	Std. Err.	P-value
<b>GINI</b>			
Indirect effect (mediated by trust)	-0.17	0.05	0.00
Total effect	1.45	0.29	0.00



**Figure7.** Results of Generalized Structural Equation Modelling

**5. CONCLUSION AND DISCUSSION**

Since Chinese central government determined to take the policy for reform and opening-up, and later established it as a basic state policy, Chinese economy has developed at an astoundingly high speed. At the same time, China also made some achievements on judicature, medical system and education provision. Chinese government led their citizens to make this miracle come true.

However, with the context of rapid economic development, the disparity in China increases simultaneously. For example, while wealthy people are enjoying their extra benefits from housing, investment and other assets, the majority of Chinese obtain their income from job salary. Increasing economic disparity gradually leads to some severe social issues in many aspects such as education, housing, work, and in particular, health.

In this research, we explore the influence of income gap on Chinese people's mental health, specifically the depression. The assumption is that income inequality has a direct influence on the presence of depression, as well as an indirect influence through the mediator of institutional trust. The income inequality might make normal people resentful and lose their trust towards institutions. Therefore, this study targets relationship between income inequality and depression, especially focus on the effect of institutional trust as a mediator.

Data used for analysis is from the CGSS 2021 and National Bureau of Statistics. The variables at individual level comes from the CGSS 2021 including the variables for the measurement of depression and institutional trust. We obtained GINI coefficients in 2021 of 31 provinces in China from the National Bureau of Statistics. This paper selected three representative provinces respectively from each area of China—northern zone, southern zone, northwestern zone and southwestern zone. For the analysis, first we conducted Cronbach's Alpha to generate variables of depression and institutional trust. Second, we conducted generalized structural equation modeling (GSEM) to analyze the correlation of income inequality in province level and people's degree of depression in these chosen areas and testing the mediating effect of institutional trust.

The hypothesize was that there's a negative relationship between income inequality and institutional trust, and low institutional trust will worsen residents' depression. Our hypothesis is partially supported by the findings. Through the analysis, we get three findings. First and foremost, income inequality indeed affects depression. When the GINI coefficient is higher in a certain province, the population of residents who suffer from depression tends to be larger. It is not inexplicable. When people who are from low-income group have less access to good medical or psychological services, have fewer good food options, blight in daily lives can worsen their mental health, some of them will eventually become depressed. (Hossein Zare, etal. 2022) Furthermore, the result indicates that institutional trust has a positive influence on depression, indicating that when institutional trust is higher, there are fewer people who suffer from depression. This finding has accordance with our common sense too. People usually have more hope for their future career and lives when they trust these institutions can provide services well, operate orderly with little corruption. That is to say they think the society is fair with their trust towards institutions and therefore live more happily, reducing the risk of being depressed, vice versa. Nevertheless, the mediating effect of institutional trust on income inequality and depression seems to contradict our hypothesis. We found that when income inequality becomes severer, institutional trust increases, while we assume that high income inequality causes low institutional trust. Institutional trust erodes the negative influence of income inequality on depression. In one word, we conclude that income inequality seems to affect people's degree of depression whether mediated by institutional trust or not and people's trust on institutions in China might not be affected by income inequality in regions.

As for this, we have thought out some explanations. The first one is that due to the economic growth, Considering the continuing economic growth in China's GDP, every province in China is experiencing constant development in local economy, so citizens can feel their living standards are improving, being happier and therefore have more trust to institutions in society. According to

Nation Statistic Bureau, in 2021, China's per capita GDP reached 80,976 yuan, exceeding the world's per capita GDP level. People may think that the achievement of economic growth is partly contributed to the government and other institutions for its proper policy making or useful proposal and high executive efficiency, so they might believe in institutions more. Besides, regional reasons may also play a role. We found that regions with higher GINI coefficients are usually areas with better economic performances. For example, Chongqing, as one of the most economically developed cities in China, has a GINI coefficient that is equal to 0.43. In these areas, residents usually can enjoy high-quality public services such as medical treatment, education and security that are provided by institutions. Back to Chongqing, it possesses 36 top three hospitals, 2 excellent universities—Chongqing University and Southwest University. It's clear that residents in Chongqing can enjoy high-quality treatment from their institutions, even the GINI coefficient of Chongqing is quite high, people live there may neglect the unfair phenomenon in society, being comforted by good public services.

Admittedly, limitations indeed exist in our study. Firstly, our measurement of trust failed to cover some specific institutions. They include education system, labor market and security and so on. If we measure them, the result may be different. For example, if we measure the education system, citizens especially parents' trust toward it may be negatively influenced by income inequality. Because of the longstanding social atmosphere and cultural background, Chinese parents value education for their children a lot. If the income gap is large, parents who are in low-income group may relatively not believe in education system so much. They live in towns or underdeveloped cities in general where no or a few good middle schools or high schools locate. As a result, their children hardly get into top-notched universities to have access to lucrative positions and have a bright future. Hence, they probably have low institutional trust given high income inequality. In a similar way, people's trust to other institutions possibly also affects the result. In addition, our measurement of depression can be improved. In this study, our questions are mainly about people's happiness, frequency of feeling depressed and whether feel stressful or not. Based on these questions, we can ask more questions to get information about people's mental health situation. For example, we can ask "Did you have this experience: losing interest in everything?" or "Did you consider suicide, how many times?" and other kinds of questions to find out how many people have suspicious symptoms of depression and then measure the variable--depression. Moreover, we can improve the measurement by using data that were collected by more advanced psychological depression scales. This kind of scales are more professional than the questionnaire designed by researchers in CGSS, so we can get more accurate result by using these scales. To be more specific, people who don't study in psychology possibly have limited knowledge about diagnose of depression. In this case, they might overlook some information that indicates depression. For example, psychologists may regard feeling sleepy all the time as a harbinger of suffering from depression; however, researchers who are not professional may take it as an inconsequential aspect to study depression, so they may not design questions to measure this. To sum up, these are two limitations that our study has and we hope that researchers later can use more questions and more advanced scales to analyze.

### **Acknowledgment**

We choose to study income inequality and depression because we care about the inequality in China especially some kinds that are critical to people's living standards. Income inequality is a subject that worths in-depth studies considering its influence and the aggravating trend in China.



Also, we chose depression for the large population of Chinese patients who suffer from depression. We want to test the effect of income inequality on depression to try to find relationship between these two social problems. As for institutional trust, we chose to study it to satisfy our curiosity about whether people's institutional trust can affect their lives or not, so we finally studied this subject.

Ruohan Shao was responsible for writing background, data and method, conclusion and discussion, acknowledgement and some work about data cleaning. Fenglin Wang wrote literature review, results, designed tables, adjust the format of paper and drew graphs. Besides, we finished the reference list together.

Our adviser is a teacher who works in Jinan Foreign Language School and teaches AP Microeconomics. When we are writing this paper, she pointed out our mistakes taught us to do data analysis and refined the paper finally. She did this work for no financial payment and we thanked her heartily.

Our adviser helped us use GSEM and Cronbach's Alpha to get the result.

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