


# The Association between Urbanization and Depression among the Middle-Aged and Elderly: A Longitudinal Study in China

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## Abstract

Urbanization has been and will continue to be the mainstream trend of global population movement, including China. Depression is the most common mental disorders and the leading factor of disabilities. However, the impacts of urbanization on the depression occurrence are still unclear. This paper analyzed the data from 3 waves of the China Health and Retirement Longitudinal Study (CHARLS) with sample size as 8510 adults representing the middle aged and elderly group in China. Depression was identified and measured by the 10-item Center for Epidemiological Studies Depression Scale (CESD-10). Urbanization level was measured by population density, GDP per capita and secondary/tertiary industry as percentage to GDP in the China City Statistical Yearbook. The fixed effect regression model was used to explore the association between the changes of urbanization and depression. As result, depression is closely related to the urbanization, protective effects are found for 3 indicators above: The depression prevalence decreases while urbanization level increases (from lowest urbanization level to the highest:  $P < 0.01$ ). Among the 10 depression symptoms, “Bothered”, “Reduced energy leading to diminished activity” and “Hopelessness” are the most significantly improved with urbanization. The impact of urbanization on residents’ mental health is a long-term, multi-factor interaction. Therefore we need to fully consider all possible influencing factors, and longer follow-up study to verify.

## Keywords

urbanization, depression, mental health, urbanicity, China

### What do we already know about this topic?

The association between urbanization and depression occurrence remains to be unclear and complex, no consensus has been reached worldwide. On the one hand, urbanization can raise the residents’ health consciousness and increase the accessibility of medical service, which makes people more likely to get professional care and reduce the risk of depression. On the other hand, urbanization brings pollution and traffic noise and reduces physical activity frequency of residents, which could damage people’s mental health.

### How does your research contribute to the field?

The results of this study give more evidence on the protective impacts of urbanization as a longitudinal study with large sample size. It shows that the prevalence of depression decreased in the regions with high urbanization level in China, the 3 aspects of urbanization, namely dense population, economy improvement and industrial structure change, all play a protective role in depression.

### What are your research’s implications toward theory, practice, or policy?

The study shows that changes in the demographic, economic and industrial structure of China’s urbanization may improve people’s mental health.

## Introduction

Over the past decades, urbanization has become the mainstream trend global population movement. The proportion of the urban population worldwide is about 55% currently and

estimated to reach 68% by 2050.<sup>1</sup> It’s also estimated that in the next 30 years, 90% of the increasing urbanization will occur in Africa and Asia.<sup>2</sup> Particularly, China has experienced an unprecedented rapid urbanization development since



1978 as the year of market liberation. The urban population increased from 17.9% to 59.6% in 2018.<sup>3,4</sup> It's estimated that more than 1 billion Chinese will live in cities by 2030.<sup>3</sup> Given the dramatic lasting urbanization, more focus should be pinned on its possible influence on health of the population.

Due to the multidisciplinary nature of urbanization research and the complexity of urbanization itself, there is no uniform standard for defining the concept of urbanization. Scholars have summarized urbanization from the perspectives of population, economy and lifestyle, emphasizing the process of urbanization from rural areas to urban areas. Eldridge thought "population concentration process is the full meaning of urbanization", Vaughan said "urbanization refers to the lifestyle from the countryside to the city lifestyle demonstration process", Clark proposed "population urbanization is the first industry shrinking high-centralized industry the process of growing population". The standard Urban planning terminology in China refers to urbanization as "the historical process of the transformation of human production and life style from rural to urban, which is mainly reflected in the transformation of rural population into urban population and the continuous development and improvement of cities".

A number of researchers have attempted to understand the potential impacts of urbanization on health, but the majority are focusing on physical health. Comparatively, much less studies have been conducted to discover the causal relationship between urbanization and mental health.<sup>2</sup>

At present, many theories have been introduced into the discussion of the mechanism of urbanization's influence on mental health, such as Grossman's theory of healthy production, Michael Marmot's social determinism, Max Weber's theory of social stratification, and the social decision theory of health. With the development of science and technology, more and more people realize the important influence of socio-economic environment on human health. Urbanization is an important manifestation of the current social and economic conditions. On the one hand, it affects residents' health by changing the social environment; on the other hand, it changes residents' social class by changing their income, education and other factors, and then changes their lifestyle to affect residents' health.

Among all mental problems, depression is the most common disorder, a leading cause of disabilities and a big contributor to the global disease burden, approximately 264 million people are suffering from it in the world.<sup>5</sup> In China,

depression is the fourth leading cause of disabilities and affecting 54 million people as estimated by WHO.<sup>6,7</sup> Depression can be caused by various biologic, genetic, social and environmental factors,<sup>8,9</sup> which makes it likely to be affected by urbanization. But the association between urbanization and depression occurrence remains to be unclear and complex, no consensus has been reached worldwide.<sup>1</sup> Some studies, including in the United States,<sup>10,11</sup> the Netherlands,<sup>12,13</sup> Vietnam<sup>14</sup> and India,<sup>15</sup> found that urbanization was detrimental to mental health, because cities are concentrated with several negative factors to depression such as overcrowding, less greens and space, higher crime rate, pollution and traffic noise.<sup>16,17</sup> While other studies, mainly conducted in China, found urbanization can have protective effect on mental health, considering that cities are also associated with improved infrastructures, more resources, more opportunity and better social support and welfare.<sup>1,3,18,19</sup> A recent Chinese meta-analysis study also showed that the prevalence of depression symptoms among urban elder groups aged > 60 (20.5%) was lower than those living in rural areas (29.2%).<sup>20</sup>

Although some a number of studies has demonstrated the associations between urbanization and depression, the majority of them are cross-sectional, that have limited power to illustrate the underlying mechanisms due to mixing various possible covariates in the pathway.<sup>1</sup> It will be helpful to use a better model excluded individual heterogeneity to draw a clearer picture of this relationship. Also taking into consideration that aging population is another paralleling trend in China, and depression is a common disease among Chinese elder group (20.5%),<sup>21</sup> in this longitudinal study, we would analyze the data from a national representative survey for middle-aged and elderly and attempt to investigate the association between urbanization evolution and the prevalence of depression and its 10 symptoms among middle-aged and elder Chinese.

## Data and Methods

### Data

The data in this study was from the China Health and Retirement Longitudinal Study (CHARLS) conducted by the China social science survey center at Peking University. CHARLS is a nationally represented dataset that measures the health and well-being of the Chinese population aged 45 and over. The survey followed a multi-stage stratified

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random PPS (Probability Proportionate to Size) sampling strategy, covering 150 counties or city districts, included 450 villages or resident committees, which was well representative.<sup>22</sup> This study used data in 2011, 2013, and 2015 waves, including basic personal information and health conditions.

Our main dependent variable is the score of depressive symptoms measured in 3 waves with the Chinese language version of 10-item Center for Epidemiologic Studies Depression Scale (CESD-10). CESD-10 mainly measures the mental health status and depression tendency of respondents, with proved reliability and validity (Cronbach's alpha = 0.815).<sup>23</sup> There are 10 questions in CESD-10, collecting the frequency of the respondents' feelings or behaviors in a week. Each question is measured on a four-point score from "rarely or none"(0) to "most or all of time"(3). The total score ranges from 0 to 30, with a higher score indicating higher level of depressive symptoms. Several studies have reported that a cut-off point of 10 showed high sensitivity and specificity for diagnosis of depressive symptoms.<sup>24</sup> Accordingly, respondents with scores above 10 were considered to be prone to depression.

The key independent variable, urbanization, is measured by 3 most frequently used indicators. Urbanization is usually in line with the changes from 3 aspects: (1) population migration; (2) economic development; (3) industry structure transition and upgrading. Urbanization expended as the wheel of history, population moved and economic activities aggregated in cities, the imported population calls for more positions and promote transition and upgrading of industry. People working in the primary industry became less, the proportion of second and third industry will increase. This industrial transition lead to producing more benefit and further drive people's movement.<sup>25-28</sup> To describe these 3 aspects in a measurable way, and referring to the measurement indicators of urbanization level in domestic and foreign studies, this paper uses the population density, GDP per capita and secondary/tertiary industry as percentage to GDP as indicators.<sup>29-31</sup> The data is from in the China City Statistical Yearbook, in which GDP per capita has been adjusted to eliminate the impact of inflation according to CPI. The data is defined as 5 levels from low to high, representing the level of urbanization, by equal interval adjusted to ensure the relative balance of the data (Appendix I).

Several control variables accounting for compositional differences between individuals are also included in the regressions. Through the study, we found that personal characteristics and living environment of individuals can affect mental health. Depression often occurs in people who are older, female, low-educated, non-spousal, less social support and relatively unhealthy.<sup>32-34</sup> Therefore, we use age, square of age, gender, education level, marital status and work status as covariates. Among these variables, gender is unchanged due to the use of longitudinal data, education level is found

**Table 1.** Sociodemographic Characteristics.

	2011	2013	2015
<b>Gender (%)</b>			
Male	49.45	-	-
Female	50.55	-	-
<b>Age (%)</b>			
45-50	21.40	11.29	2.61
50-60	38.12	39.35	38.71
60-70	29.78	34.82	39.71
70-80	9.61	12.63	15.95
>80	1.09	1.90	3.03
<b>Education level (%)</b>			
Illiteracy	21.72	-	-
Can read	18.13	-	-
Primary school	24.19	-	-
Junior high school and above	35.96	-	-
<b>Marital status (%)</b>			
Married	90.80	89.37	87.59
Others	9.20	10.63	12.41
<b>Work status (%)</b>			
0	25.80	28.69	33.69
1	60.89	57.31	51.69
2	13.31	14.00	14.62

Note. There was no change in the gender and education group; married status: married-with spouse, others-without spouse; work status: 0-no job, 1-take up 1 job, 2-take up 2 jobs.

unchanged through descriptive statistics, and the rest were time-varying variables (Table 1).

This study is the panel data constituted by the longitudinal study when the respondents tracked in all the 3 waves. To control the data quality, exclusion criteria is as follow: (1) respondents without necessary socio-demographic information; (2) respondents without information on CESD-10 in all 3 waves; (3) respondents' cities without urbanization indicators (8 provinces covering 11 cities without urbanization indicators); (4) respondents under 45 years old. Overall, the final sample size is 8510 cases per year.

## Methods and Analytic Strategy

In this study, we use 3 waves of CHARLS to build the panel data, which can account for not only observed confounders but also differences in individual living environments, home and work environments and other unobserved confounders. The panel data takes into account that such individual differences do not change over time, thus it can effectively solve the problem of missing variables and eliminate the estimation bias caused by unobvious effects.

To exam whether individual heterogeneity is related to explanatory variables, we implemented a Hausman specification test between fixed effect model and random effected model. The Hausman test shows that the *P* values was less

than .001, indicating that individual heterogeneity is related to explanatory variables, thus the fixed effect model is selected.

Specification of our model was as follows:

$$Y_{it} = \beta_1 U_{it} + \beta_2 X_{it} + u_i + e_{it}$$

Where the dependent variable  $Y_{it}$  denotes whether individual  $i$  is depressed at time  $t$ ,  $U_{it}$  denotes the focal independent variable urbanization index which is divided into 5 grades as dummy variables, and is separately incorporated into the model to avoid multicollinearity, and  $X_{it}$  denotes time-varying variables for individual  $i$  at time point  $t$ . Furthermore,  $u_i$  is the intercept term of individual heterogeneity, which represents the unobvious influence and time-invariant variables, and  $e_{it}$  is a random perturbation term that changes over time.  $\beta_1$  is the coefficients to be estimated, and if  $\beta_1$  is statistically significant, it indicates that a within-person change between waves in the urbanization variable is associated within-person change in the depression variable. We used the linear probability model to carry out the regression, and  $\beta_1$  was interpreted as the change of urbanization index by one unit and the change of depression probability.

## Result

### Sociodemographic

Of 25,530 respondents, 49.45% were male and 21.72% were illiterate. In 2011, the proportion aged 50 to 60 was the highest, with an average age of 57.99 (standard deviation: 8.54). 90.80% of the respondents were married, but due to the increase in the number of widows, the proportion of those with spouses showed a downward trend. In 2011, 25.8% had no job and the rest have at least one job, the no-job rate increased to 33.69% in 2015.

### Prevalence of Depression in Different Groups

The study found that the average score of depression was 7.88, among which the average score of depression was 15.10. The depression prevalence was nearly 30%, down from 34.54% in 2011 to 30.02% in 2013, and rise up to 33.08% in 2015. Specifically, the prevalence of depression in women is higher than that in men. The highest prevalence of depression in 2011 and 2013 was over 80 years old, and it dropped to 60 to 70 years old in 2015, indicating that depression is gradually becoming younger. Illiteracy had the highest prevalence of depression, while those with a junior high school degree or above had the lowest. Married people had lower rates of depression than people without a spouse. Work status was complicated, with one job having the highest depression prevalence, followed by no job and 2 jobs having

**Table 2.** Depression Prevalence Rate among Different Groups.

	2011	2013	2015
Depression prevalence (%)	34.54	30.02	33.08
Depression scale	8.04 ± 6.20	7.64 ± 5.68	7.94 ± 6.35
Gender (%)			
Male	27.70	23.61	25.96
Female	41.24	36.31	40.03
Age (%)			
45-50	29.54	29.24	30.63
50-60	33.54	29.68	31.51
60-70	38.24	31.08	34.57
70-80	37.65	28.56	34.41
>80	38.71	32.10	28.68
Education level (%)			
Illiteracy	45.56	37.66	42.91
Can read	41.74	36.23	39.34
Primary school	34.74	28.96	33.48
Junior high school and above	24.12	22.97	23.69
Marital status (%)			
Married	33.17	29.02	31.65
Others	48.02	38.45	43.18
Work status (%)			
0	35.68	30.53	33.81
1	37.10	32.00	35.77
2	20.60	20.91	21.78

Note. The CESD-10 ranges from 0 to 30, with a score above 10 indicating a tendency toward depression.

the lowest depression prevalence. The chi-square test showed that  $P$  value was less than 0.001 in each group (Table 2).

### Association between Depression and Urbanization

The fixed effect regression model is used to analyze and find that depression is closely related to population density, GDP per capita and the secondary/tertiary industry as percentage to GDP. The higher the urbanization level is, the lower the depression prevalence occurs. In particular, the depression prevalence presented a gradient significant decline with the increase of the population density, GDP per capita, secondary/tertiary industry as percentage to GDP, except that when population density and GDP per capita changed from low to middle-low, the influence on depression prevalence was not statistically significant. Specifically, urban residents with high population density had a 7.32% lower depression rate than those with low level. Urban residents with high per capita GDP had a 5.36% lower depression rate than those with low levels. The depression rate of urban residents with a high output value of the secondary and tertiary industries was 10.68% lower than that of urban residents with a low level.



**Table 3.** Association between Depression and Urbanization Level (Fixed Effect Model).

	Depression		
	Population density	GDP per capita	Secondary/tertiary industry as percentage to GDP
Low			
Mid-low	-0.0282 (0.0252)	-0.0084 (0.0097)	-0.0301** (0.0144)
Middle	-0.0533** (0.0271)	-0.0401*** (0.0112)	-0.0612*** (0.0177)
Mid-high	-0.0501* (0.2773)	-0.0438*** (0.0128)	-0.1275*** (0.0228)
High	-0.0732** (0.2992)	-0.0536*** (0.0137)	-0.1068*** (0.0300)

Note. Age, age squared, gender, marital status, education level and work status were controlled. The results of the control variables are not listed in the table as space concerning. The value in parentheses is the standard error.

\* $P < 0.1$ . \*\* $P < 0.05$ . \*\*\* $P < 0.01$ .

Another POLS regression was conducted in Appendix II to verify the urbanization level and control factors, and it was found that the impact of urbanization level was consistent with the results in Table 3.

Table 4 shows the results of the fixed effect model analysis on the specific depression symptoms. CESD-10 consists of 4 items (item 1,3,6 and 9) for depression affect (DA), 4 items (item 2,4,7 and 8) for somatic and retarded activity (SR) and 2 items (item 5 and 8) for positive affect (PA). The relationships between symptoms and urbanization were various, but in general both emotions and physical symptoms could be affected.

Among all, some symptoms are more likely to be affected by urbanization relatively, namely "bothered", "Reduced energy leading to diminished activity" and "Hopelessness". Specifically, in terms of DA, residents in cities with high population density, high per capita GDP and high output value of secondary and tertiary industries were 8.44%, 11.22% and 21.00% less likely to be "bothered", respectively, compared with cities with low population density, low per capita GDP and low output value of secondary and tertiary industries. In terms of positive affect, residents were 16.05%, 24.51% and 13.44% less likely to "feel hopeless". In terms of SR, residents were 8.98%, 10.71% and 19.89% less likely to "diminish activity". Meanwhile, urbanization shows less significant impacts on "Slept restlessly" and "feelings of loneliness".

Among the 3 indicators of urbanization, GDP per capita illustrated the most significant positive impacts on depression symptoms generally, population density showed the least.

## Discussion

The results of our study are consistent with other Chinese studies, showing that urbanization has positive impacts on depression outcomes in the context of China among the middle-aged and elder Chinese.<sup>1,3,18,19,21</sup> Our study showed similar findings as previous cross-sectional studies and

contribute to more solid results by controlling the possible individual socioeconomic confounders and covariates via panel analysis, as more specifically population aggregation, GDP increase and industry transmission had positively affected the prevalence of depression as for studied population and period. Urbanization had uneven impacts on depression symptoms. In the process of urbanization, GDP change contributes the most significant to the impacts compared with the other 2 factors. The economic impact of urbanization brings the increase of government health resource investment. At the same time, people are more willing to seek professional psychological help, improving the utilization rate of mental health services. Population concentration and industrial upgrading will also have a protective effect, possibly increasing the role of social support by increasing community activities

As noted, studies in other countries presents different findings about how urbanization influence depression prevalence.<sup>10-17</sup> This inconsistency can be seen as reasonable, because by nature urbanization is not a director simple factor to depression, the various aspects of urbanization outcomes may form many possible layers of influencing pathway-some of which promote and some of which hinder mental health.<sup>1,35</sup> The overall impacts of urbanization are a mixture of all layers and represent a result of the major effective aspects through antagonism.

To explain the protective impacts of urbanization in China, one possible rational may be the big gap of the health service supply between the urban and rural areas in China. In 2016, 57.3% Chinese population lived in urban areas but serviced by 88.2% of the health workers and 83.5% of the beds national wide, equivalent of 3.75 and 5.5 times as the resources each rural resident had respectively.<sup>36</sup> In particular, the specialized health service such as mental health, studies has showed that the mental health workforce in China are also unevenly distributed between rural and urban areas. Although in 2015, the National Health Commission (NHC) of China implemented a five-year psychiatrist licensing program to address the shortage of mental health workforce

**Table 4.** The Association between Depression Symptoms And Urbanization Level (Fixed Effect Model).

	1. Bothered	2. Poor concentration	3. Depressed mood	4. Reduced energy leading to diminished activity	5. Hopelessness	6. Feelings of fear	7. Disturbed sleep	8. Loss of enjoyment	9. Feelings of loneliness	10. Feelings of life cannot get going
Population density										
Low										
mid-low	-0.0429	0.0076	0.0155	-0.0480*	0.0153*	-0.0110	-0.0357	-0.0325	-0.0281	-0.0071
middle	-0.0727**	-0.0143	-0.0283	-0.0386	0.0851***	-0.0155	-0.0429	-0.0633**	-0.0348	-0.0227
mid-high	-0.0703**	-0.0264	-0.0289	-0.0532*	0.0791**	-0.0131	-0.0409	-0.0320	-0.0330	-0.0239
High	-0.0844***	-0.0649**	-0.0395	-0.0898***	0.1605***	0.0007	-0.0080	0.0200	-0.0550**	-0.0093
GDP per capita										
Low										
mid-low	-0.0327***	0.0093	-0.0420***	-0.0334***	0.0913***	-0.0064*	0.0159	0.0534***	-0.0033	0.0207***
middle	-0.0821***	-0.0301**	-0.0574***	-0.0845***	0.1256***	-0.0223***	0.0199**	0.0642***	-0.0095	0.0188**
mid-high	-0.1020***	-0.0197	-0.0846***	-0.0887***	0.1902***	-0.0200**	0.0148	0.0915***	-0.0053	0.0284***
High	-0.1122***	-0.0125	-0.0748***	-0.1071***	0.2451***	-0.0170*	0.0223	0.1056***	0.0123	0.0237**
Secondary/tertiary industry as percentage to GDP										
low										
mid-low	-0.0189	0.0028	-0.0065	-0.0627***	-0.0213	0.0020	0.0120	-0.0154	0.0200*	0.0300***
middle	-0.0902***	-0.0347*	-0.0267	-0.0955***	0.0132	-0.0128	0.0066	-0.0345**	0.0121	0.0161
mid-high	-0.1773***	-0.0968***	-0.1163***	-0.1782***	0.0905***	-0.0317**	0.0025	0.0032	-0.0046	-0.0125
High	-0.2100***	-0.1022***	-0.1050***	-0.1989***	0.1344***	-0.0307	0.0039	0.0009	0.0029	-0.0211

Note. Age, age squared, gender, marital status, education level and work status were controlled. The results of the control variables are not listed in the table as space concerning.  
\*P < 0.1. \*\*P < 0.05. \*\*\*P < 0.01.

nationwide, especially encouraging practicing in rural and remote areas. It will take time for the effects of policies to be seen, the urban-rural disparities of the availability, accessibility and quality of mental health service is still likely to continue for years.<sup>37</sup> What's more, due to various cultural and socioeconomic reasons, people with mental health needs are reluctant to seek for professional assistant and support, especially in rural areas of China. The utilization rate of mental health services in rural areas is much lower than in urban areas.<sup>38</sup>

In addition, the protective findings may also be affected by the study methodology. Normally, people who are healthier and with more resource are more likely to be able to migrant to cities and also remain in the cities, than those who do not leave or go back to rural areas. This large-scale health-selective migration is usually called as "healthy migrants effect".<sup>1,38</sup> This effect can be escalated as the investigated population in this study is the elder group, who has settled down in the cities or go back to rural areas after the instabilities right after migrant to urban areas at younger age.

Another factor that contributes to the positive impacts of urbanization is the planned urbanization progress in China. Different from unplanned growth of the cities, the government regulated urbanization could be more likely to benefit people's health and well-being.<sup>19</sup> Even some studies showed that planned urbanization may be involuntary and interrupt some original social networks, this unique migrant mechanism can still help to explain the protective impacts observed in this country by observing how it prevents negative outcomes from becoming stressors. According to previous studies, stressors living in cities came from both environment hazards and stressful events. The environmental hazards included air pollutions, water pollution, insufficient greenspace, traffic noise, poor housing, lack of sanitation, overcrowding, etc.<sup>39-48</sup> The stressful events could refer to job loss and competition, mortgage pressure and residential

relocation, etc.<sup>49-52</sup> At least partially of these stressors are possible to be intervened and moderated by policies, thus governments should shoulder the responsibilities to address some of the stressors by well-planned urbanization. For example, along with urbanization, governments could offer better city design, living conditions and infrastructures to alleviate environment hazards, meanwhile offer stable job market and improve social welfare for migrants to mitigate stress events.

Several limitations in our study should be acknowledged. Firstly, the younger group is not included in our analysis due to the limitation of the database, some negative factors that are more likely to be exposed by younger group are devalued, such as job loss and competition, mortgage burden and poor housing. Therefore, the representativeness of the findings cannot be extended to entire population. Secondly, as mentioned above, there are multiple possible layers of the influence mechanism through urbanization to depression, the various impacts on depressive symptoms cannot be interpreted without knowing a clearer factors framework, which calls for more in-depth studies to further clarify.

To conclude, our study finds that urbanization has significant positive impacts on depression outcomes among the middle-aged and the elderly in China, by controlling the effect of potential covariates and confounders. The impact of urbanization on residents' health behavior is a long-term, multi-factor interaction. With the urbanization process, residents' living and working environments have changed. In addition to economic, demographic and industrial factors, factors such as the level of health care, access to health services and health education need to be taken into account. Residents under the background of urbanization have the chance to get more health promotion to improve health consciousness and thus seek mental health. Therefore, we need to fully consider all possible influencing factors, and longer follow-up study to verify.

#### Appendix I. The division and definition of 5 levels of indicators measuring urbanization.

	Population density (people/km <sup>2</sup> )	GDP per capita (thousand yuan)	Secondary/tertiary industry as percentage to GDP (%)
Low	<200	<15	<80
Mid-low	200-400	15-25	80-85
Middle	400-600	25-35	85-90
Mid-high	600-800	35-45	90-93
High	>800	>45	>93

Note. Each data segment includes a lower limit, not an upper limit.

**Appendix II.** Association between depression and urbanization level (POLS regression results).

Urbanization	Depression		
	Population density	GDP per capita	Secondary/tertiary industry as percentage to GDP
low			
mid-low	-0.0509***	-0.0588***	-0.0140
middle	-0.0854***	-0.1064***	-0.0900***
mid-high	-0.1007***	-0.1403***	-0.1220***
high	-0.1187***	-0.1638***	-0.1535***
Gender			
Female			
Male	-0.0999***	-0.1027***	-0.1030***
Age	0.0120***	0.0121***	0.0114***
Age2	-0.0001***	-0.0001***	-0.0001***
Education			
Illiteracy			
Can read	-0.002	0.0109	0.0101
Primary school	-0.0504***	-0.0376***	-0.0400***
Junior high school and above	-0.1212***	-0.1062***	-0.1044***
Marital status			
Other			
Married	-0.0935***	-0.0925***	-0.0944***
Work status			
0			
1	0.0274***	0.0040	0.0083
2	-0.0652***	-0.0707***	-0.0637***

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