# Land utilization vs. elderly mental condition: elderly's willingness to take part in demolishing programs

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**Abstract:**
With the boost of population in the current world, demolishing is now a widely adopted method of improving land usage. This study focuses on older people's willingness to participate in these programs. Taking a village in China as an example, a survey is done on the elderly community. The community mostly includes older families, which the females can hardly read, and few males are educated. The survey includes 15 questions, including 4 asking the respondents' background. The data is analyzed using regression models and descriptive analysis. A factor analysis combines the nine dependent variables into one dimension, which can be interpreted as an understanding of the program. Two independent variables are studied one by one. It has been discovered that most elderly hold a positive attitude toward demolishing programs, and there's a positive relationship between the understanding level the elderly have of the program and their willingness to participate in the program. The general willingness to participate in these programs is unexpectedly high for the elderly in the area. It is rarely witnessed for an elderly to be strongly unwilling to move. As a result, government officials may teach the residents who show negative attitudes toward the demolishing programs to motivate them to participate in these programs, and people may not need to worry too much about the elderly's mental health after demolition.
**Keywords:** demolishing, elderly's willingness, government

## 1. Introduction

To manage the preserved land and improve the utility of land resources, governments worldwide keep practicing demolishing programs. Over the recent decade, the Chinese government has been trying to lift all residents living below the current poverty line out of poverty, which facilitates the demolishing programs. Since Chinese settlers do not frequently move to new houses spontaneously, governments have to exercise such demolishing programs to improve the utility of the land and eventually benefit the local economy. Numerous successful cases of demolishing programs can be observed all over the world. Still, it is also a concern that some elderlies might experience emotional and financial damage in the programs.

To look into the mental and financial problems that settlers may face in the mass demolishing programs that the Chinese government started, settlers in Xinngfu Village, a typical large village in Southwest China, are given a survey that focuses on the settlers' understanding of the program, the distance from the settlers' new house and their workplace, and their willingness of taking part in the program.

This paper contains five parts. In the literature review part, the possible advantages of demolishing programs and the factors that influence the elderly's mental condition are discussed. In the sample and survey part, this research method is introduced. The analysis part shows how the data was analyzed. Finally, the conclusion part gives inspiration from this research.

This research may also help government officials solve the problem that some elderly may not be willing to move out of their old houses. For example, the result of the study can inspire the officials to take certain actions to increase the likelihood of the elders taking part in the activities.

## 2. Literature review

"The demolition decisions of housing producers are strongly influenced by the economic incentives of the market and the law" (Bender, 1979). "Rapid urbanization and urban expansion have produced many urban and rural communities in China" (Lang et al., 2016). With the explosive population growth in China, the government "seeks to balance increases in urban construction land with a reduction in rural construction land" (Long et al., 2012). However, the study also shows violent protests against several demolishing programs. Undoubtedly, these programs should pay more attention to the settlers, especially the elderly happiness. It is shown that the happiness of the elderly is correlated to whether their wishes can be fulfilled and their biological and physical status (Adams, 1971). Therefore, to ensure a happy life for the elderly and future elderly, it might be a solution

for governments to try to fulfill the biological needs and improve their living conditions.

One of the possible solutions to significantly improve their living condition is to move them to a new and better settlement, which can also potentially fulfill their wishes. According to the analysis of the demolishing program of Chengui town, the governors need to consider multiple factors, including space utility, transportation, and distance between old and new settlements, and make a proper compromise to maximize the benefit of the demolishing program (Kong et al., 2021). A positive result is shown from past demolishing programs as the elders (Keene and Ruel, 2013);. However, this is the result of a study that focuses only on one single city, the result might still apply to other populations. "Smaller, older, frame buildings with less lot coverage had a greater probability of being demolished" (Weber et al., 2016). According to this statement, the settlements in Yandu, Yancheng, perfectly meet these qualities and are more likely to fit a demolishing program. In the past, numerous successful demolishing programs made utilizing resources more efficient and elevated the settlers' happiness level. For example, in Fengsi village, the demolishing program gathered the villagers together and reinforced the bonds between the neighborhoods (Wang et al., 2016). Such programs can also improve agriculture efficiency in the area, and more land can be practically used for planting. In a study on a city called Yuhang, it was discovered that with the industrialization progress, some older city structures or rural structures no longer fit the settlers' needs and may also waste resources, so demolishing is probably inevitable (Xu and Tan, 2002). Both Chinese governments and scholars believe demolishing programs is beneficial while trying to efficiently use limited resources. Also, in some places, "adaptive reuse is beginning to be considered" (Bullen and Love, 2010); such a method can be a potential supplement for demolishing programs. "The case for planned large-scale demolition for energy reasons is greatly weakened when we consider embodied energy as well as energy in-use" (Power, 2008). It is shown that the settlers' interest can be a factor that influences the projects much more than commonly believed because other factors are not actually that efficient. As a result, it is more important to understand the settlers' willingness to participate in the demolishing programs to decide whether to practice the backup or the demolishing projects.

In countries other than China and the US, for example, some settlers may process the demolishing by themselves as they frequently move to new homes (Bender, 1979). Due to the cultural difference between China and the US, while US citizens frequently move to new homes, Chinese citizens may stay in the same house for their whole life, which means that it's probably necessary for the governors to push the demolishing to fit the new society. Anyway, it is shown that demolishing programs are likely to have positive outcomes in China and other countries.

"24.3% of the rural elderly are in bad physical health, and 32.9% of them are depressed" (Bai et al., 2004). The fact that so many elderly are in a negative emotional state tells us that officials should care more about their mental health. "Conditional living with a grandchild, living with one's child hurts the elderly's happiness" (Chyi and Mao, 2011). As a result, demolishing programs may be critical to the elderly's happiness level as they may determine if the elderly still live with their children. "Life satisfaction reported by rural older Chinese adults was significantly related to […] visiting neighbors" (Li et al., 2013), and the elderly "engage in activities out of the home, socialize, and enjoy better mobility also report higher levels of subjective well-being leading to a better quality of life" (Ravulaparthy et al., ), so it is important to apply reasonable methods that help with their mobility and social activities.

## 3. Sampling and survey

### 3.1 Methodology

This is quantitative research using a survey to study the relationship between the elderly's lives and demolishing programs.

### 3.2 Sampling population

The population of this study comes from the rural area of a typical northern agricultural village called Xingfu Village. The village lies in Longgang country, Yancheng. This means that the results and conclusion of this research might only apply to cities around the coastline of southern China. The elderly dominate the population's main portion, so the village is a proper source for sampling. The demolishing and replacement of the villagers is still in process at the time when the survey was distributed, so villagers are more likely to be conscious about the process and results of demolishing and replacement.

98 valid results were collected, while 104 surveys were distributed. 6 of the 104 surveys are not considered valid since the respondents did not answer every question. The response rate is incredibly high at 100%. The reason for this high response rate is largely likely to be that the sample population is small and centralized. By visiting potential respondents individually, we successfully eliminated the voluntary response bias.

Among all the respondents, only one is between 18 and 28. The number of respondents between 60 and 70 years old is high, up to 63, occupying 64.3% of the respondents.

All the rest of the respondents were aged between 70 and 80, taking up the other 34.7% of the respondents. This shows that the distribution of the respondents' age is approximately normal and unimodal, with a median between 60 and 70 years old. The mean and medium of the age distribution are significantly larger than the average distribution of China, indicating that Xingfu village contains mostly elderly with few young people. The respondents between 18 and 28 might be a potential outlier in the research.

10 of the 98 samples were collected from female respondents, meaning that only 10.2% of the responses were from females, and all the rest were males. This might be inevitable when doing research on elderly people in rural China due to the low literacy rate. Gender bias used to be severe in China, and not many older females could read. As a result, only males with basic education could respond to our survey. However, as each family only has one copy of the survey by visiting the families and telling the respondents to discuss it with their family, the results are more likely to represent the whole family's situation instead of a single person.

### 3.3 question design

The survey includes 15 questions. The initial four questions function as control variables by gathering basic background information about the respondents. The following 11 questions are all based on a Likert scale, but the number of options varies from 2 to 5. All questions offer the respondents options to choose using their appreciation of the demolishing and replacement process or results. Questions 5 and 6 function as independent variables. Question 5 asks about the willingness to demolish and replace the respondents, while question 6 determines if the new settlement is closer or further from the respondents' workplace. Questions 7 to 15 function as dependent variables from multiple perspectives, including the condition of the new settlement, the financial condition after moving to the new settlement, and the changes that the new settlement brought.

## 4. Analysis

First, we did a descriptive analysis of the collected samples by using SPSS, a statical software presented by IBM, and the result is shown in the following table:

**Table1. Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Gender | 98 | 1 | 2 | 1.10 | 0.304 |
| Age | 98 | 1 | 6 | 5.31 | 0.649 |
| Number of family members (members) | 98 | 1 | 6 | 1.97 | 0.527 |
| Area of house before demolishing (ABD) | 98 | 1 | 3 | 1.98 | 0.476 |
| Willingness to take part in the demolishing program (Will.t) | 98 | 1 | 2 | 1.70 | 0.459 |
| Change in distance between workplace and house (distance) | 98 | 1 | 2 | 1.04 | 0.199 |
| The objective potential that the old house can be improved (potential) | 98 | 1 | 3 | 1.71 | 0.703 |
| Change in condition between old and new house (condition) | 98 | 1 | 4 | 2.23 | 0.715 |
| Attitudes against the demolishing program about old care mainly focus on financial perspective (atti. old) | 98 | 1 | 3 | 2.00 | 0.144 |
| Willingness to furnish the new house well (furnishing) | 98 | 1 | 3 | 2.08 | 0.310 |
| Understanding of the use of the empty land after demolishing (understanding) | 98 | 1 | 2 | 1.41 | 0.494 |
| Objective perception if the demolishing project can be better (demo-bett) | 98 | 1 | 3 | 2.88 | 0.359 |
| Willingness to live in town or city (t-or-c) | 98 | 1 | 2 | 1.16 | 0.372 |

| | | | | | |
|---|---|---|---|---|---|
| The demolishing project's effect on income (income) | 98 | 1 | 4 | 3.78 | 0.488 |
| Improvement of traffic (traffic) | 98 | 1 | 2 | 1.01 | 0.101 |
| Valid N (listwise) | 98 | | | | |
| | | | | | |
| | | | | | |

From the descriptive analysis, it's clear that the standard deviation of the respondents' answers to each question is small, and none of the questions' answer distributions have a standard deviation that is more than 1.0. The small standard deviation suggests that the elderly in the area have a similar understanding or opinion about the demolishing program that they are experiencing.

The mean level of the respondents' age is 5.31, which is between the 60~70 and the 70~80 options. This indicates that the mean age of the respondents is relatively old, well beyond the standard of being elderly. The standard deviation of 0.649 is moderately big, indicating that the respondents are mostly elderlies of all ages above 60 and may include a few respondents below 60.

The respondents have an average of 1.97 people in their homes, which is surprising since these settlers are all elderly. Even the mean value of the population in these elderly homes didn't get to 2 indicates a severe problem that many of these elderly are not accompanied. The population's standard deviation in their home is 0.527, which is not a large number, so a large portion of these respondents were probably just living by themselves or with their partners.

The average area of the respondents' houses is between 101~200 meters square and 201~300 meters square, which is more than sufficient for a family of two or even less. We may infer that the elderly in this area did not have the problem of not having sufficient living space, so the demolishing project might not be that attractive to most respondents.

The average willingness to participate in the demolishing project is between moderate and relatively high, which shows that the respondents have a more positive regard for the demolishing project.

The mean result for the question about the distance between the respondents' home and workplace is 1.04 with a standard deviation of 1.99. This indicates that the demolishing and replacing project significantly shortened the distance the villagers had to travel to work.

The result of the question about the potential for the old house to be improved is very close to that. Although moving to a new home provides better living conditions, the old house was still good enough. As a result, the demolishing project is more like an improvement rather than solving a problem for the respondents, which means that the respondents do not urgently need to participate.

The result of the question about the change in condition between the old and new house suggests that most respondents felt that the new home was more comfortable but not significantly better than their old home. Thus, this result supports the idea that the demolishing program is an improvement instead of a problem solution for the respondents.

The mean value of the questioning attitude against the demolishing program about old care is exactly 2, which suggests that the respondents do not feel an obvious change in their living cost, and the standard deviation is relatively small at 0.144.

Unfortunately, the respondents' attitude to questions about willingness to furnish the new house well suggests that they might not be able to use fine furniture in their new house, and some might even be unwilling to use fine furniture. This is probably due to the relatively poor condition around the area hindering the villagers from furnishing their new houses.

From the question about understanding of the use of the empty land after demolishing, we can observe that most respondents are aware of how the empty land below their original house would be utilized in the future, which means that the respondents do care about the environment around them since their new houses are not very far from their old houses.

The result of the question about whether the demolishing project can be better suggests that the respondents are overwhelmingly satisfied with the current demolishing plan since the mean is high, up to 2.88 out of 3.

The result of the question about willingness to live in town or city shows that a larger portion of the respondents are willing to live in the cities instead of rural areas, so transporting some settlers into new city areas might be a better choice than assigning them new houses in the rural area.

Surprisingly, a question about the demolishing project's effect on income shows that the respondents' income is generally reduced after the demolishing project. Still, they did not seem unhappy as the responses to other questions

are mostly positive.

Finally, the mean of questions about improving traffic is 1.01 out of 5, which suggests that the transportation situation is significantly better for the respondents after the demolishing program.

Overall, most of the respondents could be generalized as old males. Most of the answers' distribution was approximately normal, with a mean that strongly indicates that the respondents appreciated the demolishing program.

**Table2. Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 1.656 | 18.398 | 18.398 | 1.656 | 18.398 | 18.398 |
| 2 | 1.608 | 17.870 | 36.268 | 1.608 | 17.870 | 36.268 |
| 3 | 1.250 | 13.893 | 50.161 | 1.250 | 13.893 | 50.161 |
| 4 | 1.174 | 13.041 | 63.202 | 1.174 | 13.041 | 63.202 |
| 5 | 0.982 | 10.912 | 74.114 | | | |
| 6 | 0.779 | 8.652 | 82.766 | | | |
| 7 | 0.553 | 6.145 | 88.912 | | | |
| 8 | 0.519 | 5.768 | 94.680 | | | |
| 9 | 0.479 | 5.320 | 100.000 | | | |
| Extraction Method: Principal Component Analysis. | | | | | | |

After the descriptive analysis, a factor analysis is done on variables 7 to 15, which stands for questions 7 to 15 on the survey. The result suggested that the 9 variables can be simplified into 4 with a cumulative loading of 63.202%. A new variable called DV is generalized after adding the 4 variables up by weight. DV gives a general idea of the respondents' attitudes toward the demolishing program, which were shown from question 7 to question 15. Since these questions mainly focus on whether the respondent understands their demolishing program well, DV can be explained as the level of understanding about the demolishing program.

**Table3. The respondent's attitudes toward the demolishing program**

| dependent variable | distance between workplace and new settlement | Willingness to take part in the demolishing program |
|---|---|---|
| The respondents' attitudes toward the demolishing program | -0.285*** | 0.278*** |
| factor of control | 0.278*** | 0.279*** |
| constant | 0.27 | -0.175*** |
| r square | 0.14 | 0.136 |

Two regressions are processed between DV and the two independent variables. The two variables are the results of questions 5 and 6 in the survey, each representing the willingness to demolish and the distance between the workplace and home after demolishing. The significance of both models is stronger than the 1% level, indicating that the correlation between DV and the two independent variables is significant. For the willingness to demolish, the standardized beta is 0.278, which shows that although the correlation is significant, the people who understand the demolishing program better are only a little more likely to be willing to participate. For the distance

between the workplace and home after demolition, the standardized beta is -0.285, indicating that the people who know more about the demolishing program live closer to their workplace after the demolition.

# 5. Conclusion

## 5.1 Implication

In conclusion, there's a negative relationship between the distance between settlers' workplace from the new house and their understanding of the demolishing program, and there's a positive relationship between the understanding level the elderly have of the program and their willingness to participate in the program. This indicates that elderlies in the area may not be that interested in moving too far away and, therefore, not that interested in participating in the program. However, the general attitude toward the program is unexpectedly positive. Few studies focus on the elderly's willingness to move to new houses. Many people believe that the elderly have nostalgia and are unwilling to join demolishing programs, but this is likely to be just a stereotype. However, the result shows that the settlers have some financial concerns about the demolishing program, as only about half of the population is willing to furnish the new house well.

The survey result may give government officials more confidence to operate the demolishing programs. Ordinarily, it is widely concerned that the demolishing programs risk being destructive to the elderly's mental health, so some officials are not willing to lead these demolishing programs. This study has shown that the ordinary idea is not always true, and most elderly love being part of these programs. Also, the conclusion that the elderly are more likely to participate in the demolishing programs if they understand the program better helps provide the officials with a potential resolution for the problem that some people may not be willing to leave their old house.

Theoretically, very few studies have used surveys to study the relationship between the elderly's lives and demolishing programs. This study can be part of the beginning for Chinese scholars to use surveys to study the condition of the "not educated" elderlies from not-that-rich areas.

There are currently only a few theories focused on demolishing and resettling. Although the Chinese government is actively pushing these projects, they can utilize a few theories while operating the demolishing programs. This study breaks some stereotypes, such as the belief that elderlies are generally unwilling to move to new houses. Moreover, this study shows the critical economic problems that the settlers may face after they move to new houses. Also, not many studies do surveys in areas with such low levels of education and such old average age. This study shows that doing studies in areas where half of the population does not even understand how to read is not impossible.

## 5.2 limitations and future studies

There are some disadvantages in this study. The sample is not large enough to represent all the settlers in the country. All the samples are selected from a specific village with a relatively large population. Also, most female elderlies in the area cannot read, so most of the surveys are completed by the husbands in the families, which may lead to bias as the females may not be fully represented. In future studies, researchers may spend more time collecting data. A larger sample population might be considered, and the researchers may spend longer explaining the survey to those who cannot finish the survey by themselves.

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