Impact of Household Income on Poverty Levels

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Prof. Shatakshee Dhongde

Group 8

Annie Strothmann

Anne Marsh

Samuel Brown

Abstract:

The relationship between poverty and household income is an important political topic concerning a country's economy. This study tests the commonly held theory that poverty and household income are negatively correlated. This analysis uses county-level data in the United States in 2013. The simple regression model looks at median household income's effect on total poverty in each county. Then, we added the independent variables: total unemployment, population, and total number of people with less than a high school education. After finding that poverty and household income appeared to be positively correlated, even with these control variables, we then added two dummy variable to test if there was a significant difference in our finding between urban, suburban, and rural counties.

1. Introduction

Poverty, income, and unemployment are the three macroeconomic concepts that describe an economy at an individual level. While growth in gross domestic product (GDP) does measure the strength of an economy over periods of time, total poverty, median income, and total unemployment are stronger indicators of the economic welfare and health of the individual at a specific period of time. GDP can grow due to an increase in specific industries via changes in technology or increase in demand but does not necessarily create more jobs or raise the income of the workers in those industries. This growth can be beneficial; it gives a country more resources and, with these added resources, allows a country to better take care of its population. Unfortunately, a country's government may not always spread the wealth through social programs.

Poverty, unemployment, and income become important when dealing with local economies. While all of these measurements are related to macroeconomics, they serve as a better indicator of an economy's overall wellbeing and aren't good indicators for GDP or growth. First, it is important to define poverty in the United States. This definition is determined by the Census Bureau and depends on two factors, the size of the family and the ages of its members. One thing poverty does not depend on is region. For example, across the entire United States, a family of three with one child would be living in poverty if they have an income below $19,055. The exact number changes every year, as the Census Bureau accounts for inflation and other factors (The United States Census Bureau). The number of people who earn below the amount set by the Census Bureau dictates the total amount of people in poverty in that county. Poverty, income, and unemployment are the most important statistics used when describing a local economy. They affect elections and the outlook of the community. When unemployment, for example, is low in one area but high in another, there will likely be a movement of labor from the higher to the lower. Differences in income levels will have the opposite effect. When a community is known for having high income, people will move to that community. In short, low poverty, low unemployment, and high income is the best case scenario not just for a country but also for a single county.

With that taken into account, testing the commonly held belief that an increase in income will decrease both unemployment and total poverty becomes that much more important. The outcome of this study is also meaningful from a policy making perspective. If it is true, we as a society must increase our efforts to increase income. If this hypothesis is incorrect, however, we must change our policies accordingly. We believe that this generally held assumption will be proven true through this analysis.

2. Literature Review

A number of articles and research exist pertaining to the impact of unemployment and household income on poverty levels. The following papers provide information on these relationships.

U.S. poverty and population trends have experienced large fluctuations during the latest economic recession of 2008. Linda Jacobsen and Mark Mather acquired their data through the ACS and CPS with data from late 2008/early 2009.

As of October 2009, nearly 16 million people in the United States were unemployed. The largest age faction affected by unemployment was 18-24 years olds. Unemployment rates were the lowest among those 55 and older. This is important because many older workers are employed in retail and service occupations. Their job loss is important because it is caused by the sharp declines in household wealth and consumer spending. The Bureau of Labor Statistics estimates that of the 7.3 million jobs lost between December 2007 and October 2009, 2.1 million were manufacturing jobs and another 1.6 million were construction jobs. This drastic increase in unemployment also had detrimental effects on poverty levels.

The Census Bureau published that in 2008, the total poverty rate rose to 13% and the child poverty rate rose to 19%. Poverty rates haven't been this high since 1997. The young working age range had the largest increase in both poverty and unemployment and created strong evidence the two are strongly related.

The book, *Longer Hours, Fewer Jobs* by Michael D. Yates, provides a view of the American economy. Yates discussed how wages have fluctuated since 1945. Though the nominal minimum wage has increased significantly since it was first introduced, the real minimum wage has fallen. That is, the purchasing power relative to nominal wage has decreased over time. Furthermore, in 1991, when the minimum wage was $4.25, it would be necessary to earn $6.52 an hour in order to reach the official poverty level of $13,560 a year.

Unemployment has been the bane of the U.S. economy in the modern era. Only during war time has the unemployment rate been where it arguably should be. Though the unemployment rate from 1967 through 1993 has mostly stayed in the single digits, the expanded unemployment rate has continually been much higher. This expanded unemployment rate is just as important as the official rate as it takes into account people who are underemployed and feel as though they are not doing as much as they can for

themselves or for their families. This book helps us in our study by giving us a benchmark of where unemployment and poverty levels were in 1991.

The paper "Unemployment in the Great Recession: A Comparison of Germany, Canada and the United States" gives us a more recent view of unemployment in three major economies. It shows how Germany's unemployment rate was relatively stable since 2008 while Canada's unemployment rate has increased and the United States' unemployment rate has increased dramatically. The unemployment rate in the United States has remained high while Canada's and Germany's have decreased since the recession. This is due in part to the fall of the construction industry in the United States and also due to these countries relative GDP's. Germany has had a much higher GDP relative to that of the United States from 2008 to 2012.

A unique angle on the forces driving poverty were explored by French economists Cécile Détang-Dessendre and Carl Gaigné. Their paper, *Unemployment duration, city size, and the tightness of the labor market,* summarizes their empirical research and investigates the role that residential location could have on unemployment duration. They wanted to determine if residential location (urban center, urban fringe, rural area) affected an individual's unemployment duration. 60% of French population resides in urban centers, 20% reside in the urban fringe, and the remaining 20% reside in rural areas. Residential location takes into account the time required to travel to the job, the physical distance to the job, and the spatial structure of the labor supply and demand.

The 40,000 workers used surveyed for the sample were located in different types of rural and urban areas. Each individual was asked to complete a survey inquiring about their: job status during the years 1998 and 2003, monthly progress in labor market, their population density location, job training, gender, age, household size, and education. The initial results gave a mean unemployment rate of 12.2 months and the median was at 8 months.

Commuting time had an insignificant impact on the data if the commuting time was between 30-45 minutes. When commuting time is low, people tend to overestimate the amount of job opportunities in large cities and underestimate the amount of job opportunities in medium and small cities. Although many perceive there will be more jobs in large cities, the probability of receiving a job is low due to the high number of job applicants. The potential number of jobs and potential number of job seekers has a large plays a huge role in unemployment. The relationship between job access and unemployment duration is insignificant for workers living in the urban center. When physical distance and travel time were introduced to the model, job accessibility had a greater impact on unemployment duration for

workers living in the urban fringe and rural. This implies that the farther a worker is from an urban center, there will be a significant reduction of spotting job opportunities.

Our literature research has revealed that unemployment and poverty are an international issue. While unemployment and poverty has simultaneously been increasing in America, other parts of the world, such as France, Germany, and Greece, this isn't the case. The largest age faction affected by unemployment and poverty is young adult due to their lack of training experience and skill level. The study done by French economists Cécile Détang-Dessendre and Carl Gaigné revealed that unemployment occurs in regions farthest from the urban center. The literature review provided insight on what factors to include while studying the relationship between unemployment and poverty.

3. Data

This study is primarily focused on the effects of median house on the number of people in poverty. Our dependent variable is people in poverty. This is measured as the total number of people in poverty per county. We also used several independent variables in our analysis. Our primary independent variable is median household income. We also include the population size per county, the total number of people unemployed, and the total number of people with less than a high school diploma.

All of data we used in our analysis was obtained through the United States Department of Agriculture – Economic Research Service. This data is across counties in the United States from 2013.

3.1 Simple Regression Model

$$total\_allage = \beta_0 + \beta_1 med\_house + u$$

1. *Total People in Poverty (Total_allage):* Our dependent variable is the total number of people in poverty in each county across the United States.
2. *Median Household Income (med_house):* The median household income of each county represented in U.S. dollars.

3.2 Multiple Regression Models

$$total\_allage = \beta_0 + \beta_1 med\_house + \beta_2 population + u$$

$$total\_allage = \beta_0 + \beta_1 med\_house + \beta_2 population + \beta_3 tot\_unemp + u$$

$$total\_allage = \beta_0 + \beta_1 med\_house + \beta_2 population + \beta_3 tot\_unemp + \beta_4 educ\_less\_high + u$$

$$total\_allage = \beta_0 + \beta_1 med\_house + \beta_2 population + \beta_4 educ\_less\_high + u$$

Additional Variables included:

1. *County Population (population):* The population estimates of each county in 2013
2. *Total Unemployment (tot_unemp):* Number of people unemployed in 2013.
3. *Less than High School Diploma (educ_less_high):* Number of people in the county without a high school diploma or the equivalent.

Total number of people in poverty, total population, and education less than high school all had large standard deviations. The distributions of these variables are all skewed to the right. The total population standard deviation is especially large, as it is about three times the size of its mean. Similarly, the standard deviation of the total number of people with an education less than a high school diploma or the equivalent is more than seven times the size of its means. This means that the mean of these variables is smaller than the median.

We investigated further to determine where the skewness could result. Our initial thoughts were that the suburban and rural counties would look the most normal because as opposed the urban counties the types of people that live there are very similar in income and poverty levels. The urban counties could have the two extremes a lot of people with low income and thus in poverty and people with high income that creates a high skewness. *Appendix 1* shows the breakdown of the summary statistics between urban, suburban, and rural. We found that this is not case the skewness is still apparent but less so when they were broken up.

Table 1: Summary Statistics

Variable	Obs.	Mean	Std. Deviation	Minimum	Maximum
total_allage	3111	11,437.31	21,746.25	12	199,215
med_house	3111	45,953.2	11,658.93	21572	117,680
population	3111	85,252.58	239,134.9	103	6,973,742
tot_unemp	3108	6,977.844	47,095.74	4	1,668,743
educ_less_high	3103	17,984.45	128,622.2	4	4,587,281
urban*	3111	0.365	0.481	0	1
rural*	3111	0.305	0.461	0	1

*dummy variables

3.3 Gauss - Markov Assumptions

It is just as important verify the reliability of the data to be able interpret the sound results. The data in the study was verified using the Gauss Markov Assumptions for Multivariable Regression.

1. **Linear in Parameters**

   Our model can be written in the form $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_k X_k + u$, meaning it is linear in parameters.

2. **Random Sampling**

   The data included every county in the United States that had complete information for the desired variables. The model for the random sample is as follows:

$$Yi = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_k X_{ik} + u_i$$

3. **No Perfect Collinearity**

   As Table 2 show there is no perfect collinearity between the independent variables. These variables were also chosen to be so that none of the variables are a combination of another.

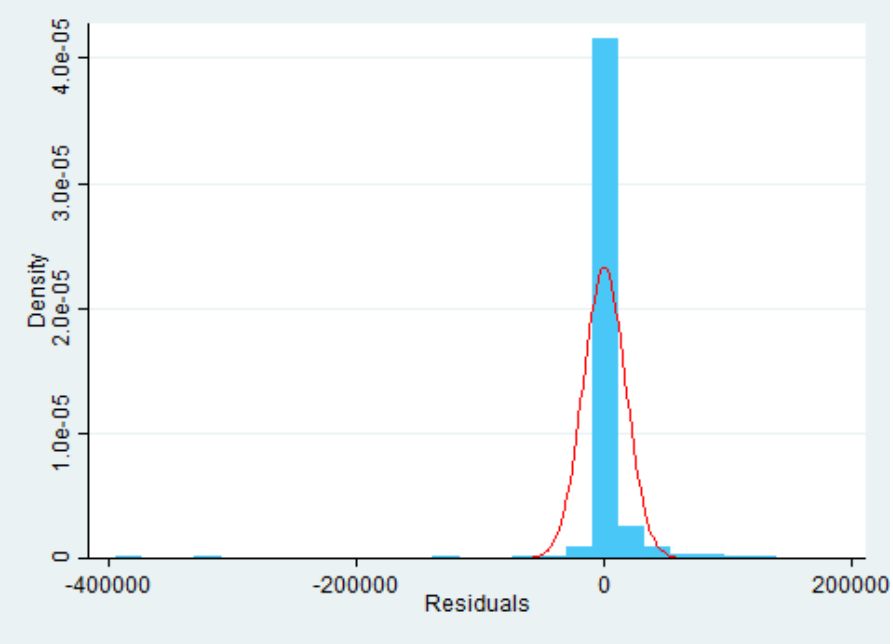
Table 2: Correlation Matrix between Independent Variables

	med_house	population	tot_unemp	educ_less_high	urban	rural
med_house	**1.00**					
population	**0.2485**	**1.00**				
tot_unemp	**0.0287**	**0.0198**	**1.00**			
educ_less_high	**0.0479**	**0.0580**	**0.0055**	**1.00**		
urban	**0.4081**	**0.2950**	**0.0230**	**0.0561**	**1.00**	
rural	**-0.1737**	**-0.1721**	**-0.0158**	**-0.0328**	**-0.5012**	**1.00**

4. **Zero Conditional Mean**

   Based on the regression equation, the residuals for all our counties were plotted in the graph below. While there is a slight leftward skew, there are enough observations about zero for us to assume that the zero conditional mean assumption is not violated.

Figure 1: Zero Conditional of the Mean



5. Homoskedasticity

Our last assumption was that of homoskedasticity which means that variance in the error term is the same for all combinations of our explanatory variables. The variety of independent variables that we have should control for any errors in homoskedasticity.

4. Results

4.1 Simple Regression

First, we regressed the total number of all American citizens' that are in poverty per county and their respective median household income to find its simple relationship. In this regression, all other factors contributing to percent of people in poverty other than household income are included in the error term u. Since u does not include all variables that effect poverty so it is not a complete description of the relationship of poverty in the United States. Our equation is as follows:

$$\textit{Total\_allage} = -6354.315 + 0.387\textit{med\_house} + u$$

This model suggest that median household income is positively correlated with the total number of people in poverty. Meaning that as median household increased by one dollar then the total number of people in poverty increase by 0.387. Because the coefficient on median household income is significant at the 1% level, we can conclude that there is a statically significant correlation between median household income and total number of people in poverty. The positive relationship between median household income and

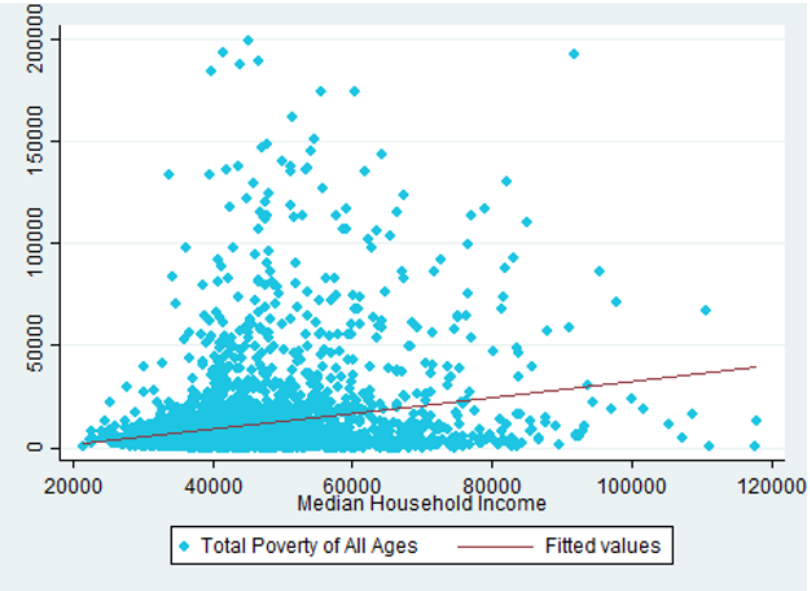
total people in poverty violates our initial hypothesis of that they are to be negatively correlated. We believe that this positive correlation comes from the distinction of where the county is located such as if the county in a metropolitan or a rural county.

Table 2: Simple Regression: total_allage regressed on med_house

Independent Variable	Simple Regression
Med_house	0.387*** (11.83)
Intercept	-6354.315*** (-4.10)
Number of Observations	3111
R-Squared	0.0431

** denotes significance level at 10%, ** 5%, ***1%*

Figure 2: Simple Linear Regress – Median Household Income and Total Poverty Levels



4.2 Multiple Regression

When population is added to the simple regression model the coefficient on median household income still remains significant at the 1% level; the population was also significant at the same level. When we added population in to the model the intercept coefficient becomes insignificant. We then further added total unemployment and the number of people with less than a high school diploma or the equivalent.

When we added just total unemployment we found that it is insignificant at the 10% level. After adding the number of people without a high school diploma, the significant on the total poverty does not change. Given this we decided to drop total unemployment from the model.

To make sure that unemployment should be considered insignificant, we used the F Test multiple times. When we compared Model 3 with Model 4 (*see Table 3*), we found total unemployment to be insignificant. We also found that the number of people without a high school diploma to be jointly insignificant with total unemployment when we compared Model 3 with Model 2. As one last test, we compared Model 3 with our simple regression model. In this case, we found population, total unemployment, and the number of people without a high school diploma to be jointly significant. However, we did not add total unemployment back to the model since we believe population's large individual significance greatly outweighed total unemployment's insignificance. As with the simple regression model, the coefficient on the median household income is still positive, which is opposite of our original hypothesis. To see if this positive value is significant for all counties or just counties in urban areas that usually have a wide difference in income level, we added dummy variables that separate between urban, suburban, and rural counties.

Table 3: Multiple Regression Models

Independent Variables	Model 1	Model 2	Model 3	Model 4
Med_house	0.107*** (3.94)	0.106*** (3.90)	0.105*** (3.85)	0.106*** (3.89)
Population	0.0563*** (40.92)	0.0563*** (40.88)	0.0562*** (40.68)	0.0562*** (40.71)
Tot_unemp		0.0102 (1.56)	0.0101 (1.55)	
Educ_less_high			0.0053** (2.23)	0.0053** (2.23)
Intercept	1763.588 (1.39)	1743.136 (1.38)	1735.92 (1.37)	1750.61 (1.38)
No. of Obs.	3,110	3,107	3,100	3,102
R-Squared	0.3783	0.3787	0.3797	0.3793

** denotes significance level at 10%, ** 5%, ***1%*

Since median household income had a positive effect on total poverty in the Models shown in Table 3, we decided to separate our data into three categories: urban, rural, and suburban. We used two dummy variables, urban and rural; the urban variable is equal to one when it refers to a metropolitan county. Likewise, rural is equal to one when it refers to a rural county. When both are equal to zero, the data refers to a suburban county.

We found the urban dummy variable to have a large positive effect on total poverty. We also found that when adding the dummy variable, the coefficient for median household income became negative, though it was positive in our original models. This supports our hypothesis of how median household income will negatively affect total poverty. Though rural is insignificant, we did find that it would have a negative effect on the intercept. Since the suburban coefficient is also the intercept, we can say that it, too, had a positive effect on total poverty and was significant. The addition of dummy variables supports our original hypothesis for rural counties.

Table 3: Multiple Regression Models

Independent Variables	Dummy Variable Model
Urban	12,785.3*** (16.68)
Rural	-1,124.26 (-1.54)
Med_house	-0.0857*** (-3.10)
Population	0.0500*** (37.32)
Educ_less_high	0.0041* (1.79)
Intercept	6,781.663*** (5.40)
Number of Observations	3,102
R-Squared	0.4481

** denotes significance level at 10%, ** 5%, ***1%*

5. Conclusions

In this study, we wanted to observe the macroeconomic concepts that most affected the individual. Income was expected to have a negative effect on poverty while unemployment will increase the amount of poverty. This is a generally held assumption that we expected to easily verify. However, the initial tests did not support this view. Overall, perhaps due to the large number of urban counties in the United States, we found that median household income has a positive effect on total poverty. The most surprising result was the insignificance of total unemployment. There are, of course, other factors that influence poverty.

It is important to note here that we observed the affects of other variables on total poverty, namely the total population of the county and the total number of people without a high school diploma in the county. The analysis of total population showed a small but highly significant positive correlation between population and poverty. The analysis of population without a high school diploma showed a

small and nearly insignificant positive correlation between it and total poverty. As mentioned before, we were surprised by the total unemployment variable. This was for two reasons. First, it was a small correlation. Second, it was insignificant both individually and when tested alongside most of the other variables. The one exception was population, but its individual significance most likely outweighed total unemployment's individual insignificance. Based off this evidence, we can say that population and, to a lesser extent, number of people without a high school diploma affects total poverty.

The analysis of income's affect on poverty leaves us with a somewhat correct hypothesis. We were incorrect in our inclusion of total unemployment and we were only partially correct about median household's income effect on total poverty. We found that median household income would positively effect poverty in metropolitan areas, that is in both urban and suburban counties. However, the hypothesis was only verified in rural counties. This is probably due to the large concentration of people in urban and suburban areas. We believe that rural governments should continue to use their current economic policies. Governments in metropolitan areas should, on the other hand, increase their social programs to combat this poverty. The effect of income on poverty should not be ignored in these areas.

Appendix 1

Table 4: Summary Statistics - Urban

Variable	Obs.	Mean	Std. Deviation	Minimum	Maximum
total_allage	1,135	24,114.06	31,836.43	67	119,215
med_house	1,135	52,222.61	13,254.71	28,757	117,680
population	1,135	178,391.2	311,491.7	857	6,973,742
tot_unemp	1,135	8,410.079	42,933.44	4	740,805
educ_less_high	1,134	27,494.98	42,933.44	4	4,587,281
urban*	1,135	1	0	1	1
rural*	1,135	0	0	0	0

Table 5: Summary Statistics- Suburban

Variable	Obs.	Mean	Std. Deviation	Minimum	Maximum
total_allage	1027	5248.506	4414.602	67	40008
med_house	1027	41826.52	7889.685	22599	110930
population	1027	39851.9	193777.1	639	5742953
tot_unemp	1027	6448.062	56118.14	14	1668743
educ_less_high	1026	13352.31	77606.26	18	1849468
urban*	1027	0	0	0	0
rural*	1027	0	0	0	0

Table 6: Summary Statistics – Rural

Variable	Obs.	Mean	Std. Deviation	Minimum	Maximum
total_allage	949	2973.444	3502.93	12	36553
med_house	949	42920.86	9679.559	21572	84237
population	949	22991.45	119998.4	103	3595839
tot_unemp	946	5834.608	40709.25	11	800537
educ_less_high	943	11587.46	69798.98	8	1510337
urban*	949	0	0	0	0
rural*	949	1	0	1	1

Appendix 2

```
. sum total_allage med_house population  tot_unemp educ_less_high

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
total_allage |      3,111    11437.31    21746.25         12     199215
   med_house |      3,111     45953.2    11658.93      21572     117680
  population |      3,110    84123.77    230734.9        103    6973742
   tot_unemp |      3,108    6977.844    47095.74          4    1668743
educ_less_~h |      3,103    17984.45    128622.2          4    4587281

. sum total_allage med_house population  tot_unemp educ_less_high if urban == 1

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
total_allage |      1,135    24114.06    31836.43        141     199215
   med_house |      1,135    52222.61    13254.71      28757     117680
  population |      1,135    178391.2    311491.7        857    6973742
   tot_unemp |      1,135    8410.079    42933.44          4     740805
educ_less_~h |      1,134    27494.98    188814.9          4    4587281

. sum total_allage med_house population  tot_unemp educ_less_high if urban == 0 &
rural == 0

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
total_allage |      1,027    5248.506    4414.602         67      40008
   med_house |      1,027    41826.52    7889.685      22599     110930
  population |      1,027     39851.9    193777.1        639    5742953
   tot_unemp |      1,027    6448.062    56118.14         14    1668743
educ_less_~h |      1,026    13352.31    77606.26         18    1849468

. sum total_allage med_house population  tot_unemp educ_less_high if rural == 1

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
total_allage |        949    2973.444     3502.93         12      36553
   med_house |        949    42920.86    9679.559      21572      84237
  population |        948    19222.63     30346.9        103     510027
   tot_unemp |        946    5834.608    40709.25         11     800537
educ_less_~h |        943    11587.46    69798.98          8    1510337

. corr total_allage med_house population  tot_unemp educ_less_high
(obs=3,100)

             | total_~e med_ho~e popula~n tot_un~p educ_l~h
-------------+------------------------------------------------
total_allage |   1.0000
   med_house |   0.2086   1.0000
  population |   0.6125   0.2520   1.0000
   tot_unemp |   0.0364   0.0288   0.0212   1.0000
educ_less_~h |   0.0706   0.0479   0.0608   0.0055   1.0000
```

```
. reg total_allage med_house

      Source |       SS           df       MS      Number of obs   =     3,111
-------------+----------------------------------   F(1, 3109)      =    139.99
       Model |  6.3369e+10         1  6.3369e+10   Prob > F        =    0.0000
    Residual |  1.4073e+12     3,109   452668856   R-squared       =    0.0431
-------------+----------------------------------   Adj R-squared   =    0.0428
       Total |  1.4707e+12     3,110   472899205   Root MSE        =     21276

------------------------------------------------------------------------------
total_allage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   med_house |   .3871684   .0327229    11.83   0.000     .3230077     .451329
       _cons |  -6354.315   1551.349    -4.10   0.000    -9396.087   -3312.543
------------------------------------------------------------------------------

. reg total_allage med_house population

      Source |       SS           df       MS      Number of obs   =     3,110
-------------+----------------------------------   F(2, 3107)      =    945.28
       Model |  5.5632e+11         2  2.7816e+11   Prob > F        =    0.0000
    Residual |  9.1428e+11     3,107   294264280   R-squared       =    0.3783
-------------+----------------------------------   Adj R-squared   =    0.3779
       Total |  1.4706e+12     3,109   473014023   Root MSE        =     17154

------------------------------------------------------------------------------
total_allage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   med_house |   .1073988   .0272632     3.94   0.000     .0539432    .1608545
  population |   .0563732   .0013775    40.92   0.000     .0536722    .0590741
       _cons |   1763.588    1266.65     1.39   0.164    -719.9685    4247.144
------------------------------------------------------------------------------

. reg total_allage med_house population tot_unemp

      Source |       SS           df       MS      Number of obs   =     3,107
-------------+----------------------------------   F(3, 3103)      =    630.52
       Model |  5.5683e+11         3  1.8561e+11   Prob > F        =    0.0000
    Residual |  9.1345e+11     3,103   294376956   R-squared       =    0.3787
-------------+----------------------------------   Adj R-squared   =    0.3781
       Total |  1.4703e+12     3,106   473368797   Root MSE        =     17157

------------------------------------------------------------------------------
total_allage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   med_house |   .1064904   .0272833     3.90   0.000     .0529951    .1599856
  population |   .0563321    .001378    40.88   0.000     .0536301     .059034
   tot_unemp |   .0102231   .0065392     1.56   0.118    -.0025985    .0230447
       _cons |   1743.136   1267.291     1.38   0.169    -741.6771    4227.949
------------------------------------------------------------------------------

. reg total_allage med_house population tot_unemp educ_less_high
```

```
      Source |       SS           df       MS      Number of obs   =     3,100
-------------+----------------------------------   F(4, 3095)      =    473.70
       Model |  5.5810e+11         4  1.3952e+11   Prob > F        =    0.0000
    Residual |  9.1161e+11     3,095   294541582   R-squared       =    0.3797
-------------+----------------------------------   Adj R-squared   =    0.3789
       Total |  1.4697e+12     3,099   474250922   Root MSE        =     17162

------------------------------------------------------------------------------
  total_allage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
     med_house |     .10519   .0273503     3.85   0.000     .0515635    .1588165
    population |   .0561587   .0013806    40.68   0.000     .0534518    .0588656
     tot_unemp |   .0101256   .0065412     1.55   0.122       -.0027    .0229511
educ_less_high |   .0053492   .0024016     2.23   0.026     .0006404     .010058
         _cons |    1735.92   1269.222     1.37   0.172    -752.6819    4224.522
------------------------------------------------------------------------------

. reg total_allage med_house population educ_less_high

      Source |       SS           df       MS      Number of obs   =     3,102
-------------+----------------------------------   F(3, 3098)      =    631.06
       Model |  5.5754e+11         3  1.8585e+11   Prob > F        =    0.0000
    Residual |  9.1237e+11     3,098   294503033   R-squared       =    0.3793
-------------+----------------------------------   Adj R-squared   =    0.3787
       Total |  1.4699e+12     3,101   474013151   Root MSE        =     17161

------------------------------------------------------------------------------
  total_allage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
     med_house |   .1062673   .0273369     3.89   0.000     .0526671    .1598676
    population |   .0561933   .0013803    40.71   0.000     .0534869    .0588997
educ_less_high |   .0053649   .0024014     2.23   0.026     .0006564    .0100733
         _cons |    1750.61   1268.811     1.38   0.168    -737.1861    4238.405
------------------------------------------------------------------------------

. reg total_allage urban rural med_house population educ_less_high

      Source |       SS           df       MS      Number of obs   =     3,102
-------------+----------------------------------   F(5, 3096)      =    502.82
       Model |  6.5873e+11         5  1.3175e+11   Prob > F        =    0.0000
    Residual |  8.1119e+11     3,096   262012170   R-squared       =    0.4481
-------------+----------------------------------   Adj R-squared   =    0.4472
       Total |  1.4699e+12     3,101   474013151   Root MSE        =     16187

------------------------------------------------------------------------------
  total_allage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
         urban |    12785.3   766.7305    16.68   0.000     11281.94    14288.65
         rural |   -1124.26   731.6592    -1.54   0.124    -2558.847    310.3264
     med_house |  -.0857289   .0276459    -3.10   0.002    -.1399352   -.0315227
    population |   .0500075   .0013399    37.32   0.000     .0473804    .0526346
educ_less_high |    .004057    .002266     1.79   0.073     -.000386    .0085001
         _cons |   6781.663   1255.713     5.40   0.000     4319.548    9243.778
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