Supplementary Table 1. Description and detail of the measures

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| **Variable** | **Measure** |
| *Primary predictors of interest* |  |
| Poor housing quality | Housing quality represented the current number of housing problem characteristics reported. The household reference person was asked if any of the following conditions were present in the household: “… holes in the walls or ceiling, or cracks wider than the edge of a dime?”; “… holes in the floor big enough to catch your foot on?”; “… problems with pests such as rats, mice, roaches, or other insects?”, and “… a toilet, hot water heater, or other plumbing that didn’t work?” A response of “yes” to any of the aforementioned problems were coded as 1 and summed together to create the index, for which higher values indicated poorer housing quality. |
| *Outcomes of interest* |  |
| Poor health status | Measured by the response to the survey item, “What is [the referent] health-status?” Possible responses ranged from 1 (“excellent”) to 5 (“poor”). The 5-point Likert scale of reported health status was dichotomized to represent either very good/excellent or poor/fair/good.  |
| Number of medical visits | Number of medical visits (other than hospital stays) in the preceding year was categorized into “0” for no medical utilization, “1” for 1-2 medical visits per year (reference group), and “2” for greater than 2 medical visits for the year. The measure was created by the response to, “How many times did you see or talk to a doctor, nurse, or any other type of medical provider about your health?” |
| Hospitalization | Number nights spent in the hospital in the preceding year was recoded to indicate any hospital admission versus no hospital admission. The measure was created by the response to, “How many nights did you spend in the hospital?” |
| *Demographic characteristics* |  |
| Race | Race was coded as White only (reference category), Black only, Asian only, Native Hawaiian or Pacific Islander only (HP), American Indian (AI) only, or multiple races (including White-Black, White-AI, White-Asian, White-HP, Black-AI, Black-Asian, Black-HP, AI-Asian, Asian-HP, White-Black-AI, White-Black-Asian, White-AI-Asian, White-Asian-HP, White-Black-AI-Asian, Other 2 or 3 races, Other 4 or 5 races). The respondent was asked, “What race do you consider yourself to be?”  |
| Hispanic ethnicity | Ethnicity was coded as 1 (“Spanish, Hispanic, or Latino”) and 0 (“non-Hispanic”).  |
| Sex | Sex was coded as 1 (“male”) or 0 (“female”).  |
| Age | Age was coded into three groups: 18-44 (reference group), 45-66, and > 64 years of age. |
| Disability status | Disability was measured by whether the respondent reported having any of the following limitations: deaf or serious difficulty hearing; blind or serious difficulty seeing even when wearing glasses or contacts; serious difficulty concentrating, remembering, or making decisions; serious difficulty walking or climbing the stairs; difficulty dressing or bathing; difficulty doing errands alone such as visiting a doctor’s office or shopping. Respondents that reported that they had any of the aforementioned limitations was coded as 1 (“yes”) or 0 (“no functional limitation”). |
| Education | Education was created by the response to “What is the highest level of school completed or the highest degree received by December of 2013?” The results were then recoded into 4 groups: less than high school graduate (diploma or GED or equivalent), high school graduate (diploma or GED or equivalent, associate’s degree or some college, and Bachelor’s degree or higher (reference group). |
| *Socioeconomic characteristics*  |  |
| Income-to-poverty ratio | Family income-to-poverty ratio was calculated by the US Census Bureau based on 2013 family income and poverty thresholds. |
| Labor force | Labor force status was coded as 1 when the respondent indicated that they had a job (for at least 1 week of the month), or when the respondent indicated they did not have a job but were on layoff for at least one week or were looking for work. Labor force status was coded as 0 if the respondent indicated they had no job all month, no time on layoff, and no time looking for work. Labor force status was analyzed by whether the respondent was working or looking for work in December of 2013 as indicated by their monthly employment status. Respondents were considered in the labor force if they reported “Yes” to any of the following employment descriptions: “With a job entire month, worked all weeks”; “With a job all month, absent form work without pay 1+ weeks, absence not due to layoff”; “With a job all month, absent from work without pay 1+ weeks, absence due to layoff”; “With a job at least 1 but not all weeks, no time on layoff and no time looking for work”; “With a job at least 1 but not all weeks, some weeks on layoff or looking for work”; “No job all month, on layoff or looking for work all weeks”; “No job all month, at least one but not all weeks on layoff or looking for work.”  |
| Food insecurity | Food insecurity was an ordinal score from 1 (“low food insecurity”) to 3 (“high food insecurity”). The score was created from the 6 survey items below:1. “the food you bought did not last?” (1:“often true”-3:“never true”)
2. “could not afford balanced meals?” (1:“often true”-3:“never true”)
3. “In 2013, did you ever cut the size of your meals or skip meals because you did not have enough money for food?” (Yes, No)
4. [If yes to the above] “How often did you cut the size of your meals?” ( 1:“almost every month”, 2:“some months but not every month”, 3:“only 1 or 2 months).
5. “In 2013, did you ever eat less than you felt you should because there wasn’t enough money to buy food?” (Yes, No)
6. “In 2013, were you ever hungry but didn’t eat because there wasn’t enough food?” (Yes, No)

Individuals were assigned “high food insecurity” if the reference household member reported “often true” to item 1; they cut the size of their meals “almost every month”; or they were ever hungry but didn’t eat because there wasn’t enough foodIndividuals were assigned “moderate food insecurity” if the reference household member reported “sometimes true” to item 1; “often true” or “sometimes true” to item 2; cut the size of their meals “some months”, or “only 1 or 2 months”; or ate less than they should because there wasn’t enough money to buy food. |
| Health insurance coverage | The health insurance coverage measure was created by dichotomizing whether the respondent indicated that they were insured (private or public coverage) for at least part of the year (1: yes, 2: no) and serves as an indicator of health care access. |
| Non-housing government assistance | Non-housing government assistance was analyzed by whether the respondent reported receiving any governmental assistance (other than housing assistance) during the reference year (2013) and included whether the respondent stated “Yes” to the following questions: (“Did ... receive *money, vouchers, or certificates to buy groceries or food*?” and “Did ... receive assistance from a government social service agency?”) or (“Did ... receive *gas vouchers*?” and “Did ... receive *gas vouchers* through a government social service agency?”) or (“Did ... receive bus or subway tokens or passes?” and “Did ... receive bus or subway tokens or passes through a government social service agency?”) or (“WIC coverage at any time”), or (“TANF coverage at any time”) or (“GA coverage at any time”) or (“SNAP coverage at any time”) or (“Did reference parent receive assistance to pay for child care? And “Did welfare or social service help pay for *child care*?”) or (“Did ... receive *child care assistance* to go to work or training in December 2013?”) |
| *Other housing contextual characteristics* |  |
| Rental status  | Rental status was created by whether the respondent indicated that their current living quarters were 1 (“owned or being bought by someone in the household”) or 0 (“rented or occupied without payment of rent”).   |
| Household size | Household size was measured by the reported number of persons in the house during the interview month in 2014.  |
| Government housing assistance | Government housing assistance was analyzed by whether the respondent reported receiving any governmental assistance during the reference year (2013) and included whether the respondent stated “Yes” to the following questions:“Is …rent amount lower because he/she is in a federal, state, or local government housing program?” or “Does ... household have a housing voucher?” or “Did household receive any energy assistance from the government at any time during the reference year?”  |
| Unsafe neighborhood | Unsafe neighborhood perception was measured from a single item with ordinal responses ranging from 1 (“very safe”) to 4 (“very unsafe”). The item was worded “Was your neighborhood during the year safe?” Unsafe neighborhood perception was dichotomized into 1 (“somewhat safe/somewhat unsafe/very unsafe”) and 0 (“very safe”). |
| Non-metropolitan area | Non-metropolitan status was determined based on the household’s address at the time of interview.  |
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Source: U.S. Census Bureau, 2014 Survey of Income and Program Participation Wave 1 public use file

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| Supplementary Table 2) Models 1-4 Multinomial logistic regression odds ratio estimates and 95% Confidence limits of models predicting *no medical utilization* compared to moderate medical utilization in adults in the United States, (N=55,281) |
|  | Model 1 | Model 2 | Model 3 | Model 4 |
| *Current housing characteristics* |  |  |  |  |
|  Poor housing quality, 0-4 | 1.24 [1.18, 1.30] | 1.13 [1.07, 1.19] | 1.04 [0.99, 1.10] | 1.04 [0.99, 1.10] |
| *Demographic characteristics* |  |  |  |  |
| Race |  |  |  |  |
|  Black/AA |  | 1.24 [1.13, 1.36] | 1.09 [0.99, 1.20] | 1.08 [0.98, 1.19] |
|  Asian |  | 1.46 [1.27, 1.68] | 1.40 [1.22, 1.62] | 1.39 [1.21, 1.61] |
|  American Indian/Pacific Islander |  | 1.48 [1.17, 1.87] | 1.25 [0.99, 1.57] | 1.25 [0.99, 1.58] |
|  Multi-racial |  | 1.25 [1.01, 1.54] | 1.23 [1.00, 1.51] | 1.23 [1.00, 1.51] |
|  White (reference group) |  |  |  |  |
| Hispanic |  | 1.50 [1.39, 1.63] | 1.22 [1.12, 1.32] | 1.21 [1.11, 1.32] |
| Male |  | 1.56 [1.48, 1.64] | 1.58 [1.50, 1.67] | 1.58 [1.50, 1.67] |
| Age |  |  |  |  |
|  Young adulthood (18-44, ref)  |  |  |  |  |
|  Middle adulthood (45-64) |  | 0.70 [0.66, 0.74] | 0.77 [0.72, 0.81] | 0.77 [0.73, 0.82] |
|  Older adulthood (>64) |  | 0.39 [0.35, 0.43] | 0.53 [0.47, 0.59] | 0.54 [0.48, 0.60] |
| Disability status |  | 0.96 [0.88, 1.05] | 0.91 [0.83, 1.00] | 0.91 [0.84, 1.00] |
| Education |  |  |  |  |
|  Less than high school |  | 2.28 [2.06, 2.52] | 1.41 [1.27, 1.57] | 1.42 [1.27, 1.58] |
|  High school graduate or equivalent |  | 1.79 [1.66, 1.92] | 1.30 [1.20, 1.40] | 1.30 [1.21, 1.40] |
|  Associate’s degree or some college |  | 1.37 [1.28, 1.47] | 1.12 [1.04, 1.20] | 1.12 [1.04, 1.20] |
|  Bachelor’s degree or higher (reference) |  |  |  |  |
| *Socioeconomic characteristics* |  |  |  |  |
|  Income to poverty ratio (past year) |  |  | 0.96 [0.95, 0.97] | 0.96 [0.95, 0.97] |
|  In labor force in December 2013 |  |  | 1.03 [0.95, 1.11] | 1.02 [0.94, 1.10] |
|  Food insecurity (past year) |  |  | 1.10 [1.04, 1.16] | 1.10 [1.04, 1.16] |
|  Health insurance coverage (past year) |  |  | 0.33 [0.30, 0.35] | 0.33 [0.31, 0.36] |
|  Receipt of non-housing gov’t assistance (past year) |  |  | 1.10 [1.00, 1.21] | 1.11 [1.01, 1.23] |
| *Housing characteristics* |  |  |  |  |
|  Rental property (current) |  |  |  | 1.12 [1.05, 1.20] |
|  Household size during month of interview |  |  |  | 0.99 [0.97, 1.02] |
| Gov’t housing assistance (past year) |  |  |  | 0.88 [0.77, 1.01] |
| Unsafe neighborhood (past year) |  |  |  | 1.00 [0.94, 1.09] |
| Non-metropolitan status (current) |  |  |  | 1.01 [0.91, 1.11] |

Source: 2014 Survey of Income and Program Participation, wave 1, public use file. Poor housing quality was measured as a count variable from 0-4, with 0 indicating no house problems up to 4 house problems (cracks in ceiling, holes in floor, pest and plumbing problems).