# Better Household Living Conditions Improve Life Satisfaction

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**Abstract**

This report describes the effects of household living conditions on life satisfaction. It is found that better household living conditions do improve life satisfaction to a certain degree. These results are important as it is fundamental that people know what makes them satisfied with their lives because no human would wish to have an unsatisfying life.

## Introduction

Full code and data supporting this analysis is available at: https://github.com/hyunbani/household-living-conditions-and-life-satisfaction

## Data

The data was collected from Statistics Canada's General Social Survey (GSS), which is an annual survey with statistical information on the living conditions and well-being of people living in Canada. In this report, we are using the data collected in 2017, through telephone interview.

People of interest were those who are 15 years of age and older, living in the 10 provinces. However, it would be costly and impractical to survey each and every household in Canada, so random sampling was chosen as a method to determine the sample of 43,000 people, which reflects the population. In order to ensure that the sample is an accurate reflection of the population as a whole, the survey results from all sampled households were collected, and only one eligible person per household was interviewed.

Since the answers are kept strictly confidential, the respondents must have provided the answers in a more honest manner, leading to an increase in accuracy of data information. However, the collection method was not very efficient since it took a lot of time to collect answers through telephone interview, and many people tend to not answer the phone calls.

People who did not answer the telephone calls were excluded from the sample. However, there still existed some non responses for some of the questions being asked, and these were recorded as 'NA' in the data. However, for better analysis, rows with answers including 'NA' are removed after reducing the data so that it only contains the variables of interest in this study.

The main variable 'Life Satisfaction' is measured on a scale of 0 to 10, with 10 being the highest satisfaction level and 0 being the lowest. The other variables that explain household living conditions are included such as 'Household Size', 'Owned', 'Partner', 'No Child' and 'Single House'.

The explanation of each independent variable is as follows:
1) 'Household Size' - the number of people each respondent lives with
2) 'Owned' - 1 if a respondent owns the house and 0 if he/she doesn't
3) 'Partner' - 1 if a respondent lives with a partner and 0 if he/she doesn't

4) 'No Child' - 1 if a respondent doesn't have any child and 0 if he/she does
5) 'Single House' - 1 if respondent's house type is single detached house and 0 if it's not

Table 1 below shows the first ten rows of the data with the variables of interest.

Table 1: First 10 Rows of Raw Data

| Case | Life Satisfaction | Household Size | Owned | Partner | No Child | Single House |
|------|-------------------|----------------|-------|---------|----------|--------------|
| 1    | 8                 | 1              | 1     | 0       | 1        | 0            |
| 2    | 10                | 2              | 1     | 0       | 1        | 1            |
| 3    | 8                 | 2              | 1     | 0       | 1        | 1            |
| 4    | 10                | 2              | 1     | 0       | 1        | 0            |
| 5    | 8                 | 2              | 0     | 1       | 1        | 0            |
| 6    | 9                 | 2              | 1     | 0       | 1        | 1            |
| 7    | 4                 | 1              | 0     | 0       | 1        | 0            |
| 8    | 10                | 1              | 0     | 0       | 1        | 0            |
| 9    | 8                 | 1              | 1     | 0       | 1        | 0            |
| 10   | 5                 | 6              | 1     | 0       | 1        | 1            |

# Model

We are interested in explaining whether a person's life satisfaction improves when he/she has better household living conditions, based on household size, house ownership, whether he/she has a partner, no child, and lives in a single detached house.

# Results

Summary

```
##  Family: gaussian
##   Links: mu = identity; sigma = identity
## Formula: life_satisfaction ~ household_size + house_owned + live_with_partner + no_child + house
##    Data: gss_data (Number of observations: 20197)
## Samples: 4 chains, each with iter = 2000; warmup = 1000; thin = 1;
##          total post-warmup samples = 4000
##
## Population-Level Effects:
##                   Estimate Est.Error l-95% CI u-95% CI Rhat Bulk_ESS Tail_ESS
## Intercept             7.41      0.05     7.31     7.52 1.00     3844     3054
## household_size        0.09      0.01     0.07     0.11 1.00     3482     2898
## house_owned           0.44      0.03     0.38     0.50 1.00     3873     2783
## live_with_partner     0.10      0.04     0.02     0.17 1.00     5041     2947
## no_child              0.06      0.04    -0.01     0.14 1.00     3637     3134
## house                 0.14      0.03     0.08     0.20 1.00     3935     3187
##
## Family Specific Parameters:
##       Estimate Est.Error l-95% CI u-95% CI Rhat Bulk_ESS Tail_ESS
## sigma     1.62      0.01     1.60     1.63 1.00     6174     2780
##
## Samples were drawn using sampling(NUTS). For each parameter, Bulk_ESS
## and Tail_ESS are effective sample size measures, and Rhat is the potential
```

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```
## scale reduction factor on split chains (at convergence, Rhat = 1).
```

Figure 1: blah blah

```
mcmc_plot(gss_model)
```
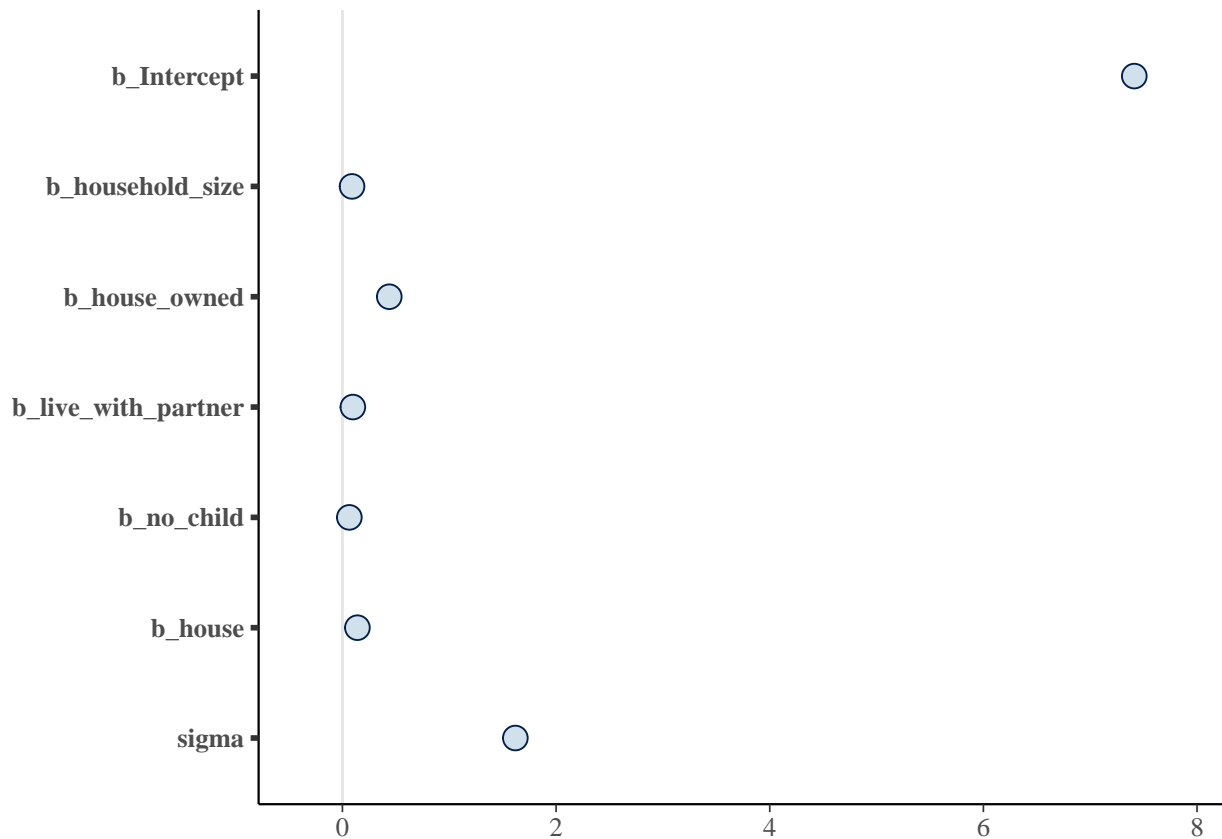


## Discussion

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