

# Household Demographic Characteristics, Consumption Structure and Regional Differences in China

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## Extended abstract

### 1. Motivation

Energy consumption is one of the most significant ways of the population to affect the environment. Over a long period of time, many studies and models have taken the industrial sector as the main source of energy consumption and carbon emissions, but now more and more scholars begin to realize that direct energy consumption and indirect energy consumption caused by household unit is also an important topic to research,

The heterogeneity of the household has undoubtedly an important impact on the quantity and structure of household consumption. But the results and conclusions are not totally consistent across different countries, which makes it difficult to extend the population-emission model.

### 2. Research question and research data

This research tries to explore whether there are some stable relationships between household demographic characteristics and consumption structure across different regions in China.

The data of this paper originate from the China Family Panel Studies 2014 (CFPS 2014), a nationwide survey carried out by the Chinese Social Science Research Center of Peking University (ISSS) which surveyed 13946 households in more than 1800 villages (communities) in 29 provinces covering 95% of the country's population.

The explanatory variables of household demographic characteristics we research includes "household size", "age group of householders" (5 intervals), "education level of householders", "elderly dependent ratio" and "child dependent ratio". And the dependent variables in this paper are the proportion of different kinds of consumption including "food", "dress", "daily necessities", "durable goods", "entertainment", "education", "health care", "transportation and communication".

### 3. The internal relevance between household demographic characteristics and the correlation with income

Before we look for the stable patterns between household characteristics and consumption structure, it is necessary to identify the relationship between household

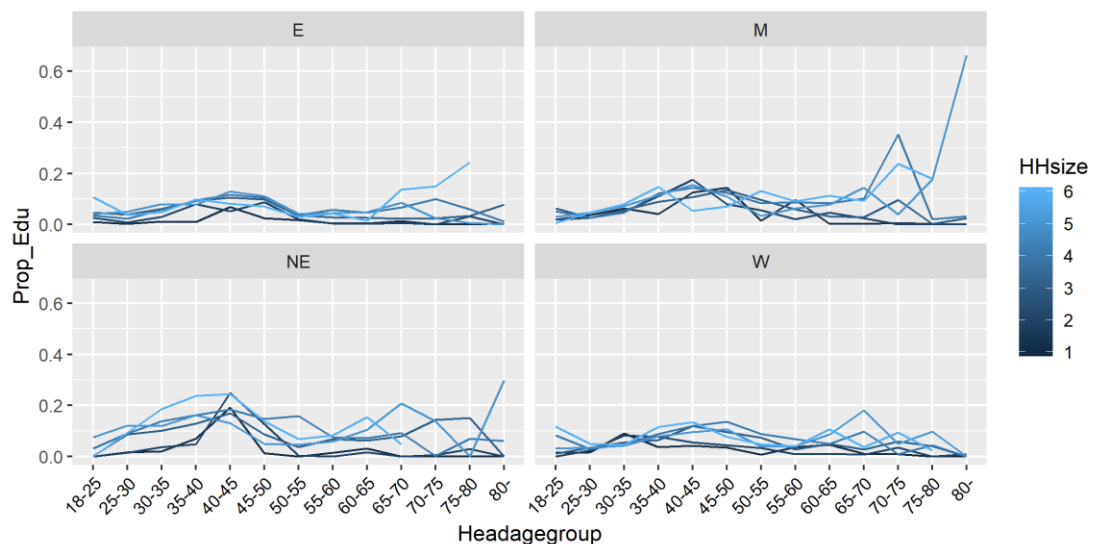
demographic factors first. Here are the most obvious and important relationship based on our correlation analysis. First, household size is highly correlated with household age structure and the number of generations. The 3-member household has the lowest elderly dependent ratio (EDR). And the child dependent ratio (CDR) increases significantly especially between 2-member households and 3-member households. Second, the relationship between the age of householder and household size is an inverse U type. And the relationship between the age of householder keep positive all the time, but it is much deeper between 55 and 70 years old. But, the positive relationship between the age of householder and the CDR turn to negative at around 30-35 years old.

As for income per capita the results of these data are consistent with common sense. The income per capita of each household decrease with the growth of household size. And it is also very obvious that the relationship between education of householder and the income per capita is positive.

#### 4. The relationship between household demographic characteristics and consumption structure in China

There are many unmeasurable factors like culture tradition, geographical conditions, consumption environment, which can affect consumption structure with household demographic factors. That is why we want to do the sub-regional comparison. If the relationship is similar in different region, the result will be more reliable. And it is also possible that we identify more relationships by analyzing the reason of regional difference. Hereon, we show some approaches of looking for a stable mechanism of interaction between household demographic characteristics and consumption structure and some results we got.

**Figure 1**



Different household demographic characteristics affect different aspects of the relationships. In the figure 1, we can see the relationship between proportion of education and the age group of householders across different household size and different regions. The lines all reach the peak at around 40-45 age group because of the influence of family life cycle. At the same time, bigger households have higher proportions of education consumption because of a relatively higher proportion of children.

Figure 2

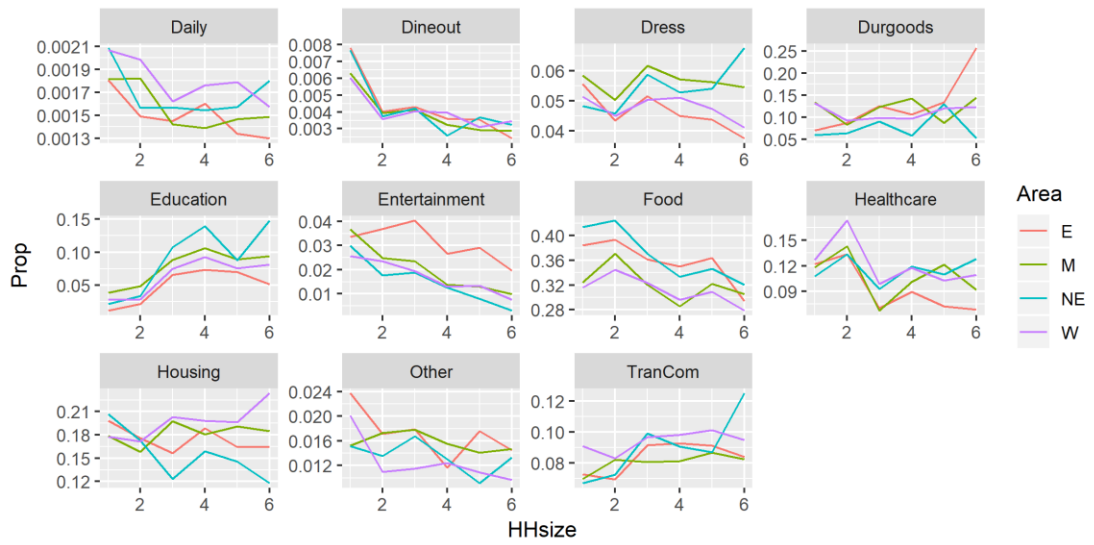
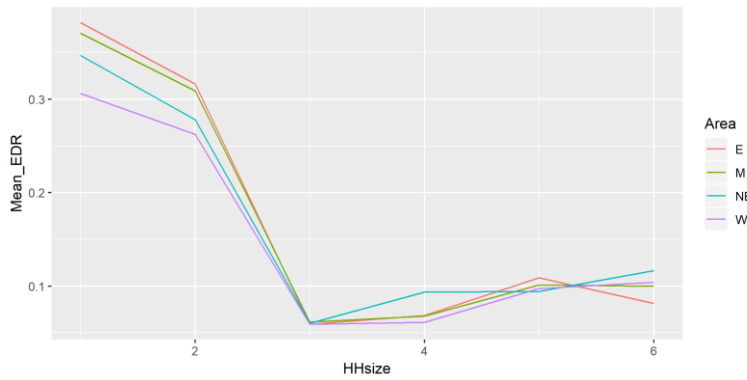
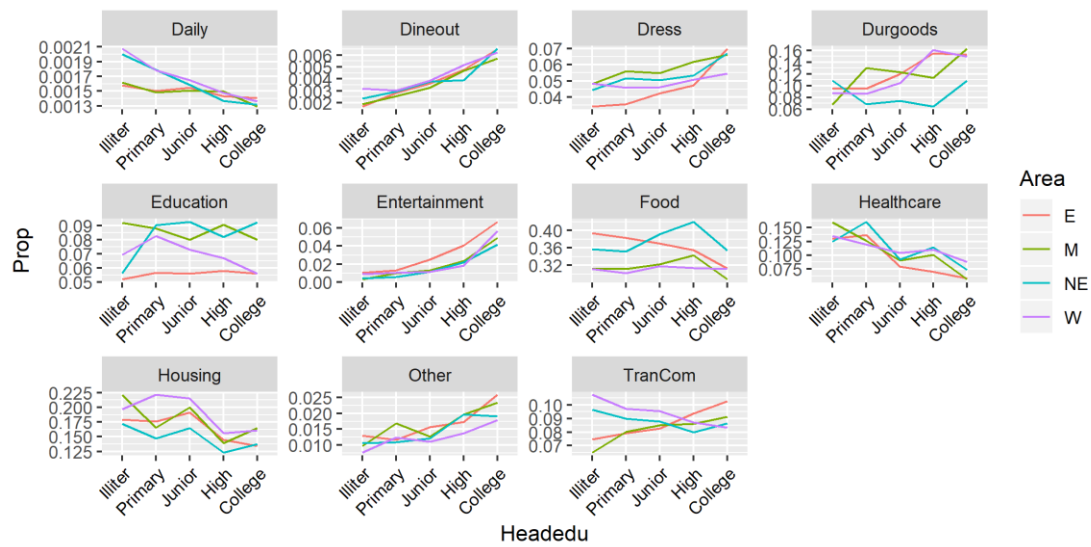


Figure 3



All household characteristics can become mediate variable for each other. Household size is the most basic characteristic of household. It has stable correlations with the proportion of “food”, “dine out”, “transportation and communication (TranCom)” because of the economies of scale. But in terms of health care consumption, the characteristic is highly consistent with the relationship between the elderly dependent ratio and household size, which means the age structure can be the real reason of this relationship.

Figure 4



Household socioeconomic characteristics like the education level of householders have more consistent relationship with consumption structure, but vary a lot across different regions. In terms of education factor, it has highly related with the consumption of daily necessities, dining out, entertainment and transportation & communication. But the types of relationship are quite different across different regions. For example, the consumption of transportation increases with the enhance of education in the eastern and middle region because of educated people tend to go out and communicate with others more. But in western, northeastern regions, higher education sometime means that “you don’t have to move to other places for better economic opportunities”.

## 5. Research approach and following work

After we get all logical cases by analyzing the interaction between variables. We would put forward valuable assumptions and use multivariate regression model to analyze the influence of the change of household demographic characteristics on consumption structure. And at the same time, we will also give some logical mechanism to explain the regional difference on some relationships, which will involve the particularities of regions and China, finally make us understand the interaction better based on the analysis of stable patterns.