Wealth Index

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October 5, 2017

Introduction

The NFHS-3 is the third National Facility and Household Survey, conducted jointly by multiple organisations. The DHS program (The Demography and Health survey program) uses the data collected from this survey to build a wealth index. Most of the details related to this index are in the `NFHS3SUP.pdf` file in the github repo. In this file you will notice that there is a wealth index and a standard of living index. Both these indexes are mostly similar, with a small number of differences. I didn't quite get the point of having 2 separate indexes, which are almost similar, so I'm focusing on the wealth index inn this report. I'll also talk about the variables that are not included in the wealth index, but are part of the standard of living index.

The wealth index shows how a household is performing economically based on the articles owned by the household, when compared to the rest of the country. The index provided (you can read more about it in `NFHS3SUP.pdf` on the github repo) is a general index created without taking the geographical location into account. In this project, I'm going to explore the NFHS-3 data to see if taking geographic location of the household into consideration will have a significant change on the way we look at the wealth index.

Variables that capture geographic pointers.

```
summary(household$HV025)
summary(household$HV026)
summary(household$SH025)
summary(household$SHCITY)
```

There are 4 variables in the dataset that capture geographic locations.

- HV025 divides the population into 'Rural' and Urban'.
- HV026 divides the population into 'Capital, large city', 'Countryside', 'Small city', and 'Town'.
- SH025 divides the population into 'Mega city', 'Large city', 'Small city', 'Large town', 'Small town' and 'Rural'.
- SHCITY has a list of 8 cities and the remaining respondents are all just 'NA's'.

I could not find any criteria based on which these 8 cities were shortlisted. They don't have many commonalities in terms of size or infrastructure. Delhi, Mumbai, Kolkata, Chennai and Hyderabad are very big cities with comparatively modern infrastructure. Whereas Indore, Meerut and Nagpur are not nearly comparable. So I'm going to exclude this variable from my analysis for the time being. But it would be interesting to comeback to this variable to specifically analyse just these cities.

From these variables, we can see that 'Rural' or 'Countryside' doesn't have any further subdivisions. Whereas 'Urban' is subdivided into 'Mega city', 'Large city', 'Small city', 'Large town', 'Small town'.

We will create a subset for each geographic of these geographic subdivisions.

```
RuralH <- subset(household, HV025 == 'Rural')
UrbanH <- subset(household, HV025 == 'Urban')
CLCityH <- subset(household, HV026 == 'Capital, large city')
SCityH <- subset(household, HV026 == 'Small city')
```

```
TownH <- subset(household, HV026 == 'Town')
LCityH <- subset(household, SH025 == 'Large city')
LTownH <- subset(household, SH025 == 'Large town')
MCityH <- subset(household, SH025 == 'Mega city')
STownH <- subset(household, SH025 == 'Small town')
```

Analyse the Wealth Index variables of each subset.

The wealth index captures data on a number of household articles and other things like construction material of the house, automobile ownership. We will look at each of these and their ownership trends based on geographic location.

Drinking water source.

```
summary(RuralH$HV201)
summary(SCityH$HV201)
summary(LCityH$HV201)
summary(LTownH$HV201)
summary(MCityH$HV201)
summary(STownH$HV201)
```

Drinking water sources are divided into 13 categories apart from *others* and *NA's*. Of these 13 sources, *bottled water* and *piped into dwelling* are probably the most modern or comfortable methods of obtaining drinking water. They are also probably the most expensive to obtain. While rural areas have less than 0.1% of population who can afford bottled water, urban areas have an average of 0.9%. But if we look at subdivisions of urban areas. 4.6% of the people in mega cities use bottled water, which is substantially high compared to the rest of the country. Bottled water (in ~2005 when this data was collected) was in a way, a luxury, and could have only been afforded by people with comparatively high income in that time period. The price of bottled water would have been significantly expensive in rural areas as it is not mass produced there, and people who earned enough to afford bottled water in rural areas must have been substantially rich and have substantially larger sources of income, like ownership of businesses apart from agricultural income.

Same is the case with drinking water that is *piped into dwelling*. One of the things people in rural areas are generally better off compared to people in mega cities is house ownership. Most people can't dream of owning a house in a mega city, whereas in rural areas people who have an acre of farmland can construct a mud hut and be *'home owners'*. So, if we look at home ownership as a way of indicating wealth, the results wouldn't be very accurate. Instead we need to understand the quality of the house. Having drinking water piped into their house indicates that the house was well planned. Most poor people who own a house in a rural area don't have a planned house. Even people who construct a brick house don't generally plan/design a house with piped water, ventilation, and other important amenities. It significantly complicates the structure of the house and its construction. It is far more easier to have it piped into your yard/plot. Which is why 35% of urban houses have piped drinking water into their dwelling while only 6% of rural households have piped drinking water.

Another important criteria for this variable and many others is availability of the resource. Most parts of India around the year 2005 did not have access to piped water connections, electricity, sewerage connections etc. So whether a household had these facilities didn't just depend on weather they could afford them, but also depend on whether the government in that region is making these facilities available to the public.

India, being a very big country, differs vastly when it comes to availability of basic amenities like the ones we talk about in this analysis. Some states are significantly better developed than others. Hence, it would be inaccurate to have the same wealth index for an entire nation. Unfortunately the data in this dataset can't

be classified on a state/region basis (although by looking at the DHS website its clear that they did have some variable to divide the sample into states, regions and even districts, I don't have variables to create those subsets). So, if you look at a house in a mega city which doesn't have piped water, sewerage connection or electricity, it indicates that the house is in abject poverty. Because they are probably surrounded by high rises with all these facilities but they themselves cannot afford any of these and many more basic facilities because of their economic situation. Similarly, if we see a house in a rural area with piped water(6.0%), piped sewer system(0.9%), it might indicate that the government there is taking special efforts to make these facilities available.

According to https://dhsprogram.com/topics/wealth-index/, "The wealth index allows for the identification of problems particular to the poor, such as unequal access to health care, as well as those particular to the wealthy, such as, in Africa, increased risk for infection with HIV... ...the DHS wealth index also allows governments to evaluate whether public health services, vaccination campaigns, education, and other essential interventions are reaching the poorest". To achieve these goals claimed by the DHS, we would require a more accurate index, one which will consider all the factors we mentioned in this discussion.

One of the points that I found relevant in the Wikipedia article about '*Wealth*' is "An individual who is considered wealthy, affluent, or rich is someone who has accumulated substantial wealth relative to others in their society or reference group". So not only is a standard index across urban and rural areas inaccurate, it is also inaccurate to have the same index for two people living in the rural part of Chattisgarh and rural part of Tamil Nadu.

Non drinking water source.

```
summary(RuralH$HV202)
summary(SCityH$HV202)
summary(LCityH$HV202)
summary(LTownH$HV202)
summary(MCityH$HV202)
summary(STownH$HV202)
```

The figures for non drinking water source are almost similar to drinking water source. When non drinking water is piped inside a home, there should be a surface of the house should be built in such a way that water won't spoil it and at least 58% of rural homes and about 13% of urban homes use materials like sand, dung and mud which can't deal with this issue. There should also be a facility for the used water to be drained out, which further complicates the design of the house. In rural areas, houses have a lot of open land(land that is not covered by cement or any artificial means). If water is piped into the yard, it can just be absorbed by the surrounding ground after being used.

Both in HV201 and HV202, there are a minority of people who rely on relatively dangerous and unreliable sources of water like, river's, pond's, lake's, well's and spring's. Since these sources of water are more prone to contamination and also not guaranteed to be available year round, it would be safe to assume that people who resort to these sources don't have any better alternatives and are in abject poverty.

Its also interesting to note that there are a small number of people who are dependent on rainwater. It would be interesting to know if any of these are outside the desert regions of northwest India.

Toilet facility

```
summary(RuralH$HV205)
summary(SCityH$HV205)
summary(LCityH$HV205)
submmary(LTownH$HV205)
```

```
summary(MCityH$HV205)
summary(STownH$HV205)
```

As discussed previously, piped sewer system is something the government is supposed to provide. So the massive difference of availability of that facility between rural and urban areas is not surprising. But we can draw conclusions from other indicators. There are almost 11% people in urban areas who don't have access to any toilet facilities, while in rural areas it is above 61%.

Electrification

```
summary(RuralH$HV206)
summary(SCityH$HV206)
summary(LCityH$HV206)
submmary(LTownH$HV206)
summary(MCityH$HV206)
summary(STownH$HV206)
```

About 94.5% of urban India and 65% of rural India had electricity at the time of this survey. Which is a big difference, but these numbers are particularly misleading because when we look at these number, we think *these many people can afford electricity in India*, but a lot of these people can't really afford electricity and just steal it. A quick Google led me to a Wikipedia article on electricity theft which led me to this article http://www.tdworld.com/smart-grid/india-spend-216-billion-smart-grid-infrastructure-2025. Some states in India lose more than 50% of the electricity they produce, to electricity theft. India on an average loses 23% of the electricity to theft. I'm assuming these number are from around 2014. But this must have been even higher around 2005 when this survey was collected.

As per the article there are significant efforts to reduce theft, so in the future a lot of people will be forced to spend some money on electricity. So if we consider wealth as something that people posses, we could just include this variable in the wealth index. Otherwise, if we consider wealth as something that people can afford to have, then this variable will add noise to our index.

Another interesting point about electricity is, unlike all other variables in this index, which cost the same in rural and urban areas, or might cost higher in rural areas, electricity is priced lower in rural areas.

Radio

```
summary(RuralH$HV207)
summary(SCityH$HV207)
summary(LCityH$HV207)
submmary(LTownH$HV207)
summary(MCityH$HV207)
summary(STownH$HV207)
```

Almost 31% of rural households and 41% of urban households have a radio. Somewhere in the 90's, radios started getting replaced by televisions. Televisions are a must have in most households. Unless someone has an old radio, or someone can't afford a television, I don't see why anyone would have a radio. If a household doesn't have a radio, but can afford a television, it doesn't sound very apt to give 3 points to that household and 5 to another household just because they also have an old radio lying around. I feel this variable unnecessarily inflates the wealth of a household in the index.

Television

```
summary(RuralH$HV208)
summary(SCityH$HV208)
summary(LCityH$HV208)
submmary(LTownH$HV208)
summary(MCityH$HV208)
summary(STownH$HV208)

summary(RuralH$SH47I)
summary(SCityH$SH47I)
summary(LCityH$SH47I)
submmary(LTownH$SH47I)
summary(MCityH$SH47I)
summary(STownH$SH47I)

summary(RuralH$SH47J)
summary(SCityH$SH47J)
summary(LCityH$SH47J)
submmary(LTownH$SH47J)
summary(MCityH$SH47J)
summary(STownH$SH47J)
```

About 36% of rural household and 75.5% of urban households have a television. About 20% of rural household own a Black & White television and 23% of urban households own B&W television, 18% of rural household and 56% of urban households own color television. The difference in wealth between urban and rural households is quite clear, especially in the case of color television ownership. We should probably also account for the population that doesn't have access to electricity, as a household which might be wealthy might not have a television just because they don't have access to electricity.

Refrigerator

```
summary(RuralH$HV209)
summary(SCityH$HV209)
summary(LCityH$HV209)
submmary(LTownH$HV209)
summary(MCityH$HV209)
summary(STownH$HV209)
```

About 10.5% of rural households and 37.5% of urban households have a refrigerators. Similar to televisions, we should consider the electricity factor while counting refrigerator towards a household's wealth.

Bicycle

```
summary(RuralH$HV210)
summary(SCityH$HV210)
summary(LCityH$HV210)
submmary(LTownH$HV210)
summary(MCityH$HV210)
summary(STownH$HV210)
```

Unlike televisions and refrigerators which are universally considered to be either a necessity or a luxury, or both, status of bicycles are a bit ambiguous I guess. Especially in households that can afford cars and even motorcycles. Moreover, in mega cities, its just not possible to ride a bicycle most of the time, but back in 2005 this wasn't such a huge problem. Back in 2005 the idea of bicycling for fitness wasn't very widespread, the idea of bicycling to work wasn't very popular among people who can afford better means of transport. At the same time, if someone is poor and works on a farm a couple of kilometers away from home, they'll probably just prefer to walk that distance.

So, there were two kind of bicycle owners. On one side we have household who can't afford any better means of transport and on the other side we have households that are rich enough to afford something better and still buy a bicycle for their children. So, we can have three groups of household, one that doesn't possess a bicycle or a motorcycle or a car, household that only have a bicycle, households that have bicycle and some other more expensive means of transport.

In urban areas, the group which doesn't possess any of the 3 can't be directly labelled as the poorest of the 3, especially in large and mega cities, as public transport which might be expensive than commuting on a bicycle, is pretty easily available and most people would prefer that. Similarly in rural areas, the distance to commute is generally not very big and people would just prefer to walk.

Motorcycle and Car

```
summary(RuralH$HV211)
summary(SCityH$HV211)
summary(LCityH$HV211)
submmary(LTownH$HV211)
summary(MCityH$HV211)
summary(STownH$HV211)

summary(RuralH$HV212)
summary(SCityH$HV212)
summary(LCityH$HV212)
submmary(LTownH$HV212)
summary(MCityH$HV212)
summary(STownH$HV212)
```

Whether it is a rural or an urban area, owning a motorcycle or a car greatly increases your ability to commute comfortably. So, these articles can constitute to the wealth index. As per `NFHS3SUP.pdf`, owning a car would give a household 4 points and owning a motorcycle would give a household 3 points. So a household with a motorcycle and a car would be getting 7 points. This could be misleading because people often buy a car and use it occasionally as it is expensive to run. So a household that exclusively uses a car to commute is definitely wealthier than a household that occasionally uses a car and has a motorcycle for daily commute. In cases where a household has member using a car and motorcycle, 7 points is valid. So these two variables are not as straight forward as they seem.

Telephone and mobile

```
summary(RuralH$HV212)
summary(SCityH$HV212)
summary(LCityH$HV212)
submmary(LTownH$HV212)
summary(MCityH$HV212)
summary(STownH$HV212)
```

```
summary(RuralH$HV243A)
summary(SCityH$HV243A)
summary(LCityH$HV243A)
submmary(LTownH$HV243A)
summary(MCityH$HV243A)
summary(STownH$HV243A)
```

Similar to the previous 2 variables, I think it would be more accurate to consider telephone and mobile possession together. But back in 2005, mobiles were pretty rare. So it would probably be alright to consider than separately as it is.

Watch

```
summary(RuralH$HV243B)
summary(SCityH$HV243B)
summary(LCityH$HV243B)
submmary(LTownH$HV243B)
summary(MCityH$HV243B)
summary(STownH$HV243B)
```

About 75% of rural household and 92% of urban household had a watch in their possession. Among the articles on the wealth index, this is probably the cheapest of all.

Animal Cart

```
summary(RuralH$HV243C)
summary(SCityH$HV243C)
summary(LCityH$HV243C)
submmary(LTownH$HV243C)
summary(MCityH$HV243C)
summary(STownH$HV243C)
```

Animal cart is essential to rural life. It is an ultra cheap mode of transport to carry produce among other things. It is interesting to see that some people in large and mega cities have claimed to own an animal cart. This seems suspicious as its not really possible to use an animal cart in a big city. So, these respondents might be people who own farm lands and animal carts in a village but stay in the city.

Matress and cot/bed

```
summary(RuralH$SH47B)
summary(SCityH$SH47B)
summary(LCityH$SH47B)
submmary(LTownH$SH47B)
summary(MCityH$SH47B)
summary(STownH$SH47B)

summary(RuralH$SH47E)
summary(SCityH$SH47E)
summary(LCityH$SH47E)
submmary(LTownH$SH47E)
```

```
summary(MCityH$SH47E)
summary(STownH$SH47E)
```

About 81.5% households in rural areas and 87.5% households in urban areas own a cot or a bed. 54% of rural households and 80% of rural households own a mattress. Cot, which I guess refers to a rectangular frame over which a flat cotton or nylon rope is woven and doesn't require a mattress is relatively very inexpensive than a bed which I guess refers to a wooden or a metal traditional bed with a platform on which a mattress is used. So this variable is probably a bit misleading. Cots are quite common in rural areas and unseen in today's urban areas, which probably explains the disparity in cot/bed and mattress ownership. As per `NFHS3SUP.pdf`, household get 1 point each for possession of a cot/bed and a mattress. So this is probably accurate.

Pressure cooker

```
summary(RuralH$SH47C)
summary(SCityH$SH47C)
summary(LCityH$SH47C)
submmary(LTownH$SH47C)
summary(MCityH$SH47C)
summary(STownH$SH47C)
```

32% of rural households and 75.5% of urban households own a pressure cooker. Most people don't consider pressure cooker to be an essential part of cooking. Some people might even prefer to avoid using it. The necessity of a pressure cooker probably depends on the regional cuisine and not on affordability. So I feel this variable does not add any accuracy in predicting the household wealth.

Chair and table

```
summary(RuralH$SH47D)
summary(SCityH$SH47D)
summary(LCityH$SH47D)
submmary(LTownH$SH47D)
summary(MCityH$SH47D)
summary(STownH$SH47D)

summary(RuralH$SH47F)
summary(SCityH$SH47F)
summary(LCityH$SH47F)
submmary(LTownH$SH47F)
summary(MCityH$SH47F)
summary(STownH$SH47F)
```

These two variables are very good indicators of household wealth as they are essential but people don't buy them unless they possess most other basic and low price household items (especially articles used in cooking etc) and some extra money is available. This is especially true with the case of purchasing a table.

Fan

```
summary(RuralH$SH47G)
summary(SCityH$SH47G)
```

```
summary(LCityH$SH47G)
submmary(LTownH$SH47G)
summary(MCityH$SH47G)
summary(STownH$SH47G)
```

Fan is quite an important household possession as most of India is tropical. Having said that, there are parts of India where a fan would be completely unnecessary, and the absence of a fan in a household in Himachal Pradesh need not mean it is less wealthier than a household that has a fan in Tamil Nadu. Even in a single state, there are hill stations which are quite cold and make fans obsolete. This and the availability of electricity need to be accounted for before giving weight to fan as a household possession.

Sewing machine

```
summary(RuralH$SH47K)
summary(SCityH$SH47K)
summary(LCityH$SH47K)
submmary(LTownH$SH47K)
summary(MCityH$SH47K)
summary(STownH$SH47K)
```

Including this in the wealth index doesn't make a lot of sense to me. From my understanding, most people in India wouldn't own a sewing machine unless they intend to make money from sewing. It is very common for people to 'borrow' their neighbor's sewing machine. For sewing machine and a number of other little things, that are useful but only occasionally, people don't generally think of buying them. This variable isn't as indicative of wealth as a color TV or a refrigerator. Moreover, using a sewing machine is not just about affordability, but also about skill and having the time to use it. People would probably just prefer to pay a tailor to do the job. So it would be better to exclude this from the index.

Computer

```
summary(RuralH$SH47K)
summary(SCityH$SH47K)
summary(LCityH$SH47K)
submmary(LTownH$SH47K)
summary(MCityH$SH47K)
summary(STownH$SH47K)
```

About 1.3% of rural household and 9.5% of urban household had a computer. Computers are significantly costly than all the household articles present in this survey.

Water pump

```
summary(RuralH$SH47U)
summary(SCityH$SH47U)
summary(LCityH$SH47U)
submmary(LTownH$SH47U)
summary(MCityH$SH47U)
summary(STownH$SH47U)
```

About 9% of rural households and 11.5% of urban households own a water pump. I'm not able to figure out exactly what kind of water pump is being discussed here. Is this a agricultural use water pump or a household use water pump, which is only needed if the household is present in a multi-storied building.

Thresher and tractor

```
summary(RuralH$SH47V)
summary(SCityH$SH47V)
summary(LCityH$SH47V)
submmary(LTownH$SH47V)
summary(MCityH$SH47V)
summary(STownH$SH47V)

summary(RuralH$SH4W)
summary(SCityH$SH47W)
summary(LCityH$SH47W)
submmary(LTownH$SH47W)
summary(MCityH$SH47W)
summary(STownH$SH47W)
```

Thresher and tractor are agricultural equipment that wouldn't be of much use if the household doesn't own at least 10 acres of land. Large scale farm ownership is relatively rare in India, so it would be probably easier for people to just rent these when in need. This is especially valid in case of a tractor, which is very expensive to own and maintain. It wouldn't make sense to own a tractor unless a person own a very large piece of land or intends to do business with it by renting it out. Doing business with a tractor is again a very tricky situation, it is quite common to see villages where many people to go into deep debts as there are too many tractor owners and too few people to take it for rent.

This situation remind me of the new car owners popping up in the last 2-3 years. Until a few years ago car taxis were very rare in India, but with the advent of taxi aggregators like Uber, there are hundreds of thousands of people who purchased a car taking a huge loan, hoping to do business. But these days the number of taxis has gone up so much that an individual taxi owner is getting very less businesses and not even able to cover the loan installments, which leads to these owners to go into debts.

There could be similar problems with the tractor ownership data. People might be wealthy enough to own take a loan and own one but decided not to buy it because it is easier to rent. At the same time a household might be owning a tractor but is not necessarily wealthy compared to a similar type of household as they might not be making any money out of the tractor. Having said that, tractor ownership could indicate ownership of large tracts of land. This variable should be used in conjunction to SH60 which documents amount of land owned. But the problem with SH60 is that when you look at amount of land owned by a household, it is also very important to look at the number of people in the household or the number of people who are going to inherit that piece of land.

Cooking fuel

```
summary(RuralH$HV226)
summary(SCityH$HV226)
summary(LCityH$HV226)
submmary(LTownH$HV226)
summary(MCityH$HV226)
summary(STownH$HV226)
```

Using electricity for cooking is quite rare in India, especially in the time period of this survey. LPG and natural gas is the most common modern method used for cooking. And like some of the variables discussed in the beginning of this report, this depended heavily on the local government. Supply and sale of LPG and natural gas is completely under the government's control. So, it is mostly available only in the urban areas. Until a year back there were no large scale efforts to make it available in rural areas. So absence of LPG does not directly indicate lack of wealth in a rural household. But in an urban household it most definitely does.

Construction materials

```
summary(RuralH$HV213)
summary(SCityH$HV213)
summary(LCityH$HV213)
submmary(LTownH$HV213)
summary(MCityH$HV213)
summary(STownH$HV213)

summary(RuralH$HV214)
summary(SCityH$HV214)
summary(LCityH$HV214)
submmary(LTownH$HV214)
summary(MCityH$HV214)
summary(STownH$HV214)

summary(RuralH$HV215)
summary(SCityH$HV215)
summary(LCityH$HV215)
submmary(LTownH$HV215)
summary(MCityH$HV215)
summary(STownH$HV215)
```

These three variables help us understand the quality of construction of the house. `NFHS3SUP.pdf` aggregates these three variables to three types of houses. 'Kachha', 'Semi-Pucca' and 'Pucca'. This is an easy way to deal with classifying houses.

Windows

```
summary(RuralH$HV213)
summary(SCityH$SH56A)
summary(LCityH$SH56A)
submmary(LTownH$SH56A)
summary(MCityH$SH56A)
summary(STownH$SH56A)

summary(RuralH$SH56B)
summary(SCityH$SH56B)
summary(LCityH$SH56B)
submmary(LTownH$SH56B)
summary(MCityH$SH56B)
summary(STownH$SH56B)

summary(RuralH$SH56C)
```

```
summary(SCityH$SH56C)
summary(LCityH$SH56C)
submmary(LTownH$SH56C)
summary(MCityH$SH56C)
summary(STownH$SH56C)

summary(RuralH$SH56D)
summary(SCityH$SH56D)
summary(LCityH$SH56D)
submmary(LTownH$SH56D)
summary(MCityH$SH56D)
summary(STownH$SH56D)
```

These four variables capture whether the houses have windows, whether they are glass windows and if these windows has a screen or a curtain or a shutter. I have googled a bit and couldn't quite find a difference between a 'screen' and a 'curtain or shutter'. So I'm not sure why there are two different variables for this.

As discussed earlier, most homes in India are not planned properly, from my understanding it is especially difficult to have a window in a mud house, which are in the majority in rural areas. So this might have an overlapping with the 'material of wall' variable. It is also very common in poorer household to see old clothes being used as window curtains, so these variables are not very accurate, or maybe SH56C and SH56D are trying to address this issue. Considering all these things, these variables are pretty useful in indicating the wealth of a household.

People sleeping per room

```
summary(RuralH$HV012/RuralH$HV216)
summary(SCityH$HV012/SCityH$HV216)
summary(LCityH$HV012/LCityH$HV216)
summary(LTownH$HV012/LTownH$HV216)
summary(MCityH$HV012/MCityH$HV216)
summary(STownH$HV012/STownH$HV216)
summary(UrbanH$HV012/UrbanH$HV216)
```

This variable really helpful in differentiating between the level of wealth a household possess. As mentioned elsewhere, owning house in a large city is pretty difficult, a lot of people work hard to buy a really small house, this variable helps differentiate between the wealth of house owners. It also helps identifying the households in the lowest economic status, as in large cities it is common to see multiple people sharing a single room.

House ownership

```
summary(RuralH$SH58)
summary(SCityH$SH58)
summary(LCityH$SH58)
summary(LTownH$SH58)
summary(MCityH$SH58)
summary(STownH$SH58)
```

As discussed elsewhere house ownership in urban areas, especially mega cities is a very different deal than house ownership in rural areas. This variable and the large differences in the rural vs urban trends of most other variables are the reason why I stress on a separate index for rural and urban regions.

Account

```
summary(RuralH$HV247)
summary(SCityH$HV247)
summary(LCityH$HV247)
summary(LTownH$HV247)
summary(MCityH$HV247)
summary(STownH$HV247)
```

Most households don't have the kind of income which generate savings that can be put in an account. Until a year ago, having an account didn't make any sense for poor households. Even among households with better income, most people preferred to invest the savings in gold or purchasing land or other such things. I guess people would have also found it a hassle to handle a bank account. More than wealth, ownership of a bank account is probably a better indicator of education. It is still probably useful to have this as a wealth indicator, but its usefulness and importance compared to other variables is questionable.

Other variables

There are variables in the standard of living index that are not present in the wealth index and would probably be a good idea if they are included. They are 'Shares toilet with other households (HV225)', 'Separate room for cooking (HV242)', 'Own agricultural land (SH60)', 'Ownership of irrigated land (SH61)' and 'Ownership of livestock (HV246)'.

Among these variables HV225 and HV242 are very strong and reliable indicators of wealth, whereas the value of SH60, SH61 and HV246 would depend on the number of people who are dependent on the property and would inherit it.