

# Problem Set 1

## Development Economics

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### 1 Inequality in consumption, income and wealth

#### 1.1 Report average CIW per household separately for rural and urban areas.

Table 1 reports mean consumption, income and wealth by household for Uganda in USD (conversion from Uganda Shilling to USD based on the 2010 exchange rate). For both rural and urban areas, consumption is on average larger than income and wealth larger than consumption. In comparison to Malawi, consumption is higher and income lower. Urban areas have higher consumption, income and wealth than rural areas.

**Table 1:** Average CIW in USD

	Rural	Urban	Total
Consumption	1,685.619	2,916.914	1,996.008
Income	637.484	817.377	682.869
Wealth	5,626.061	7,837.439	6,166.059

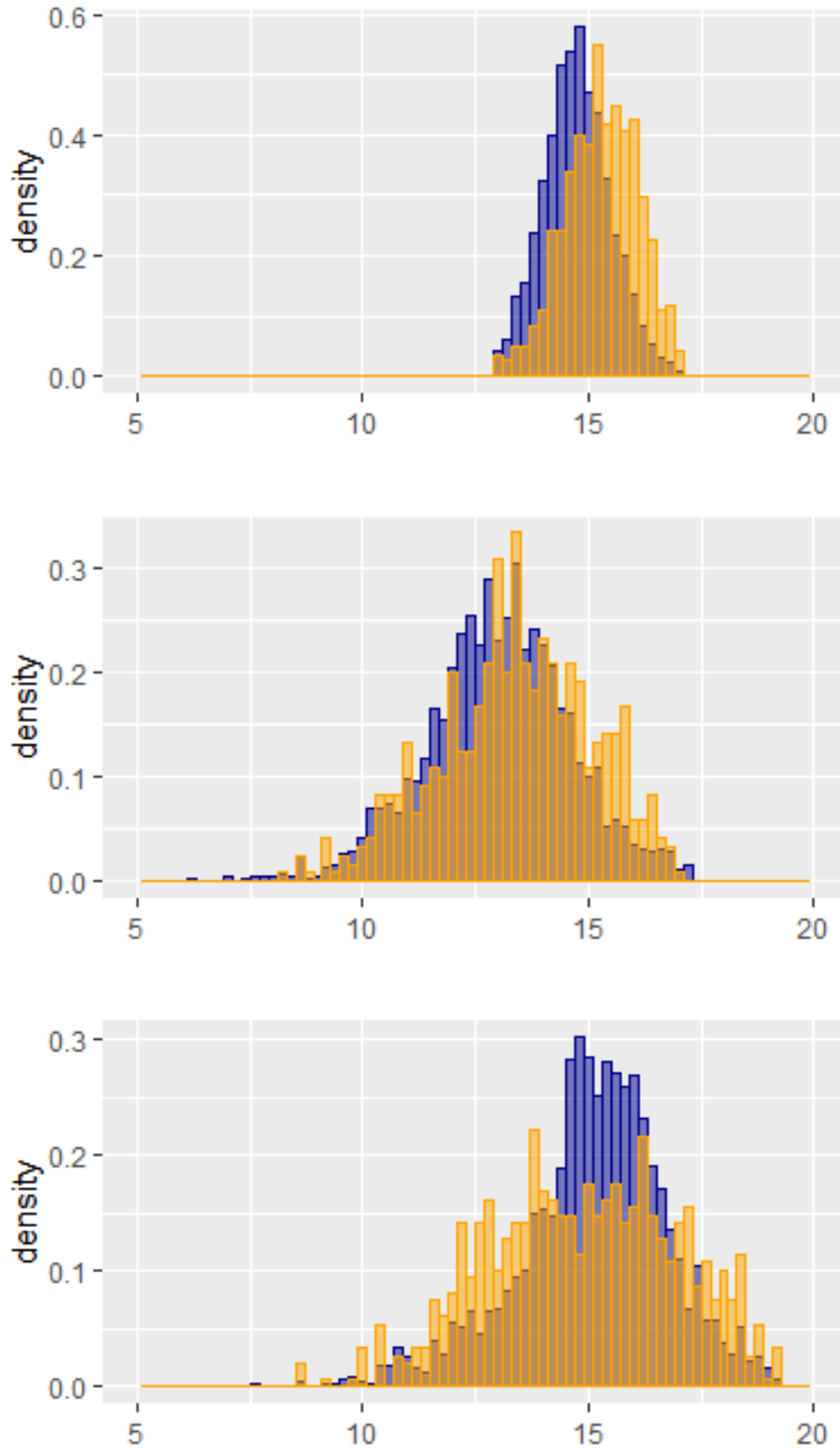
## 1.2 CIW inequality: (1) Show histogram for CIW separately for rural and urban areas; (2) Report the variance of logs for CIW separately for rural and urban areas.

Figures 1 depict the density of log consumption, income and wealth for rural (blue) and urban (orange) areas. Clearly, the mass of each variable is farther to the right for urban as compared to rural areas and the variance of the distributions increases from consumption to income and wealth.

This pattern is confirmed by Table 2. The variance of logs is higher in wealth than in income and higher in income than in wealth for both rural and urban areas. Furthermore, inequality is higher in urban than rural areas along all three variables of interest. As we have seen in class, the exact same pattern can be observed in Malawi. In comparison to the US, income inequality appears to be higher in Uganda, but wealth inequality is lower which suggests a smaller transmission from income to wealth in Uganda than in the US. The percentage of consumption inequality in income inequality is much smaller than in the US, which can be interpreted as suggestive evidence for better consumption insurance in Uganda than in the US.

**Table 2:** Variance of log CIW in USH

	Rural	Urban	Total
Consumption	0.548	0.645	0.626
Income	2.631	2.963	2.732
Wealth	2.796	4.469	3.228



**Figure 1:** Histograms of log consumption, income and wealth in USH

### 1.3 Describe the joint cross-sectional behavior of CIW

Tables 3 to 8 report the correlations between log consumption, income and wealth. Correlations are higher in rural than in urban areas across all variables. These results are somewhat counterintuitive. From the previous results, I would expect correlations to be higher from urban than rural areas.

**Table 3:** Correlation for urban areas

	Consumption	Income
Consumption	1	-0.029
Income	-0.029	1

**Table 4:** Correlation for urban areas

	Consumption	Wealth
Consumption	1	0.504
Wealth	0.504	1

**Table 5:** Correlation for urban areas

	Income	Wealth
Income	1	0.357
Wealth	0.357	1

### 1.4 Describe the CIW level, inequality, and covariances over the lifecycle.

Figures 2 show the level of log CIW over the life cycle. As in developed countries the life cycle pattern is hump-shaped for consumption. For income and wealth the profiles are increasing with stagnation towards the end of the life.

**Table 6:** Correlation for rural areas

	Consumption	Income
Consumption	1	0.219
Income	0.219	1

**Table 7:** Correlation for rural areas

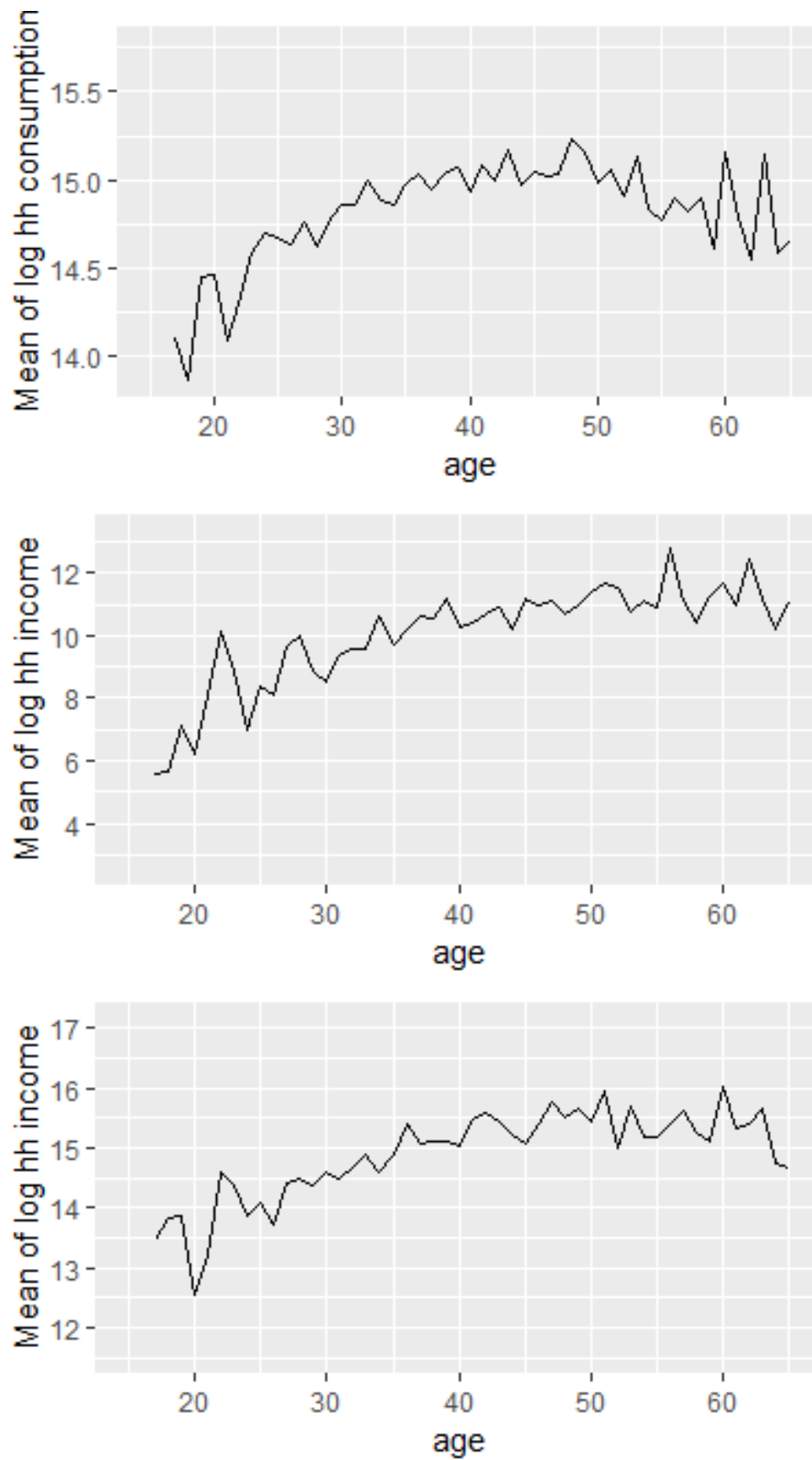
	Consumption	Wealth
Consumption	1	0.520
Wealth	0.520	1

**Table 8:** Correlation for rural areas

	Income	Wealth
Income	1	0.517
Wealth	0.517	1

Figures 3 report the variance of log CIW over the life cycle. For consumption the profile increases over age, for income it decreases and for wealth it remains flat. The pattern for consumption is similar as in the US, as shown in Storesletten, Telmer and Yaron (2004). The profiles for income however contradict US evidence.

In Figures 4 we show the correlation of the logged variables. For consumption and income, these profiles have an upward trend from age 20 onwards. For wealth, the profiles fluctuate around a constant path.

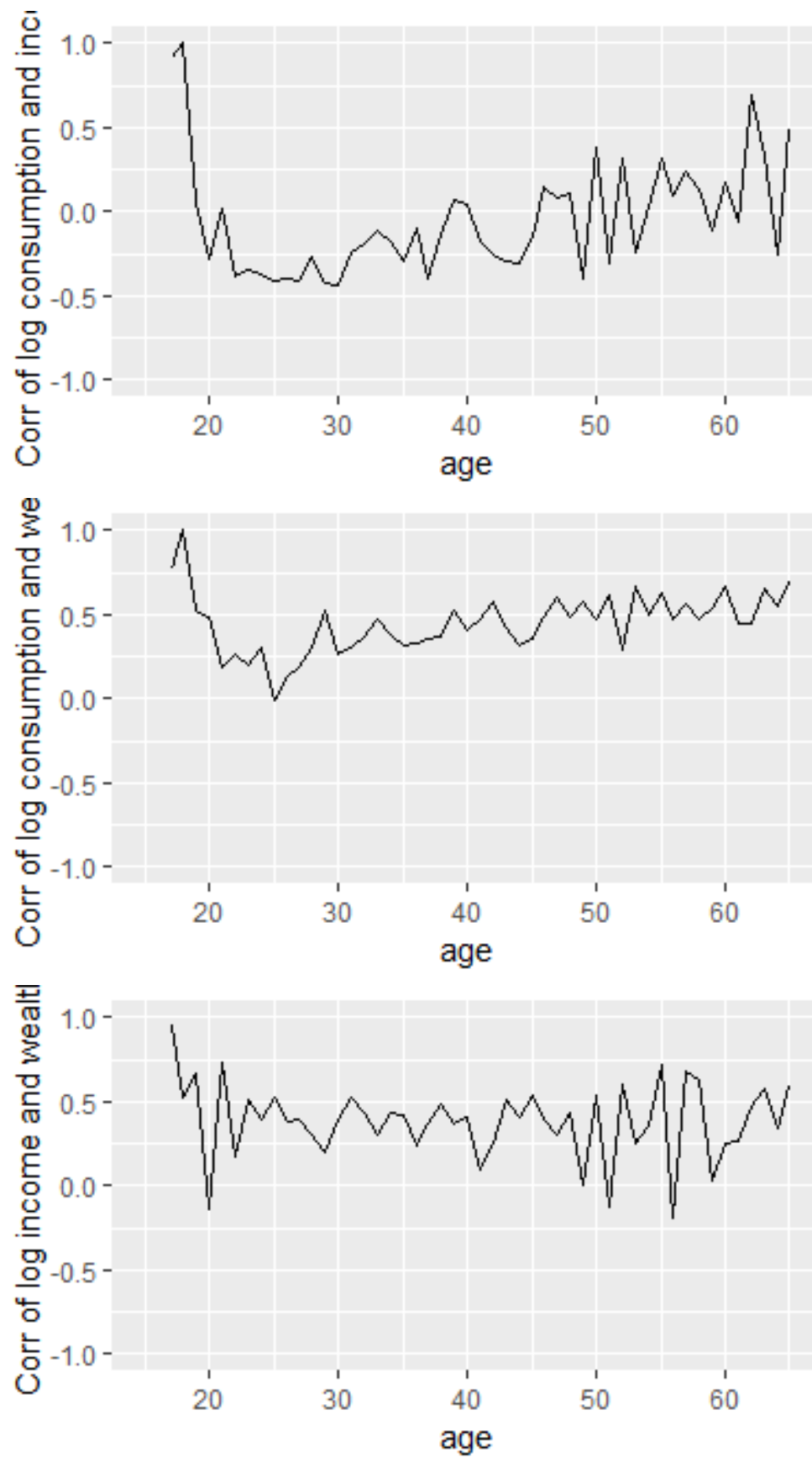


**Figure 2:** The level of log CIW over the life cycle



**Figure 3:** The variance of log CIW over the life cycle





**Figure 4:** The correlation of log CIW over the life cycle

## 1.5 Rank your households by income, and discuss the behavior of the top and bottom of the consumption and wealth distributions conditional on income

Table 9 shows the conditional distribution of wealth and consumption on income. As in the case of Malawi, the shares increase along the quintiles for both variables. In comparison to the US, the top income quintile has a remarkably smaller share in total wealth.

**Table 9:** Share of wealth/consumption in total wealth/consumption in Percent by quintiles

	Q1	Q2	Q3	Q4	Q5
wealth	18.003	19.105	20.303	20.925	21.664
consumption	19.440	19.480	19.846	20.317	20.918

## 2 Inequality in Labor Supply

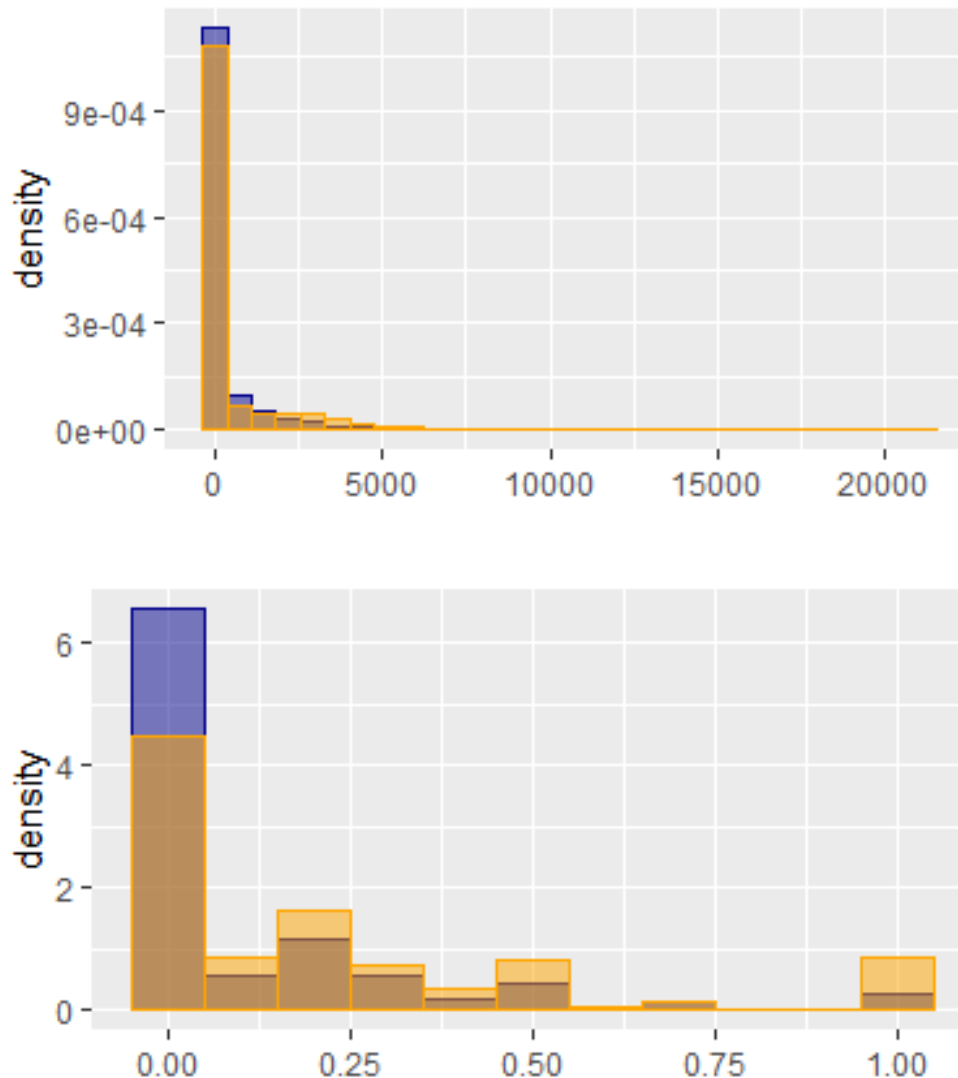
### 2.1 Redo Question 1 for intensive and extensive margins of labor supply.

Table 10 shows the average hours and employment per household. Notice that in this table we only capture market hours worked, so by construction family labour is not included. Average hours in rural areas are lower than in urban areas which is likely due to more time being devoted to family labour such as agriculture on the countryside than in bigger cities. The same applies to employment.

**Table 10:** Average hours and employment

	Rural	Urban	Total
Hours	332.155	572.455	392.874
Employment	0.124	0.227	0.150

Figures 5 confirm what we have learned from the previous table. In rural areas, there is a larger fraction of households working zero or little hours and not participating in market labour. Again, this is likely due to the larger relevance of agricultural activities in rural areas.



**Figure 5:** The histogram of hours worked (top) and employment (bottom). Orange represents urban, blue rural households.

As visible from Table 11, the variance of log hours is larger in rural than in urban areas whereas it is smaller for employment.

**Table 11:** Variance of log hours and employment

	Rural	Urban	Total
Hours	1.657	1.501	1.699
Employment	0.402	0.498	0.437

Correlation analysis (Tables 12 to 14) suggests that correlation between hours and employment is higher in urban areas. This might reflect differences in average family size.

**Table 12:** Correlation for total Uganda

	Hours	Employment
Hours	1	0.237
Employment	0.237	1

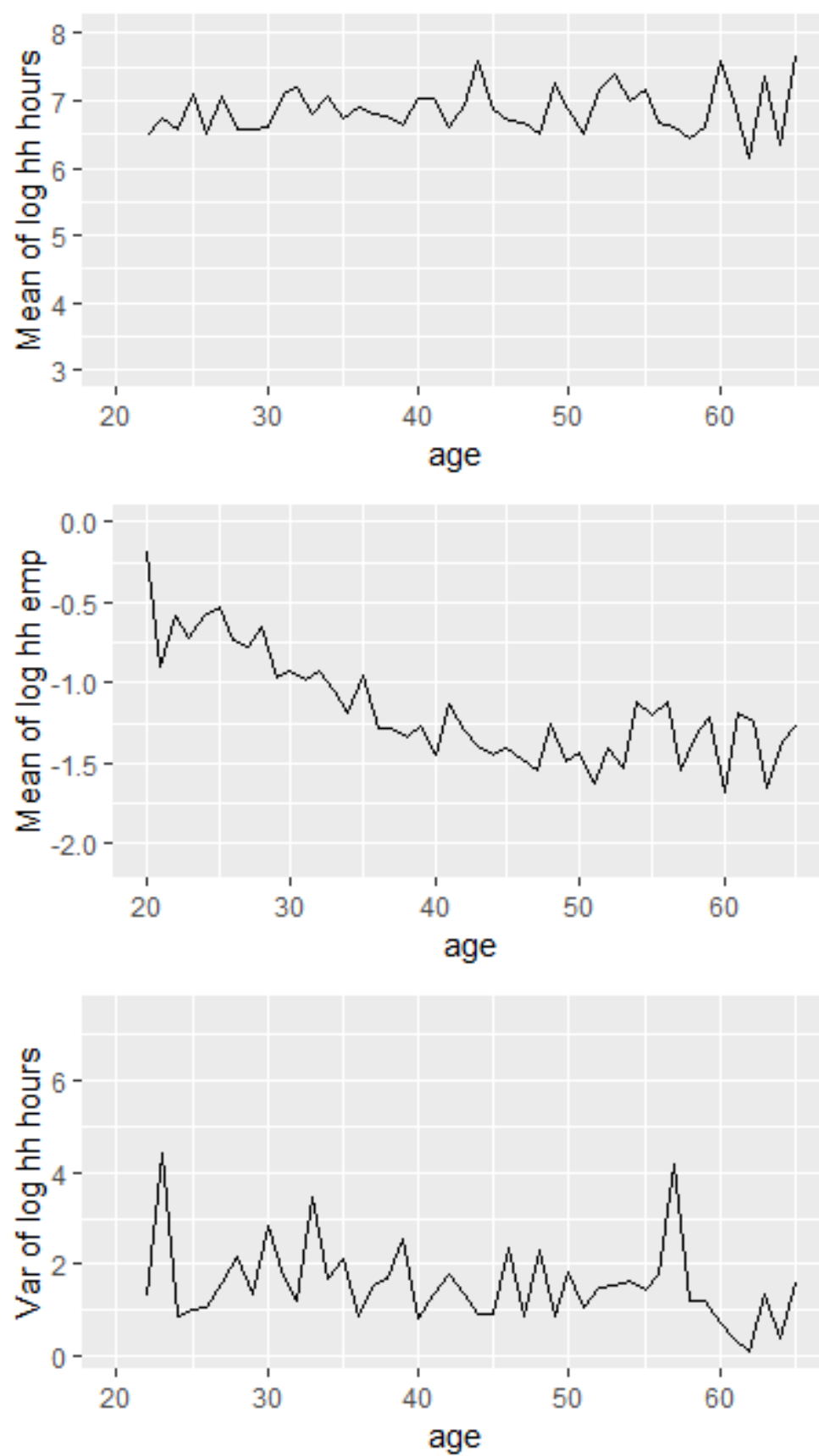
**Table 13:** Correlation for rural areas

	Hours	Employment
Hours	1	0.208
Employment	0.208	1

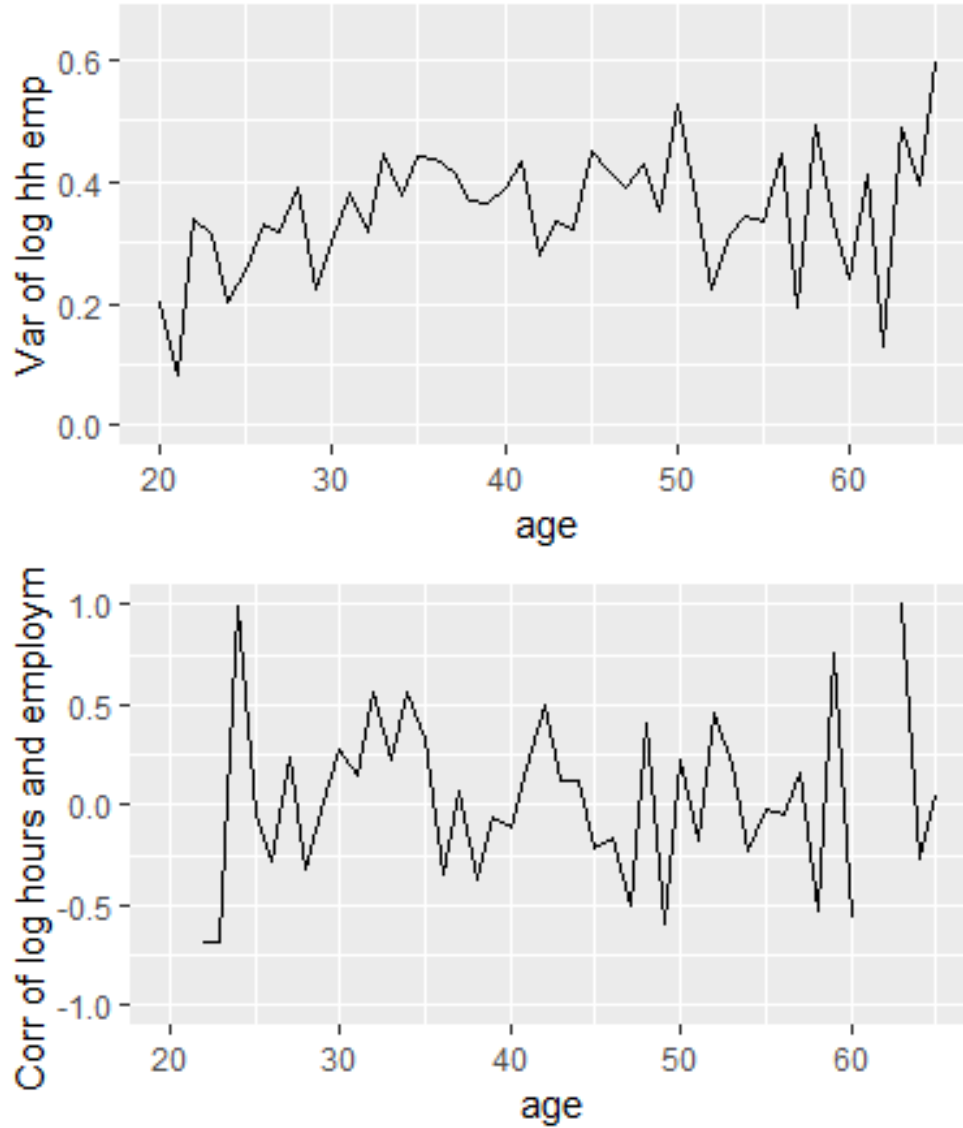
**Table 14:** Correlations for urban areas

	Hours	Employment
Hours	1	0.252
Employment	0.252	1

Finally we again plot the life cycle profiles for hours and employment.



**Figure 6:** Mean, variance and correlation of log hours and employment



**Figure 7:** Mean, variance and correlation of log hours and employment Cont

## 2.2 Redo separately for women and men, and by education groups (less than primary school completed, primary school completed, and secondary school completed or higher).

For this subsection I can only give an overview due to time constraints. Notice that the rest of the analysis can easily be done based on the previous analysis.

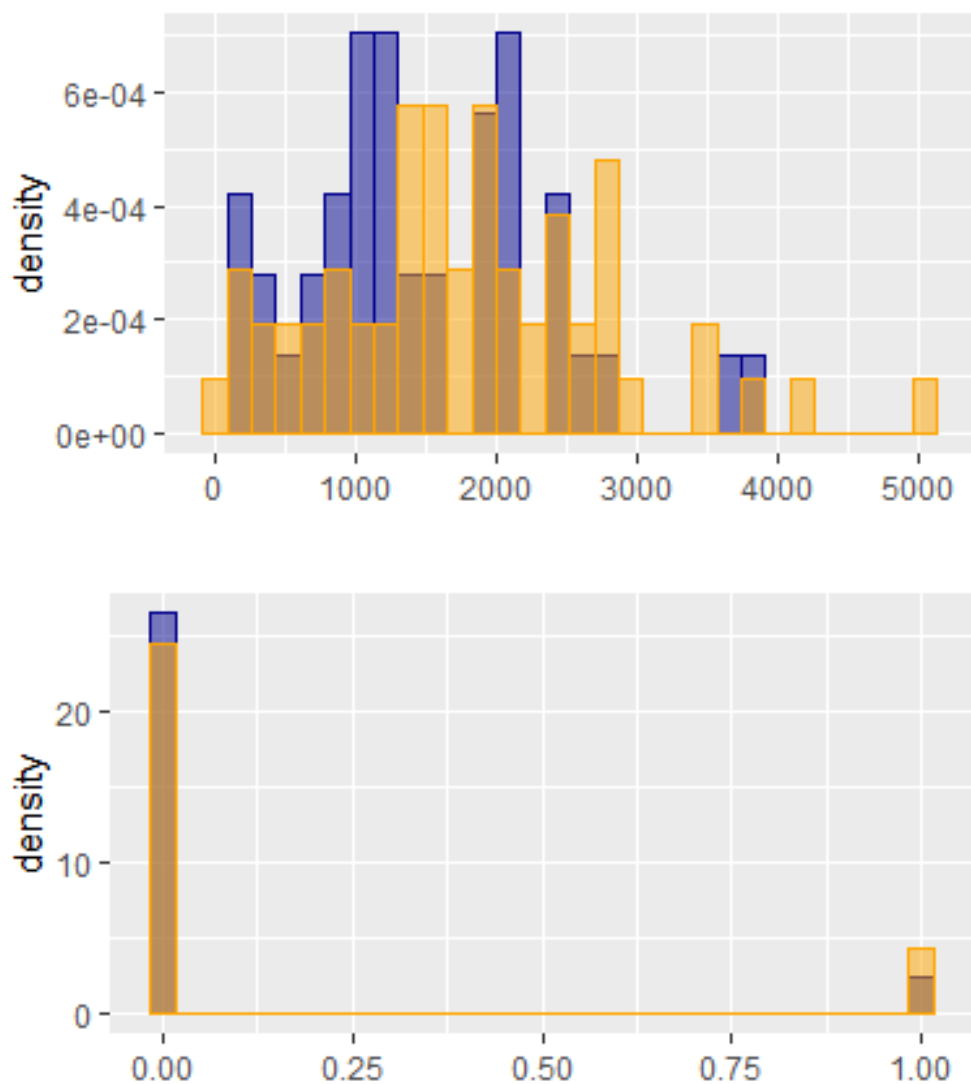
Table 15 shows that males are double as likely to be employed and also work more hours than females. From Figures 8 we can deduce that hours vary more across females than males which might be due to more part-time work among females.

Finally, we can also split up the sample by different educational groups. I create

groups for less than primary education completed, primary education completed and more than that. In Table 16 we can see that employment increases monotonically with education. Hours follow a U shaped pattern.

**Table 15:** Mean hours and employment by gender

	Female	Male	Total
Hours	1,493.512	1,795.183	1,672.723
Employment	0.085	0.151	0.117



**Figure 8:** Histogram of hours and employment by gender

**Table 16:** Mean hours and employment by education

	Less than primary c.	Primary c.	Secondary or more
Hours	1,535.045	1,393.143	1,867.273
Employment	0.198	0.213	0.273

### 3 Inequality Across Space

#### 3.1 Plot the level of CIW and labor supply by zone (or district) against the level of household income by zone.

Figures 9 depict the level of hours worked, consumption and wealth against income for each district. Spatially, income increases with wealth, hours and consumption.



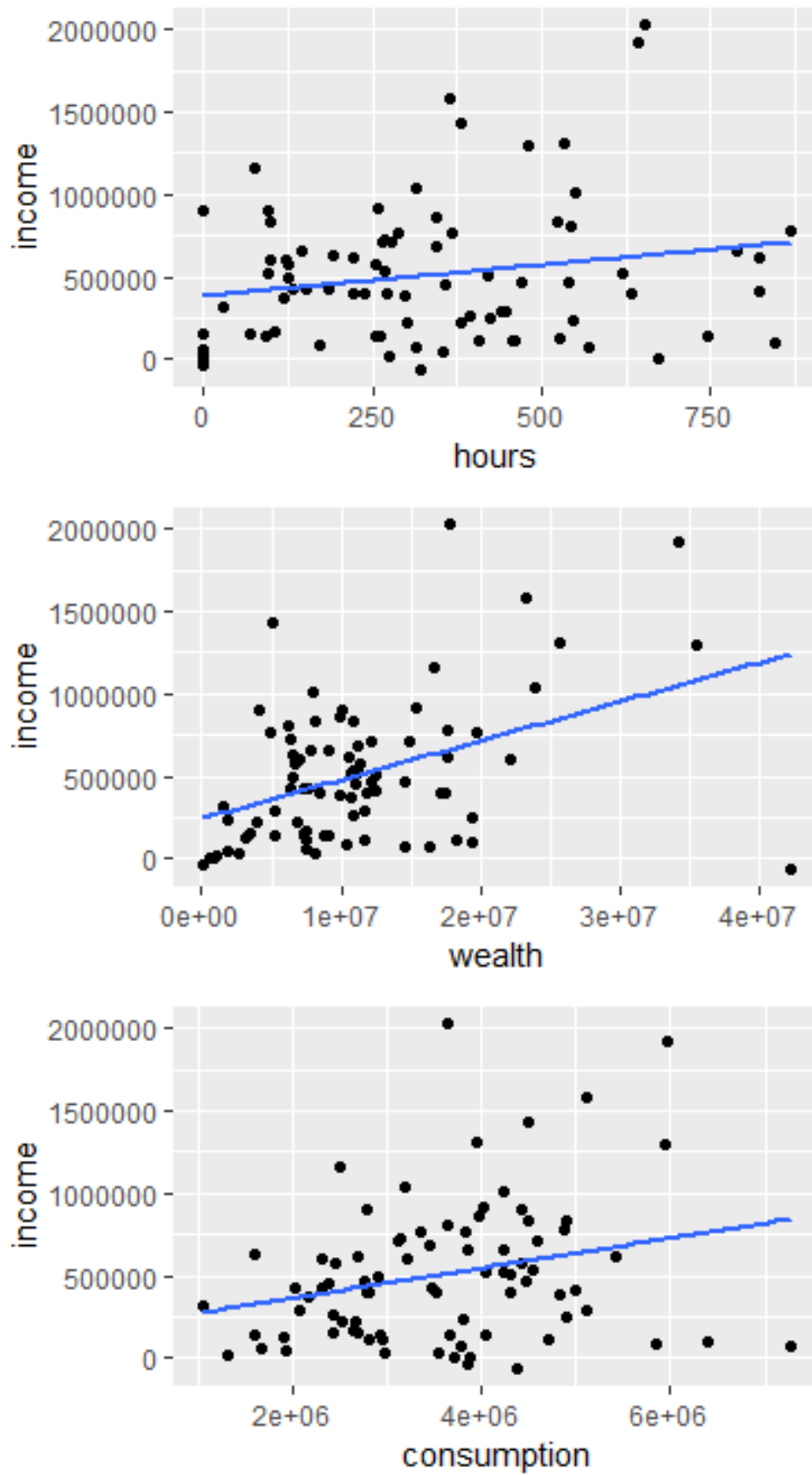


Figure 9: Scatterplots in levels

### **3.2 Plot the inequality of CIW and labor supply by zone (or district) against the level of household income by zone.**

Figures 9 show variance of logs (inequality) of hours worked, consumption and wealth against income for each district. While hours inequality decreases with income inequality, wealth and consumption rise with it.

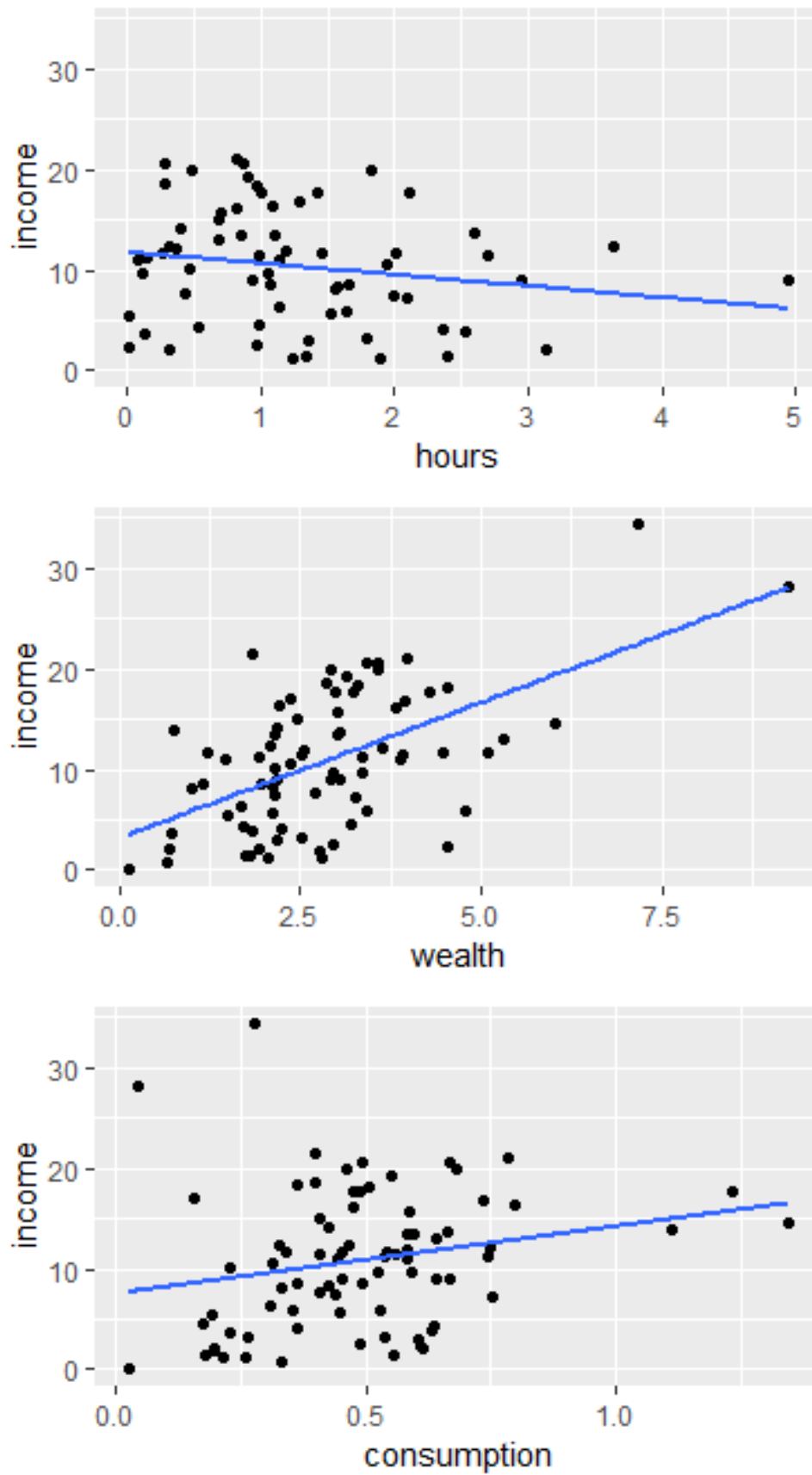


Figure 10: Scatterplots in variance of logs