An update of Indonesian household-level income and consumption patterns as an input to the iPETS model

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March 2018

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Abstract

The integrated Population-Economy-Technology-Science (iPETS) model is a global integrated assessment model developed and used by NCAR's Integrated Assessment Modeling (IAM) group to understand how key aspects of society may evolve in the future and how they might interact with a changing climate. Income and consumption patterns of households by demographic characteristics are used to calibrate parameters in iPETS for each of nine world regions. These income and consumption patterns are obtained from analysis of country-specific socioeconomic household surveys. iPETS parameters based on these results are combined with demographic projections of expected changes in population size, age structure, education, household structure, and urbanization to improve economic, energy, land use, and emissions projections. Because household income and consumption patterns can change substantially over time, particularly in developing countries, periodic updates of the household-level data used in iPETS are needed. This paper describes an updated analysis of Indonesian household data, based on the 2013 SUSENAS National Social Economic Survey. This analysis further classified households by education level, in addition to previously analyzed demographic characteristics, and also differentiated results by income deciles and access to electricity. Results indicated that higher incomes and expenditures were associated with higher levels of education, lower household sizes, residence in urban areas, and access to electricity. A comparison between 2002 and 2013 SUSENAS data showed that the share of expenditures on food decreased during this time, while the share spent on other goods and services and particularly on transportation increased, consistent with changes commonly observed in developing countries.

Acknowledgments

The authors would like to acknowledge University of Colorado students Michely Tenardi and Nikolas Setiawan for their work translating the 2013 Indonesia dataset, and NCAR senior scientist Brian O'Neill for his review of this paper and thoughtful feedback.

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Introduction

The Integrated Assessment Modeling (IAM) group within the Climate and Global Dynamics Laboratory (CGD) at the National Center for Atmospheric Research (NCAR) develops and uses an integrated modeling framework that combines human and earth systems to help understand how key aspects of society may evolve in the future and how they might interact with a changing climate. Central to this framework is the group's flagship global integrated assessment model, the integrated Population-Economy-Technology-Science (iPETS) model. This model combines household-level input data with demographic projections about expected changes in demographic characteristics to improve economic, energy, land use, and emissions projections. These projections can then be used in conjunction with projections from global climate models, such as the Community Earth System Model (CESM), to address integrated research questions.

The household-level input data used in iPETS comes from the analysis of income and consumption patterns from household surveys conducted by national statistical agencies, international organizations, and universities or other academic institutions around the world. iPETS disaggregates the world into nine world regions: China, the European Union, India, Latin America, Sub-Saharan Africa, transitional countries, the United States, other industrialized countries, and other developing countries (see Figure 1). Household survey data from one or more key countries within each region are used to calibrate model parameters for that region. Work has been continually underway to update household-level data in order to improve the representations of household income and consumption patterns for these regions.

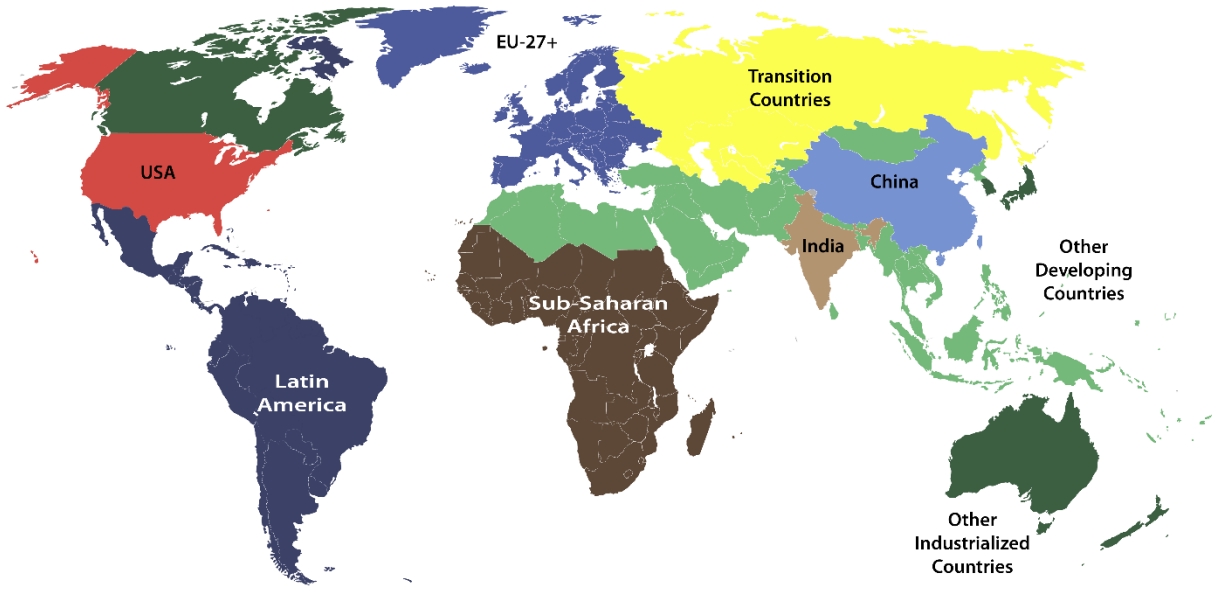

Figure 1: Regions in the iPETS model

Indonesia is the representative country for the "other developing countries" or ODC region, as of version 2.0 of iPETS. Household-level input data for this country was first used in the iPETS model based on results from analysis of the 2002 SUSENAS National Social Economic Survey data (Zigova, 2009). To reflect more recent changes in household socioeconomic conditions and update input files for the iPETS model, we obtained the Indonesian 2013 SUSENAS National Social Economic Survey data and conducted a statistical analysis to derive current Indonesian household income and consumption patterns. This paper reports on this update, in addition to providing an overview of how household-level data is used in the iPETS model.

An overview of household survey data in the iPETS model

The iPETS integrated assessment model combines human and earth systems by linking three component models: 1) a community demographic model, 2) an energy-economic model, and 3) a simple climate and atmospheric composition model. Similar to other integrated assessment models, iPETS can address questions on timescales of decades to a century and focuses on economic behavior in terms of long-term, average trends. However, the distinguishing feature of iPETS is its focus on demographic heterogeneity. The model constructs representative households for each region that reflect changing demographic composition over time, including urbanization, aging, and changes in household size and educational composition (iPETS model wiki, 2017).

The model achieves this focus on demographic heterogeneity within households, in part, by using household-level survey data on income and consumption patterns for four main types of goods: energy, food, transport, and other goods and services (Zigova, 2009), with more recent applications further breaking down energy into three different types of energy goods (O'Neill et al., 2012). To obtain this information, data from country-specific household surveys is analyzed to produce a table of results with per capita monetary values for 33 variables among households grouped by demographic characteristics (age, education, household size, and rural or urban status) of the householders with or without access to electricity and by income deciles across urban and rural areas (see Table 1). Variables representing total consumption categories, such as total food, are not necessarily exhaustively described by variable subcategories. Instead, subcategory variables are those needed for iPETS analyses. Nonetheless, totals for all categories represent all household expenditures reported in the surveys for that category (see Figure 2).

Results are calculated in each country's native currency and then converted to U.S. dollars using the official exchange rate for each country as defined by the World Bank. In order to achieve a national representation of households, variables are also calculated to report the number of surveyed households by demographic characteristics of the householders, as well as the weighted population living in these households, the weighted number of households, and the national population weighted by age, gender, education, and urban/rural status across all household sizes. This data is formatted according to a standardized template for all countries.

Income	total income
	labor income
	asset income
	nonmonetary income
	private transfers (paid)
	government transfers (paid)
	private transfers (received)
	government transfers (received)
	income tax
	total tax
	savings
Energy	total energy
	electricity
	natural gas
	petroleum products
	coal
	coal products
	biomass
Food	total food
	rice
	total crops
	beef
	fish
	total animal products
	processed beef
	processed animal products
	total processed food
Transport	transport total
	transport fuels
	transport equipment
	transport services
Other goods and services	other services
	other goods

Table 1: Variables for household income and expenditures derived from household survey datasets

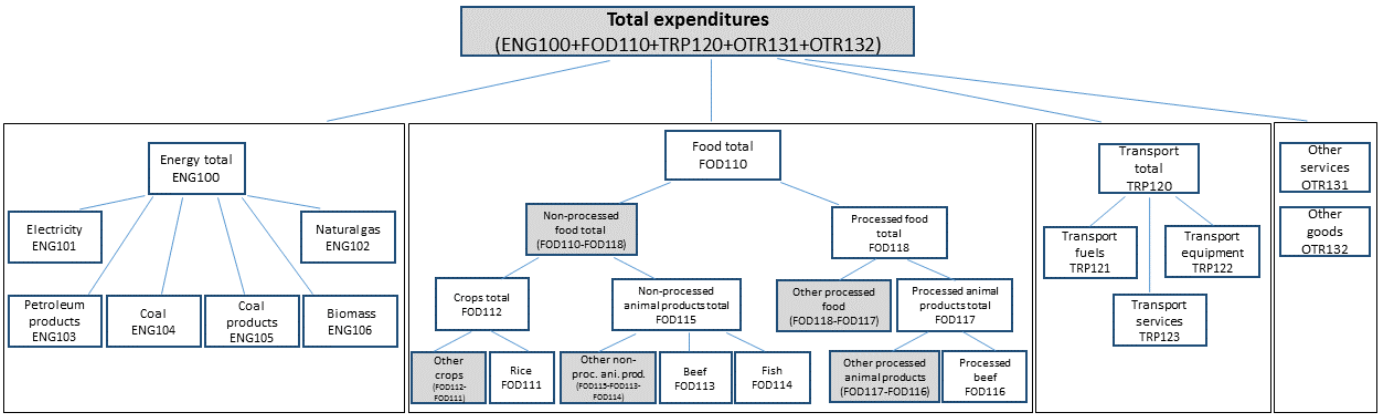

Figure 2: Household expenditure categories by variable[1]

2013 Indonesian household survey data

Data overview

The SUSENAS Survei Sosial Ekonomi Nasional (National Social Economic Survey) is a national survey effort undertaken by Badan Pusat Statistik (BPS – Statistics Indonesia) to capture country-specific demographic and economic information at the individual and household levels. SUSENAS collects information on basic demographics of the household members, as well as detailed information on expenditures, income, health, education, employment, housing, fertility, and access to technology.

As the world's fourth most populous country (after China, India, and the United States) (U.S. Census Bureau), Indonesia serves as a good representative for the iPETS ODC region. This is also because of the high quality and good availability of the Indonesian SUSENAS data (iPETS model wiki, 2017). SUSENAS was first implemented in 1963 and now collects basic information on householders annually, with more detailed information on income and expenditures collected every three years (Chen and Pitt, 2017).

The original Indonesian dataset used to produce data for iPETS was the 2002 SUSENAS Susenas Survei Sosial Ekonomi Nasional. That survey sampled more than 250,000 individuals living in more than 64,000 households. The 2013 survey, which we report on here, covered more than 1 million individuals living in nearly 300,000 sample households. All income and expenditure data reported here are in Indonesia's native currency, the Indonesian rupiah (IDR).

Data translation, cleaning, and processing

The 2013 dataset was obtained from BPS-Statistics Indonesia, and the original dataset and all corresponding documentation were written in Indonesian. Two graduate research assistants native to Indonesia helped translate the questionnaire, data codebook, and other related documents into English.

[1] ENG10x, FOD11x, TRP12x, OTR13x are variable labels for household expenditures on energy, food, transportation, and other categories. Shaded boxes are expenditure categories that are not explicitly included in Table 1 but that can be derived using other expenditure variables.

The translation took place over the course of two months and resulted in a complete dataset in English, which we subsequently worked with for the remainder of the analysis.

The 2013 survey consisted of two questionnaires—the "Principal" (Kor) questionnaire (file “VSEN13_K”) and the "Module" (Mod) questionnaire (file “VSEN13.MKP”). Raw data from these questionnaires were aggregated into nine data files that could be linked together using a unique household “serial number” variable common to all data files. Data provided by the survey was generally very comprehensive, with robust demographic information and very complete information on energy, food, and transport expenditures, so not much cleaning was needed for this data (see Appendix 1 for the full SPSS syntax used in this analysis). This information was combined into two files necessary for demographic and expenditure analysis. Income data, however, was incomplete.[2] When compared to the 2002 dataset, the new dataset had a variable for labor income but was missing other income and transfer information. Moreover, the labor income variable in the 2013 dataset only represented net labor income from each household member’s primary job, which underestimated total labor income because household members may have more than one job. In addition, no data was available for transfers or savings.

Imputation of income variables

To address the problem of missing income information in the dataset, we devised a method to impute some of the missing income variables based on the more complete income data from the 2002 Indonesian dataset. From the 2002 SUSENAS data, we found a positive linear relationship between labor income and total income among households across various demographic characteristics. Controlling for demographic characteristics (age, rural/urban, and household size) of the householders, the correlation coefficient between labor income and total income was 0.87, indicating a strong positive correlation (see Figure 3). Assuming the relationship between labor income and total income across households by demographic characteristics in 2002 remained the same in 2013, we calculated the ratios of total income to labor income in 2002 of different groups of households and multiplied the ratios by labor income values from the 2013 dataset to derive imputed values for total income. Similarly, we used the relationship between labor income and asset income across groups of households by demographic characteristics in the 2002 dataset to derive asset income for the 2013 dataset. Because values for non-monetary income in households weren’t available in the 2002 data, we were not able to impute those values for 2013.

[2] The complete 2013 BPS dataset does contain a data file with income information, but this file was not included with the files we obtained from BPS, and we were subsequently unable to obtain that file in time for our analysis.

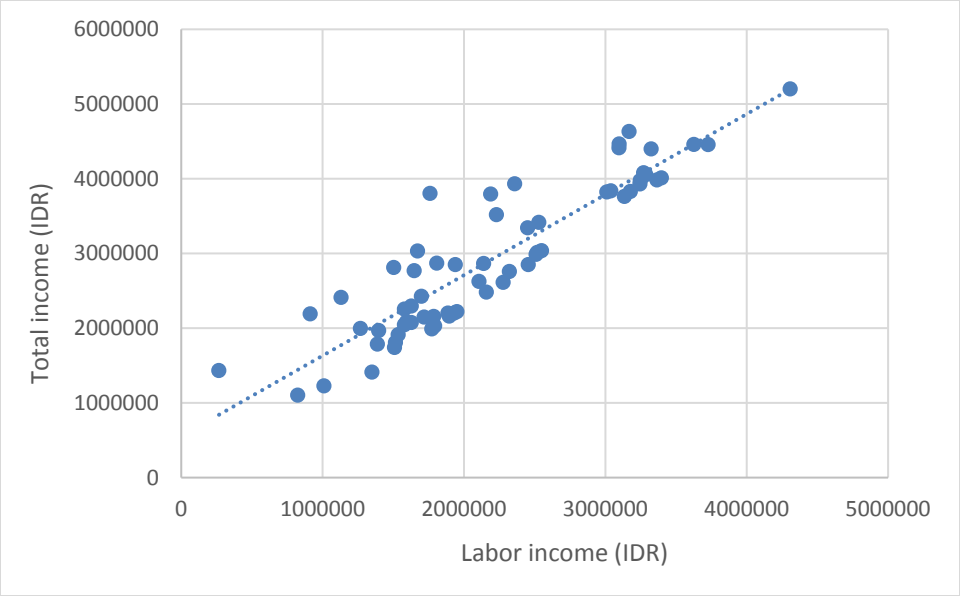

Figure 3: Relationship between per capita labor income and per capita total income of household groups for 2002 Indonesian dataset (Indonesian rupiah (IDR))

Although these imputation methods generally worked well, some caveats should be mentioned. First, because education data in the 2002 dataset was incomplete, we did not use education to distinguish between households in the development of the proportions. Instead, proportions were grouped by other demographic characteristics (urban/rural, household size, and age) and applied uniformly across education groups. Controlling for education would have likely improved the accuracy of the imputed data. In addition, the assumption that the relationship among income variables across households by demographic characteristics remained the same from 2002 to 2013 may not always hold for all household groups. Thus it's possible that the imputed values of total income and asset income for some household groups in 2013 dataset could be biased.

While the imputation of some income variables introduces additional assumptions and uncertainty into the household data, the most common use of income data in iPETS is employing labor income data to characterize relative differences in labor supply across household types. These differences, combined with projections of the changing composition of the population, allow the construction of a single representative household with changing characteristics (in this case, labor supply) over time. Since labor income is available directly from the data, it is not affected by the imputation approach.

Demographic characteristics of surveyed households

The 2013 SUSENAS data reported that just over half of Indonesian households lived in urban areas, and nearly all households in the country (99%) had access to electricity. Access to electricity did not differ substantially between rural and urban households—1.8% of rural households had no access to electricity, compared with 0.8% of urban households. The average household size was 4.6 people, and household sizes of both rural (4.5) and urban (4.6) households were nearly identical to the overall average. The largest household size reported was 21 people.

To adequately represent household types as they are used in the iPETS model, we aggregated household sizes into three groups: 1) one or two household members, 2) three household members, or 3) four or more household members. Over half of households had four or more people residing in them. Just under a quarter of households had three members, and the remaining quarter of households had one or two members. Most household heads were young to middle-aged (25-45). Older households (50-65) tended to have smaller households of one or two members, while younger households (20-40) tended to have four or more members.

Nearly half of all household heads had completed primary school, while just over one-quarter had completed a secondary or high school level education. Twenty percent of households had not completed any formal education, and only five percent had completed a college education. Educational compositions of households differed substantially between urban and rural areas (see Figure 4). Rural householders were nearly twice as likely to have no formal education and more likely to have only a primary school education, while urban householders were more than twice as likely to have completed high school and four times more likely to have a college degree.

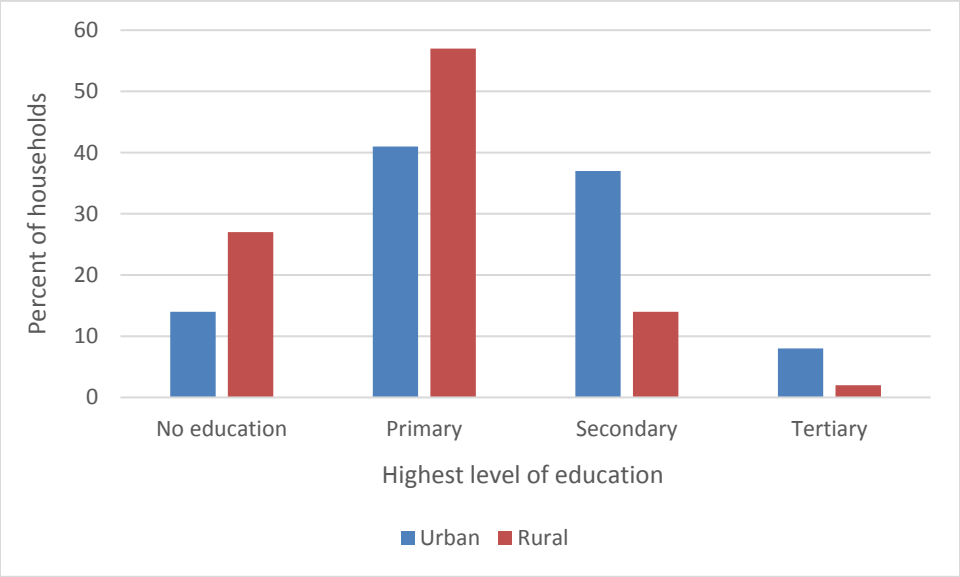

Figure 4: Highest level of education of household heads by urban or rural residence

Analysis of Income and Consumption Patterns

Income

Per capita labor income generally increased with age of the householder until age 54 and then dropped off thereafter, while the per capita asset income generally increased monotonically with age of householders (see Figure 5). Total income was also highest among middle-aged households. Though information on additional income sources was not available for the 2013 dataset, the imputed total income implies that younger and older households received additional income from government benefits and private transfers, which helped make up for lower labor income in these age groups. These findings are consistent with patterns from most other countries (Zigova, 2009).

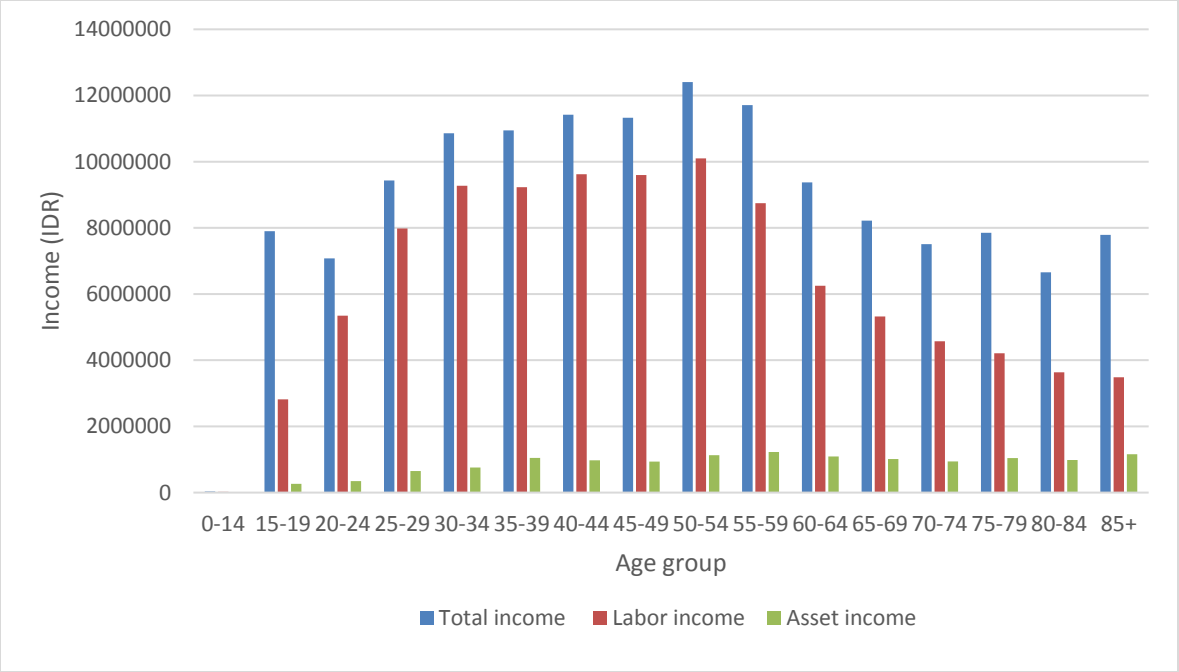

Figure 5: Total, labor, and asset income (per capita, Indonesian rupiah) by age of household head

Labor income was correlated with education level and, as expected, increased continuously with increasing education level of householders (see Figure 6). Smaller households also tended to have higher labor income per capita than larger households, which is consistent with previous findings that smaller households typically consist of a larger proportion of adults than children when compared to larger households (Zigova, 2009). Changes in asset income by education level and household size exhibited the same general patterns as labor income, although the changes were less dramatic.

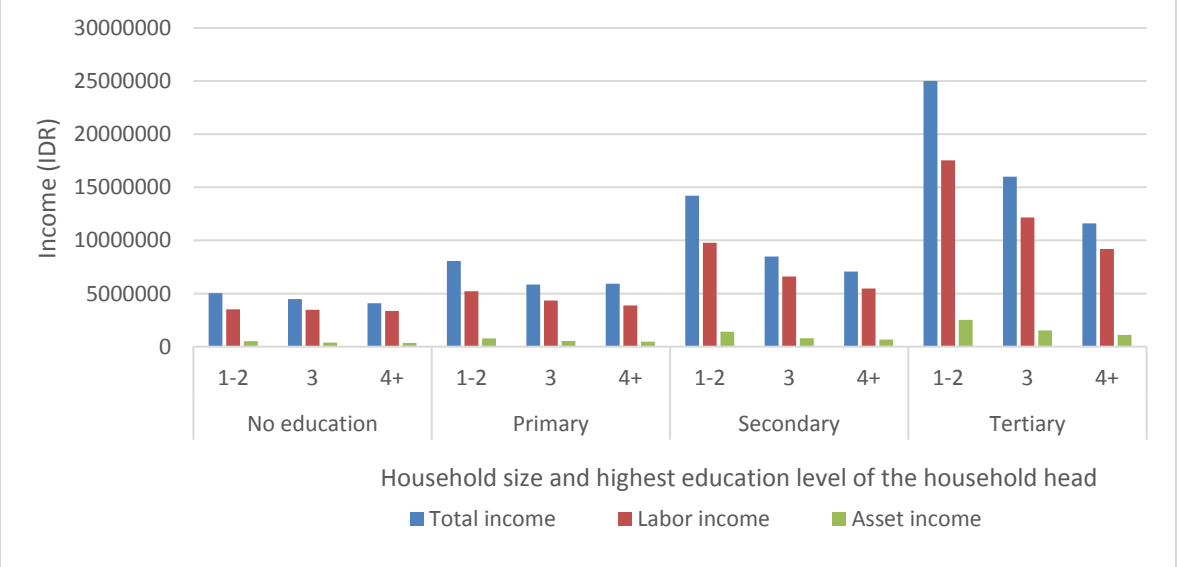

Figure 6: Total, labor, and asset income (per capita, Indonesian rupiah) by household size and highest education level of household head

All types of income were higher for households with access to electricity. Urban householders with access to electricity had the highest incomes in all categories, while rural householders without access to electricity had the lowest incomes in all categories (see Figure 7). Total income was nearly twice as high for households in both rural and urban areas with access to electricity compared to those without access to electricity.

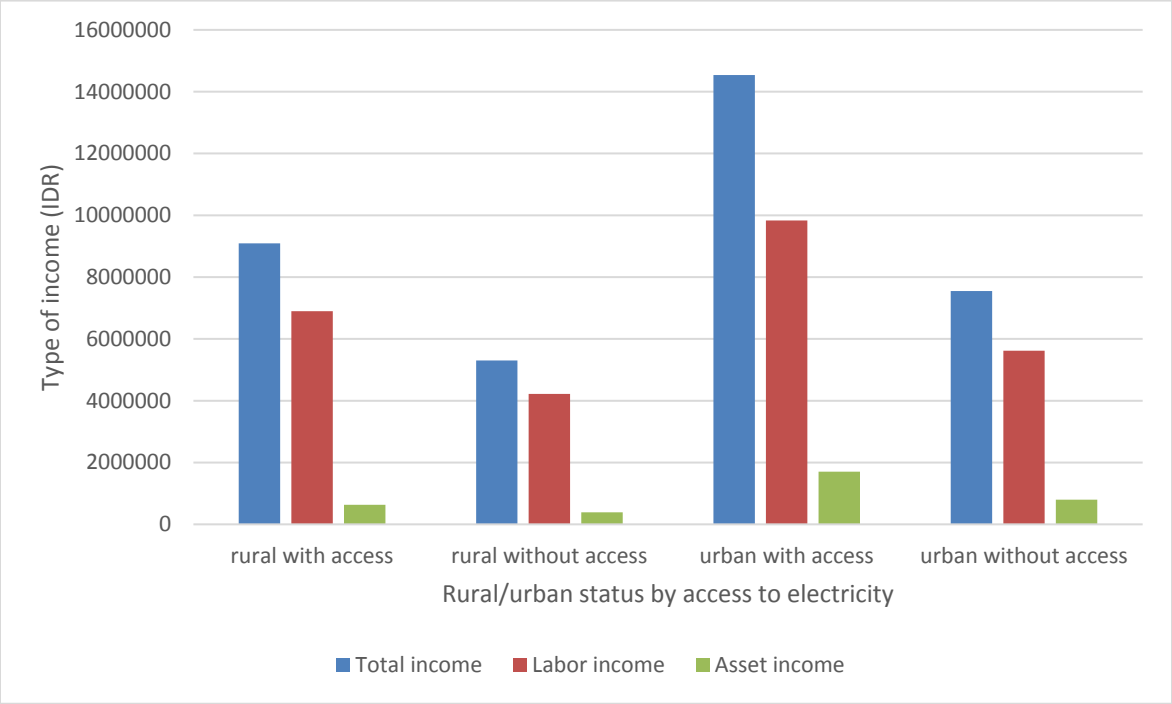

Figure 7: Total, labor, and asset income (per capita, Indonesian rupiah) by rural/urban status and access to electricity

Expenditures

Consistent with our previous analyses of data from other countries, we found that per capita expenditures were highest for households with heads aged in their late 20s and early 30s (see Figure 8), which required more spending for their larger households even though their income levels were not the highest. Spending for rural householders peaked at ages 30-34, while urban householders aged 25-39 spent the most.

Expenditures also increased consistently with increased education level of householders but declined with household size (see Figure 9). Householders with a college degree spent nearly three times as much as households with no education. Householders with no education spent similar amounts per capita on all goods and services, but for households with other education levels, the smallest households with one or two members spent nearly twice as much as did the largest households with four or more people.

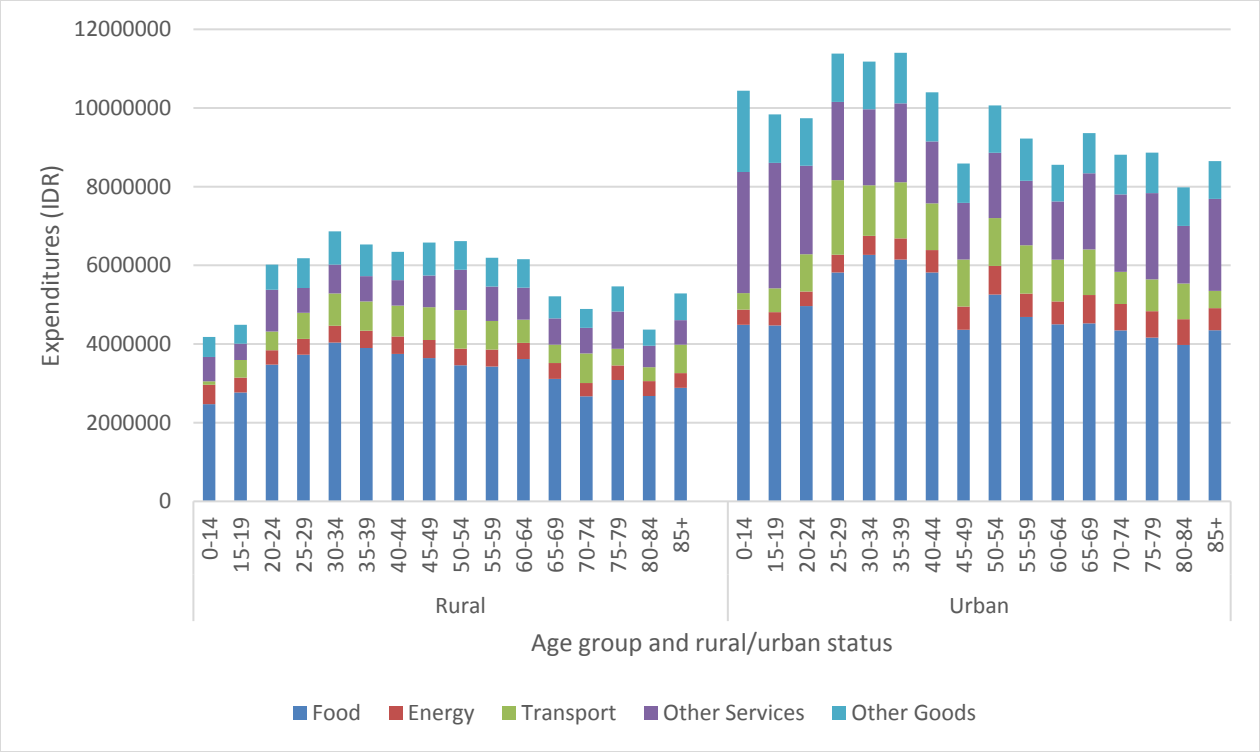

Figure 8: Household expenditures (per capita, Indonesian rupiah) by age group and rural or urban status

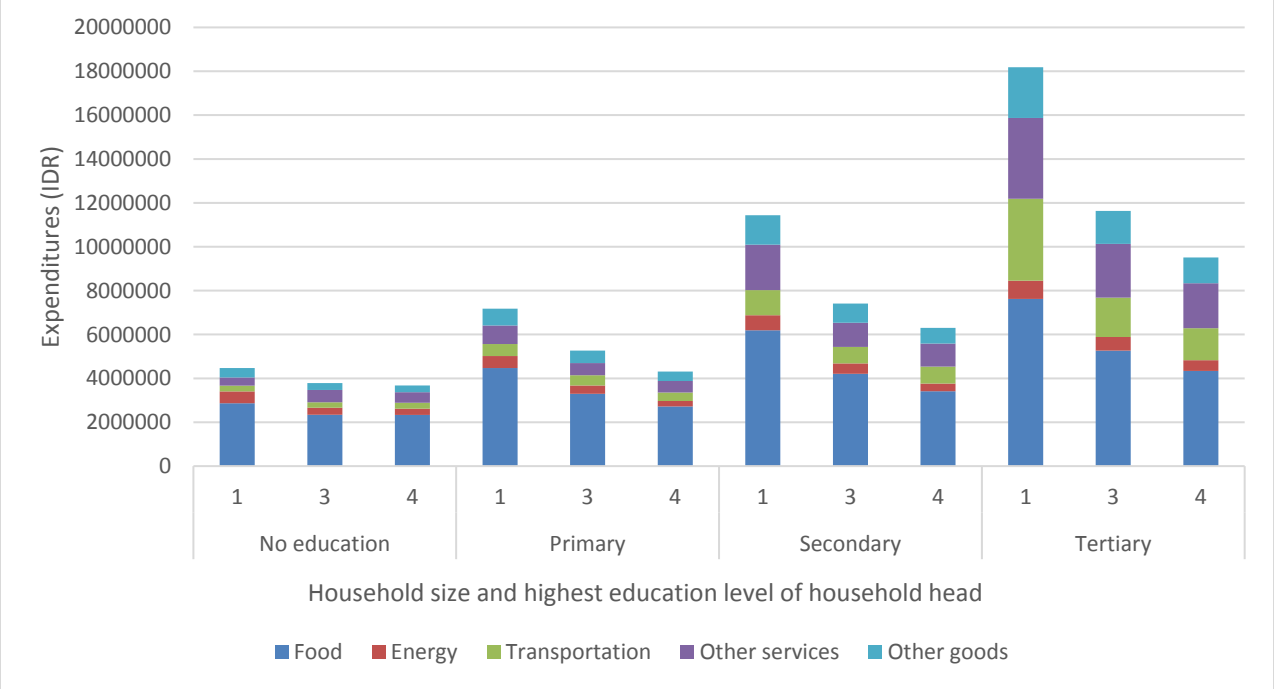

Figure 9: Household expenditures (per capita, Indonesian rupiah) by household size and highest education level of the household head

Households with varying demographic characteristics had not only different expenditure levels but also different expenditure structures. From our analysis, we observed a high proportion of total expenditures on food among Indonesian households (see Figure 10); this level of expenditure was higher than not only the high-income Organisation for Economic Co-operation and Development (OECD) countries but also many developing countries with similar income levels. This proportion of spending on food remains near 60% for most rural households and near 50% for most urban households for every age group, education level, and household size. This is consistent with the findings from our previous analysis of Indonesia (Zigova, 2009), and also with statistics from the World Bank's Global Consumption Database. (http://datatopics.worldbank.org/consumption/country/Indonesia).

Rural householders spent a slightly larger proportion of their income on energy than urban households, but energy expenditures were quite small and constant across age groups. This is likely explained by Indonesia's tropical climate, which needs no heating in the winter. In addition, air conditioning is not yet common in Indonesian households, particularly among low- and middle-income households. Only 4% of households surveyed reported having air conditioning in the home.

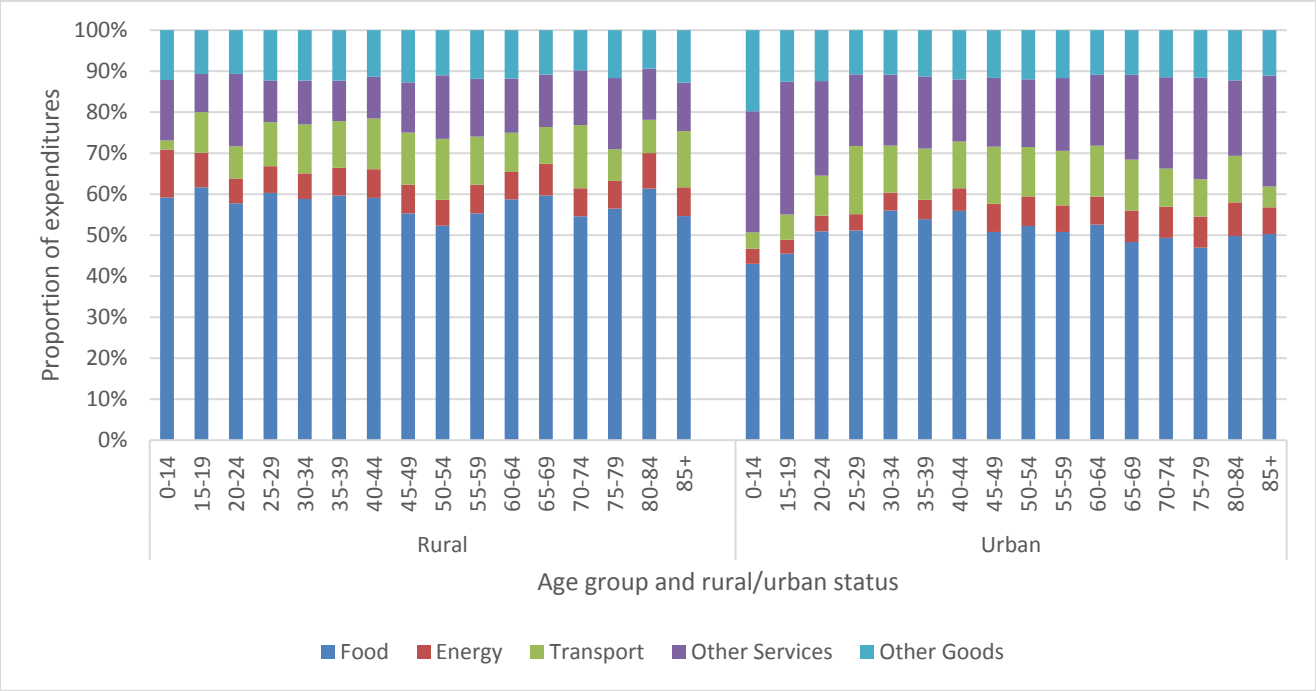

Figure 10: Proportion of household expenditures (per capita) by age group and rural or urban status

The proportion of expenditures on food and energy generally fell across all household sizes as education levels increased, a trend often observed with increasing income in other countries (see Figure 11). Conversely, expenditures on transportation, and particularly on other services and other goods (for education, health, recreation, etc.) increased across all household sizes with increasing education levels. More than half of all expenditures for households of all sizes with a college degree went to more discretionary goods and services compared to less than 30% of expenditures for those with no education.

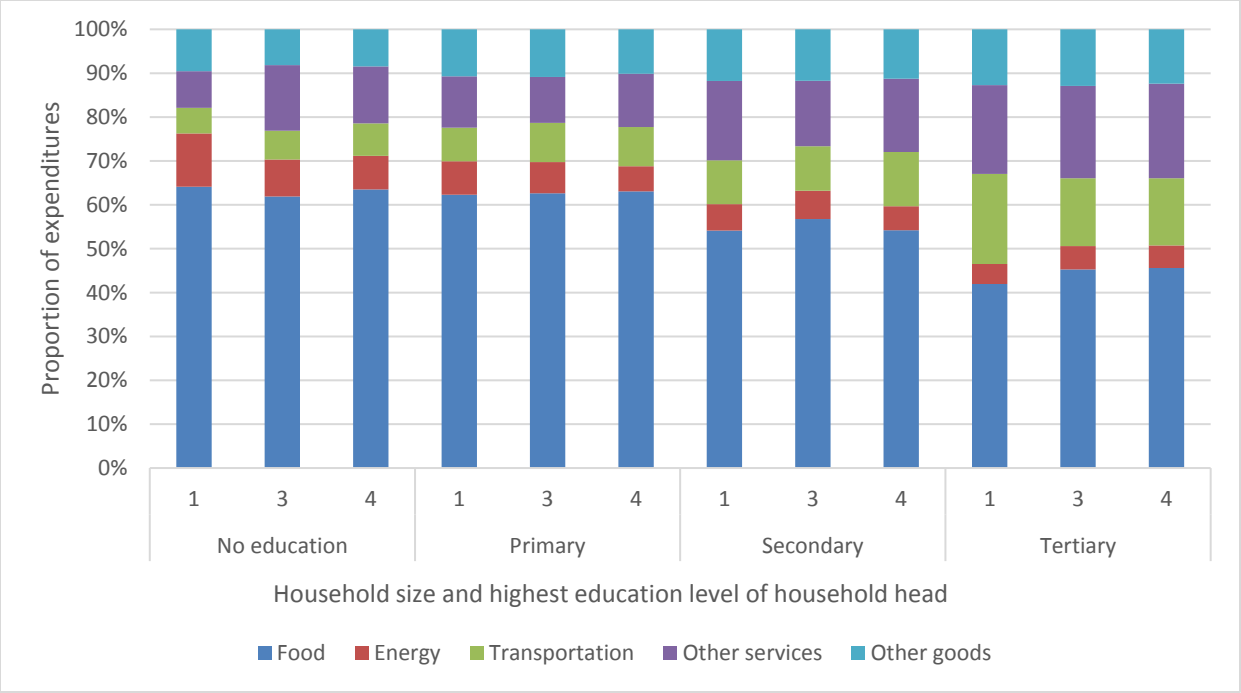

Figure 11: Proportion of household expenditures (per capita) by household size and highest education level of the household head

Our updated analysis of the 2013 Indonesian dataset included an analysis of expenditures by income decile. This analysis was not included in the analysis of the 2002 dataset. In general, urban households expended more in every category of goods and services per income decile than rural households and, in both rural and urban areas, total household expenditures increased with increasing income decile (see Figure 12). Rural householders in the highest income decile spent 1.5 times more on all goods and services than those in the next lowest income decile, and 6 times as much as those in the lowest income decile. A similar income disparity was observed among urban households. Urban householders in the highest income decile spent 1.8 times more on all goods and services than those in the next lowest income decile, and 4 times more than those in the lowest income decile. The wealthiest urban householders spent nearly 1.5 times more on all goods and services than the wealthiest rural householders. The income disparity between the poorest householders in rural and urban areas was even larger, with the poorest urban householders spending twice as much as the poorest rural householders. Higher income households in both rural and urban areas spent less proportionally on food and energy, while spending on transportation, other services, and other goods increased (see Figure 13).

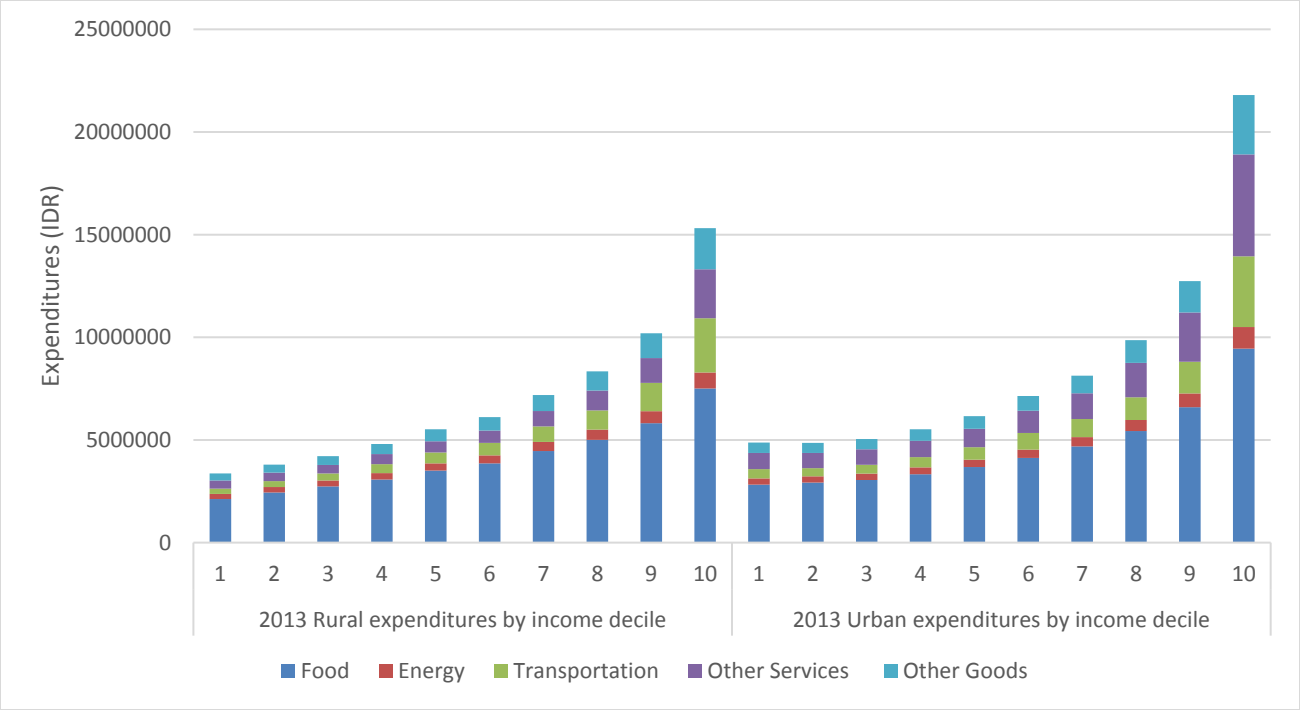

Figure 12: Comparison of rural and urban expenditures by income decile

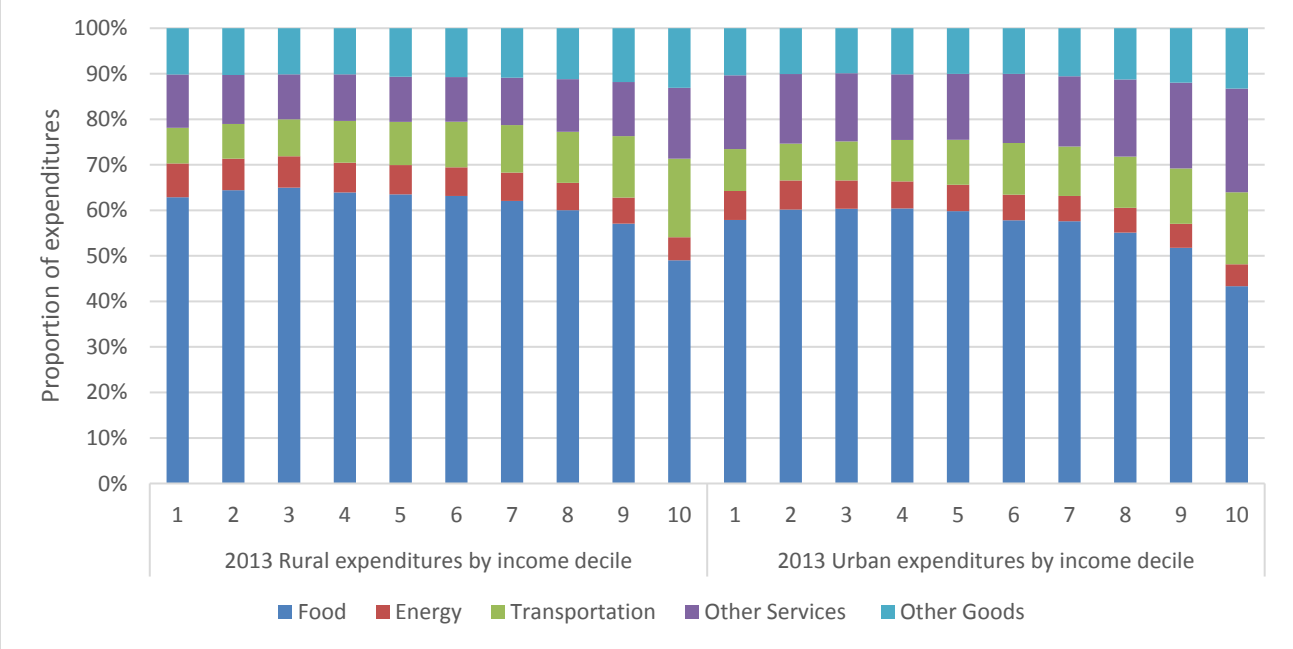

Figure 13: Comparison of the proportion of rural and urban expenditures by income decile

As expected, household expenditures increased with income among all rural and urban households with or without access to electricity (see Figures 14 and 15). Rural households without access to electricity were often located in remote areas not covered by electricity grids, while urban households without access to electricity were usually poor residents living in slum and squatter conditions. Even though

urban households generally enjoyed higher levels of income and expenditures, poor urban households without access to electricity had lower per capita income and expenditures than rural households with access to electricity. Total expenditures were nearly twice as high for both rural and urban areas with access to electricity than for those without.

Moreover, per capita household expenditures on average were lower than per capita income, indicating some savings by the households[3]. The overall relationships between income and expenditures also differed considerably between rural and urban households and across households with or without access to electricity. Figure 14 shows that expenditures increased faster among the urban households than the rural households; within rural or urban areas, expenditures increased faster among households without access to electricity than for their counterparts with access to electricity. Among the lowest income groups, the households with access to electricity generally spent more than those without access to electricity at the same income level. Urban households without access to electricity spent the least among the lowest income groups, (see red line in Figure 14), potentially because they may have been temporary migrants from rural areas trying to save money for their families. However, those households increased their expenditures the fastest with improved income.

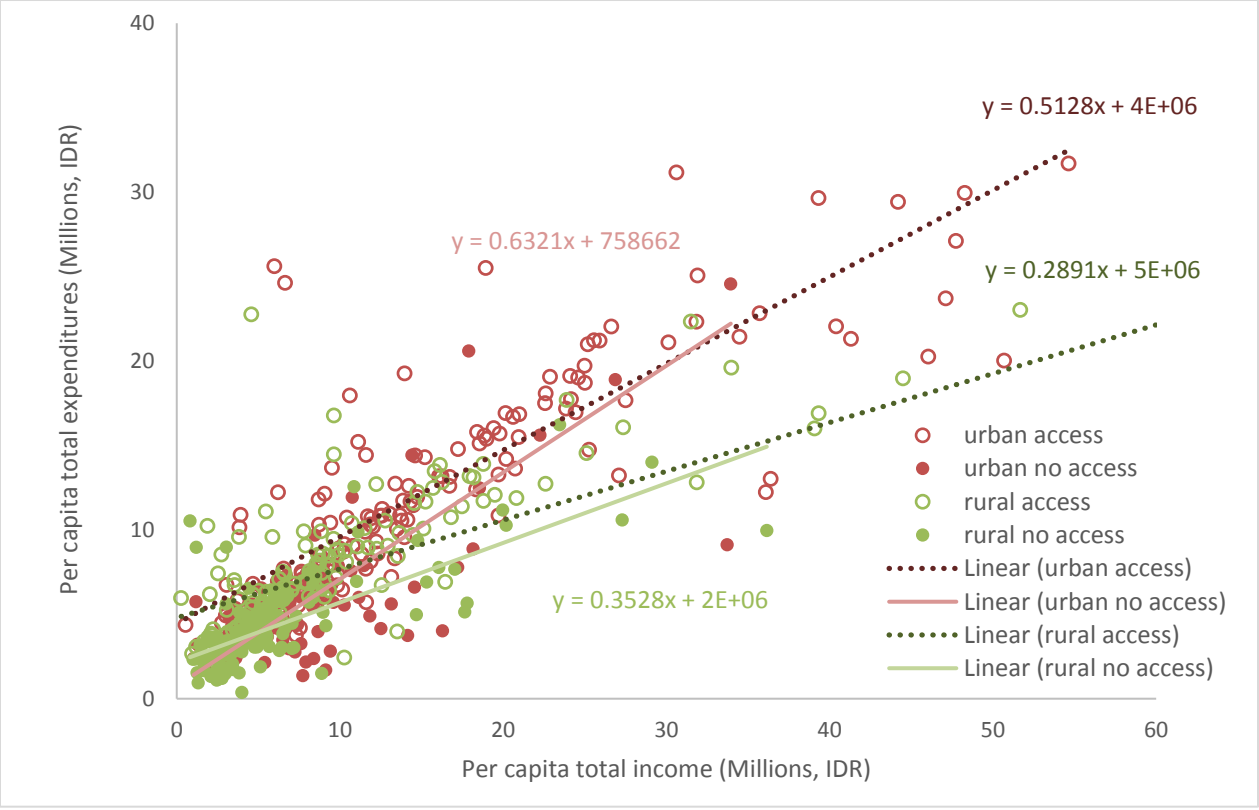

Figure 14: Per capita income and expenditures of rural and urban households with and without access to electricity

[3] Because savings information was not available in our 2013 SUSNAS dataset, we were unable to analyze this further.

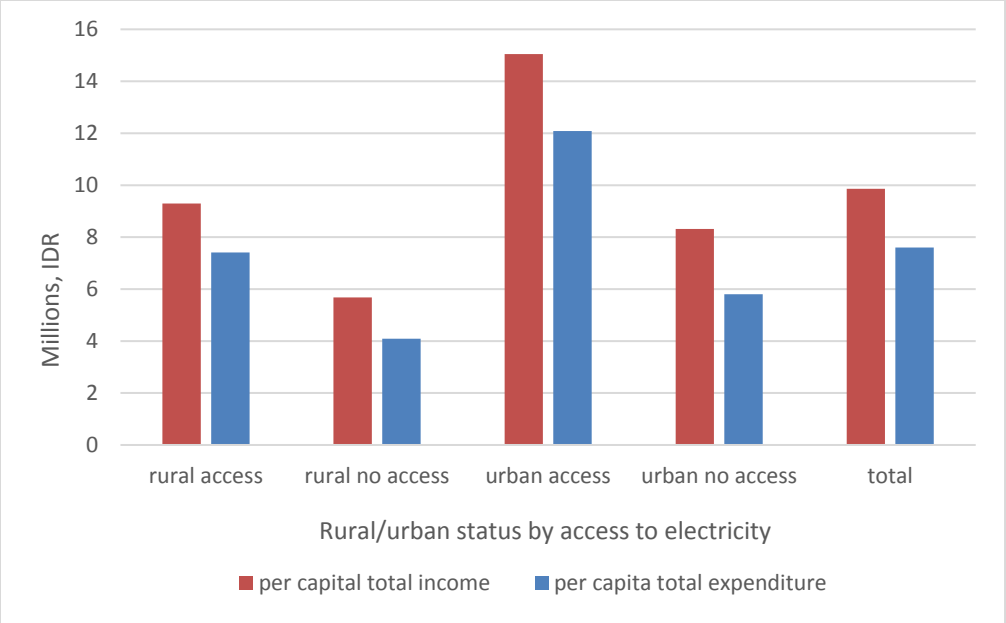

Figure 15: Average per capita income and expenditures of rural and urban households with and without access to electricity

Comparison between 2002 and 2013 data

In order to better quantify changes between the two updates of Indonesian household datasets for iPETS, we compared basic results from the 2002 and 2013 analyses. We adjusted the 2013 data to control for inflation using the World Bank's Consumer Price Index (https://data.worldbank.org/indicator/FP.CPI.TOTL?locations=ID). As the earlier analysis did not classify households by education level[4] and did not examine income deciles, we only compare the income and expenditures of the households by urban or rural status, age, and household size. Adjusted for inflation, income in rural areas increased by 36% compared to a 17% increase in urban areas between 2002 and 2013 (see Figure 16). Income disparity between urban and rural areas decreased during this time—in 2002, urban income was 1.9 times higher than rural income, compared to a factor of 1.7 times higher in 2013. Urban areas saw an 18% increase in expenditures during this time, while rural expenditures only increased by 6%. World Bank gross savings data shows that the savings rate in Indonesia increased by a factor of 1.7 between 2002 and 2013, which may help explain the implied increase in rural savings, but this data is for the country as a whole and is not broken down by urban or rural areas (https://data.worldbank.org/indicator/NY.GNS.ICTR.ZS?locations=ID).

[4] In an effort to facilitate a more robust comparison, we attempted to reconstruct the 2002 results to include education level. However, education level information from the 2002 dataset was incomplete, which resulted in insufficient education information for our analysis. Thus, the education variable was still not used in our re-analysis.

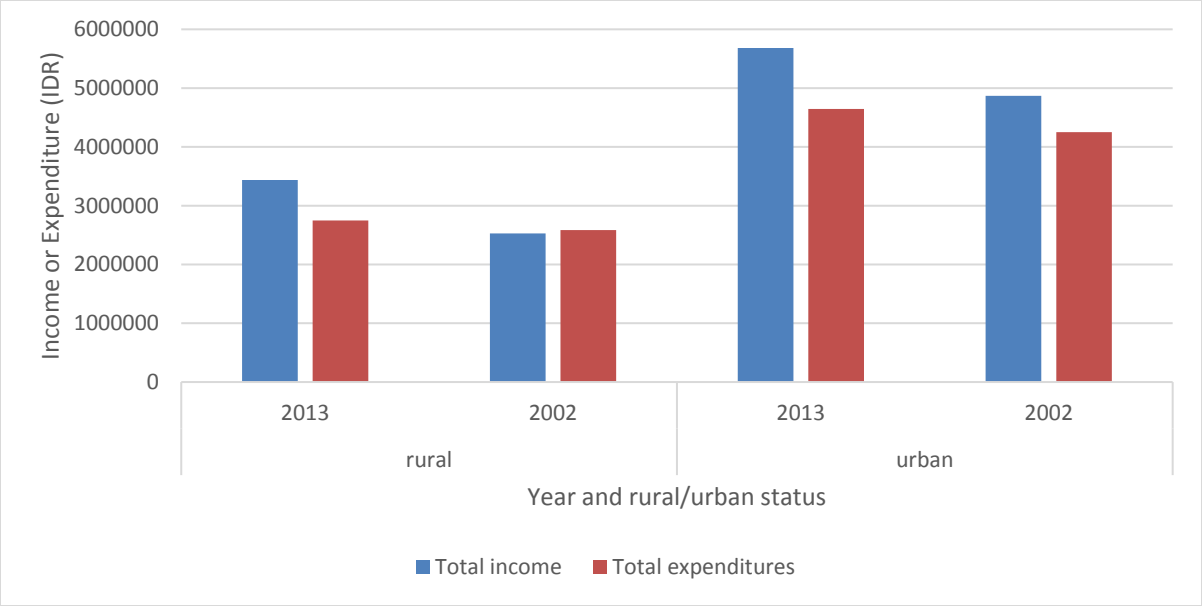

Figure 16: Comparison of total income and expenditures (per capita, Indonesian rupiah) by rural or urban status between 2002 and 2013

Total, labor, and asset income generally increased across age groups from 2002 to 2013. Middle-aged households saw significant increases in income, especially among households aged 50-59 (see Figure 17). Changes in income for older households aged 60 and above were relatively small. While most age groups experienced increased income, two young groups aged 0-14 and 20-24 reported 20% and 17%, respectively, less total income in 2013 than in 2002. Labor and asset income for these age groups also decreased at a similar rate, as did reported expenditures, which we report on shortly. The other reported decrease in labor income was for the 85+ age group, whose total income actually increased slightly due to an increase in asset income.

An examination of income by household size showed that the average income increased from 2002 to 2013 for households of all sizes (see Figure 18). Moreover, the overall pattern of decreasing per capita income with increasing household size for all types of income was more pronounced in 2013 than in 2002. Households with only one or two members saw the largest change in total income from 2002 to 2013, with an increase of 31%. Income in households with three members increased 9% compared to 12% for households with four or more members.

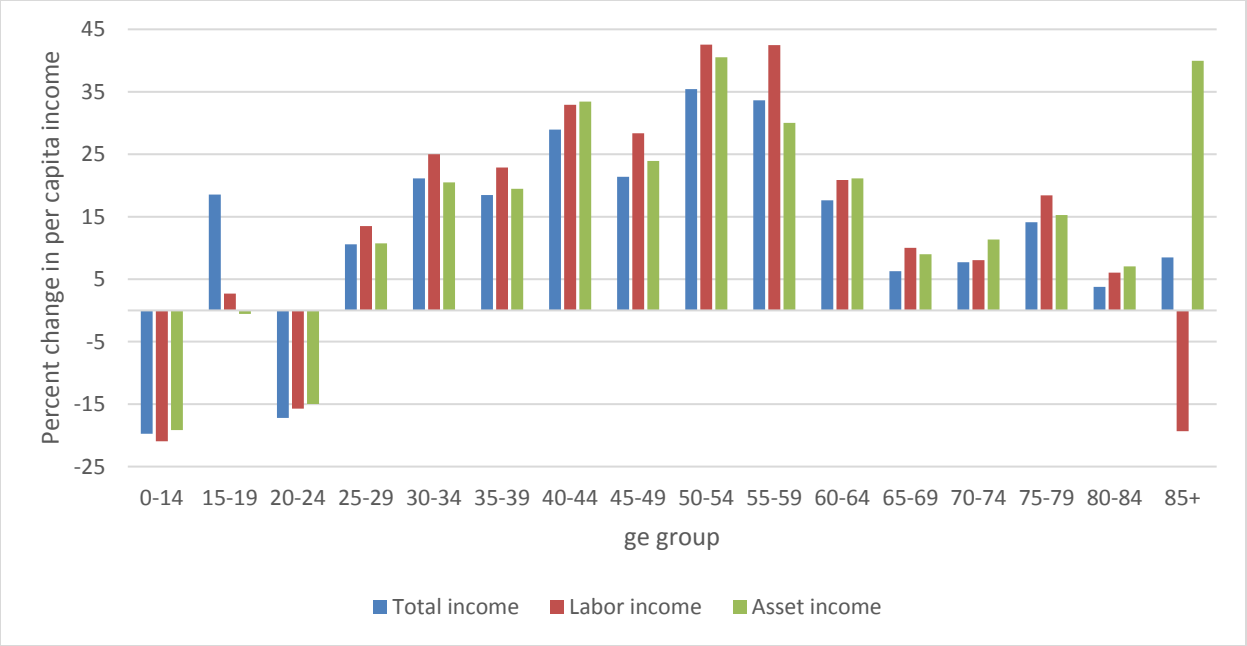

Figure 17: Percent change of total, labor, and asset income (per capita) by age group between 2002 and 2013

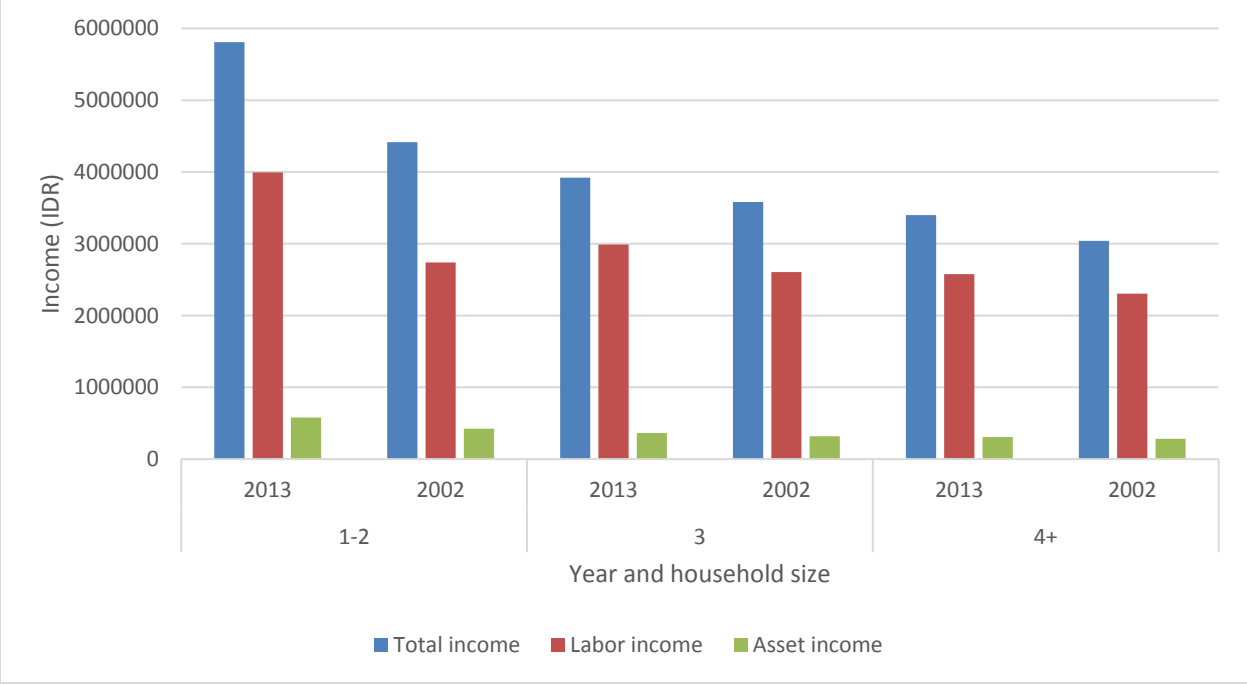

Figure 18: Comparison of total, labor, and asset income (per capita, Indonesian rupiah) by household size between 2002 and 2013

Similar to the changes in income, inflation-adjusted expenditures increased for most age groups between 2002 and 2013 (see Figure 19). The youngest and oldest households saw the largest increases

in expenditures. Householders aged 0-14 spent 39% more, while householders aged 80-84 and 85+ spent 16% and 8% more, respectively. The proportion of food expenditures fell across age groups from 2002 to 2013 while the share of expenditures on transportation, other services, and other goods rose, as would be expected with increased income (see Figure 20). Transportation expenditures were noticeably larger for most age groups, as economic development and urbanization greatly increased the number of cars, motorbikes, and other transportation options during this time. (Leung, 2016). The share of energy expenditures was very similar across all age groups and increased modestly from 2002 to 2013. Food expenditures across all household sizes decreased from 2002 to 2013, while expenditures on transportation, other services, and other goods increased. Energy expenditures increased for households with one, two, and three members, but remained similar for households with four or more people (see Figure 21).

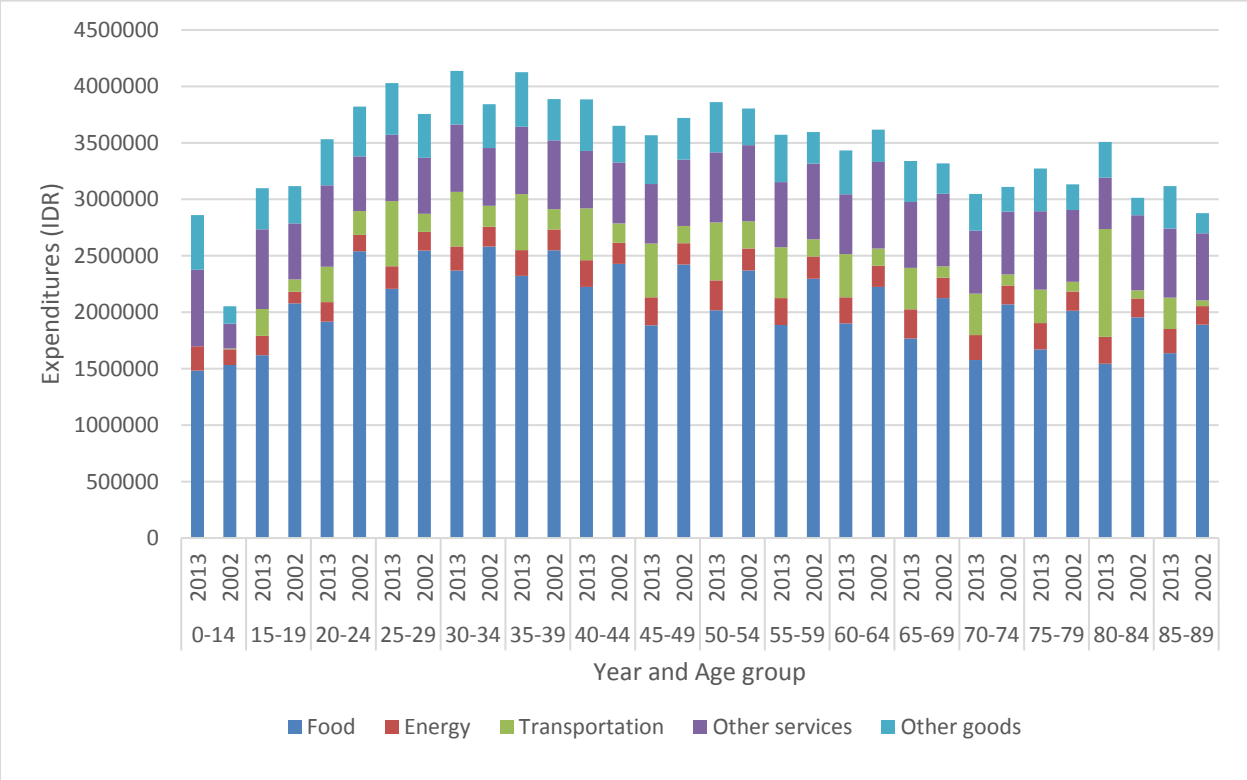

Figure 19: Expenditures in 2002 and 2013 (per capita, Indonesian rupiah) by age group for five major categories of goods and services

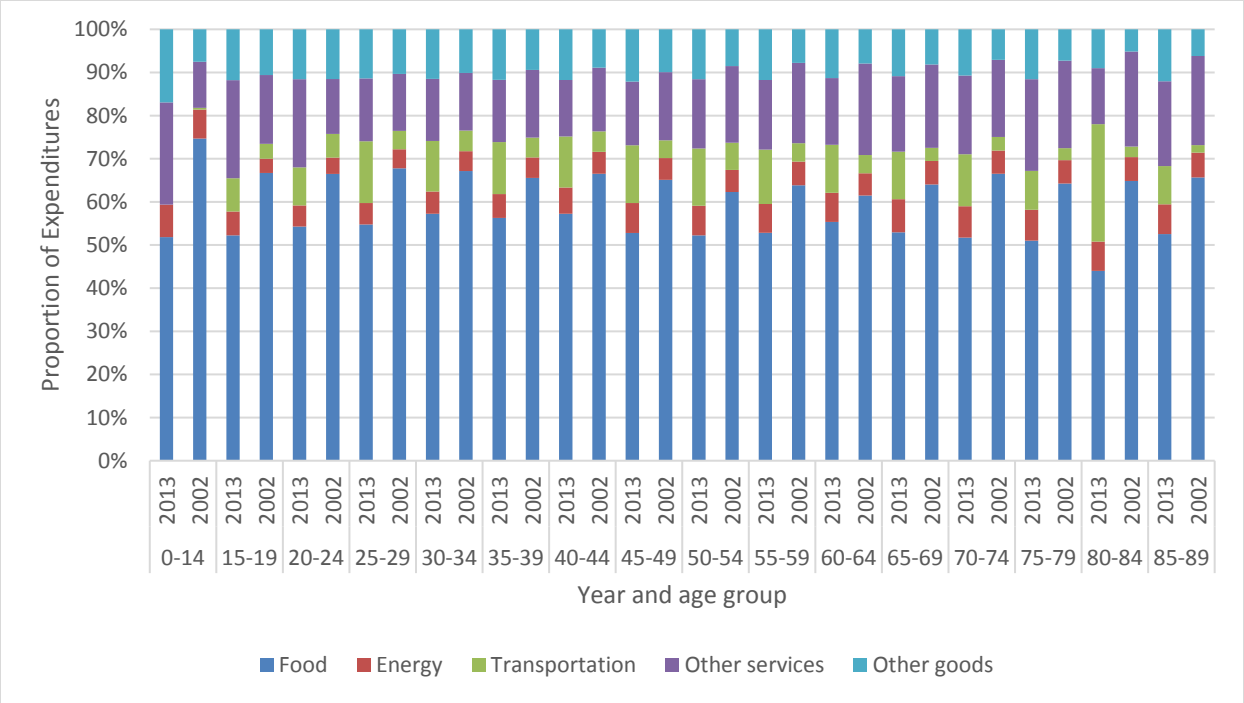

Figure 20: Proportion of expenditures (per capita) in 2002 and 2013 by age group for five major categories of goods and services

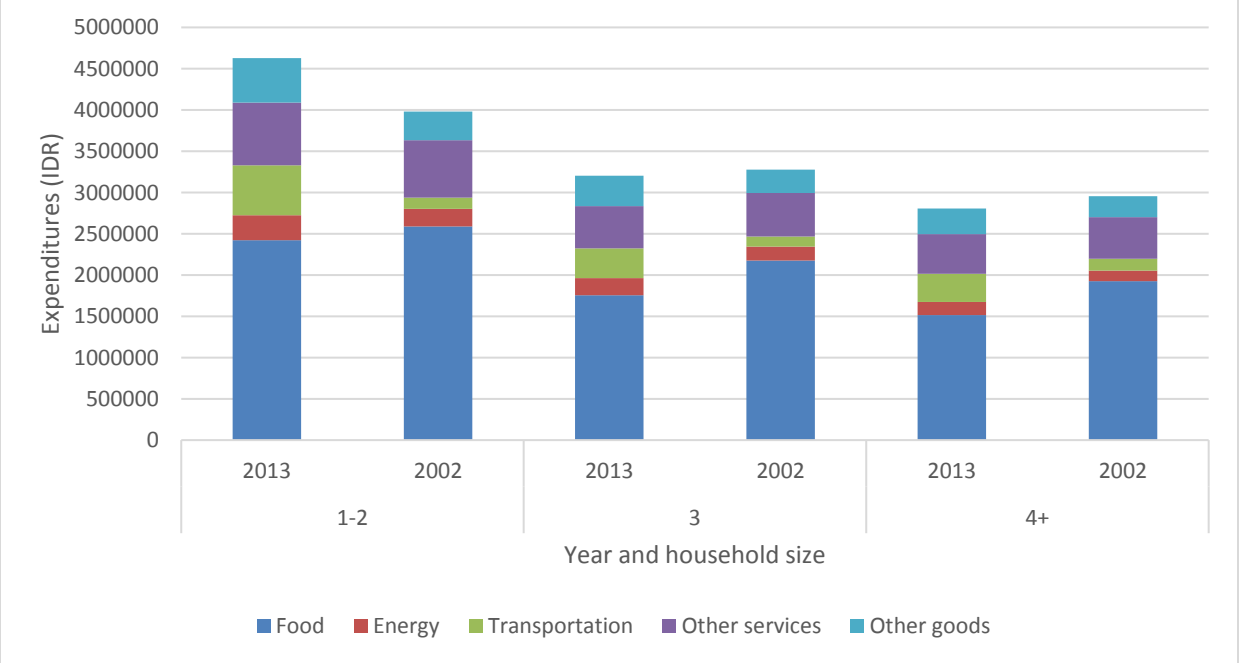

Figure 21: Expenditures (per capita, Indonesian rupiah) in 2002 and 2013 by household size for five major categories of goods and services

Conclusion

Our analysis of Indonesia's 2013 SUSENAS dataset updated input for the iPETS model and improved our understanding of the patterns of household income and expenditures in countries under socioeconomic and demographic transitions similar to Indonesia. The quality and coverage of this dataset was good and our translation, cleaning, and processing of the data went smoothly. Future dataset purchases should be checked more thoroughly initially to ensure that all expected data is obtained. Doing so for the 2013 Indonesian dataset would have allowed us to analyze income and savings information directly, rather than using an imperfect method to impute some income information.

Results indicated that higher income and expenditure levels among Indonesia's population were associated with higher levels of education, smaller household sizes, urban (versus rural) residence, and access to electricity. Consistent with previous analyses, Indonesian householders spent over half of their income on food, a high proportion even when compared to other developing countries. Energy expenditures were low and consistent across age groups, education levels, and household sizes due to the lack of heating needed in Indonesia's warm climate and the lack of air conditioning in Indonesian households. Between 2002 and 2013, income and expenditures generally increased across all demographic groups, particularly among the youngest and oldest age groups and smaller households of one to two people. Expenditure on transportation grew noticeably during this time, while the share of income spent on food fell, due to increasing economic development and urbanization.

These results further classified households by education level, in addition to existing demographic characteristics (age, household size, and rural/urban residence), and also differentiated results by income deciles and electricity access for urban and rural areas. This improved information will continue to help understand how key aspects of society may evolve in the future and how they might interact with a changing climate. Other similar analyses have been carried out to update iPETS input data for other regions, and some of these analyses will be reported in planned, additional NCAR Technical Notes.

References

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Appendix 1. Syntax used for 2013 Indonesian analysis

*Syntax ultimately creates three master files: 1) one with all individuals' demographic information, 2) one with all income and expenditure information for households, and 3) a combined file with all information.

*Use Kor13IND_English file to create initial demographic variables. This file does not contain any information about electricity access, so this will have to be obtained from a separate file.

****AGE****

*Recode age variable.

```
RECODE UMUR (0 thru 14=1) (15 thru 19=2) (20 thru 24=3) (25 thru 29=4) (30 thru 34=5) (35 thru 39=6) (40 thru 44=7) (45 thru 49=8) (50 thru 54=9) (55 thru 59=10) (60 thru 64=11) (65 thru 69=12) (70 thru 74=13) (75 thru 79=14) (80 thru 84=15) (85 thru Highest=16) INTO agegroup.

FORMATS agegroup (F2.0).

EXECUTE.
```

EDUCATION*

*Recode education variable.

```
RECODE B5R17 (1=1) (2=2) (3=2) (4=2) (5=2) (6=2) (7=2) (8=3) (9=3) (10=3) (11=3) (12=3) (13=3) (14=4) (15=4) INTO edugroup.

EXECUTE.

VARIABLE LABELS edugroup 'Education'.

VALUE LABELS edugroup 1 'E1' 2 'E2' 3 'E3' 4 'E4'.

EXECUTE.
```

****HOUSEHOLD SIZE****

*Recode household size variable into three groups to be used later in analysis.

```
RECODE NART (1=1) (2=1) (3=3) (4=4) (ELSE=4) INTO hhsize.

VARIABLE LABELS hhsize 'Household size'.

FORMATS hhsize (F1.0).

EXECUTE.
```

INCOME*.

*Compute yearly income per individual from monthly income variable.

```
COMPUTE ICM141y=(B5R29*12.1666).

EXECUTE.
```

*Sort cases for following aggregation.

```
SORT CASES BY URUT(A).
```

*Export original household size (NART) and labor income by household ID (URUT) in order to add to consumption/income file to compute per capita variables.

```
AGGREGATE

 /OUTFILE= 'original_hhsize_laborincome.sav'

 /PRESORTED

 /BREAK=URUT

  /hhsize_orig=MAX(NART)

  /ICM141maxy=SUM(ICM141y).
```

*An outfile of simplified variables needed was saved using code below.

```
SAVE OUTFILE=' KOR13IND_English_121917 only vars needed for analysis.sav'

/DROP=B1R1 B1R2 B1R7 B1R8 JAHAT1 JAHAT2 PERGI1 PERGI2 PERGI3 AKTE1 AKTE2 PRASKL1
PRASKL2 PRASKL3 PRASKL4 B5_TL1 B5_TL2 B5_TT1 B5_TT2 B5_IBU B5_INFO B5R1A B5R1B
B5R1C B5R1D B5R1E B5R1F B5R1G B5R1H B5R2 B5R3 B5R4A B5R4B1 B5R4B2 B5R4B3 B5R5
B5R6A B5R6B B5R6C B5R6D B5R6E B5R6F B5R6G B5R6H B5R7 B5R8 B5R9A B5R9B B5R9C B5R9D
B5R9E B5R9F B5R10A B5R10B B5R11A B5R11B B5R12A B5R12B B5R12C B5R12D B5R12E
B5R13A B5R13B1 B5R13B2 B5R13B3 B5R14 B5R15 B5R16 B5R18A B5R18B B5R19A B5R19B
B5R19C B5R20 B5R21A B5R21B B5R21C B5R21D B5R21E B5R21F B5R21_A B5R21_B B5R21_BL
B5R22 B5R23A B5R23B B5R24A1 B5R24A2 B5R24A3 B5R24A4 B5R24B B5R25 B5R26 B5R27A
B5R27B B5R28A B5R28B B5R30 B5R31 B5R32 B5R33 B5R34A1 B5R34A2 B5R34A3 B5R34B1
B5R34B2 B5R34B3 B5R34C1 B5R34C2 B5R34C3 B5R35 B5R36 B5R37 B5R38 B5R38L
/COMPRESSED.
```

*Use KOR13RT_English file to compute electricity access. Only three variables were needed from this file: 1) URUT - household ID, 2) B6R14A - light source, and 3) B6R15 - main fuel for cooking, so these variables were saved to a new file using code below after sorting cases.

*Sort cases.

```
SORT CASES BY URUT(A).
```

```
SAVE OUTFILE=’KOR13RT_English_access variables only.sav'

 /DROP=B1R1 B1R2 B1R5 B1R7 B1R8 B1R11 B2R1 B2R2 B2R3 B2R4 B2R5 B4BR1 B4BR1A B4BR1B
 B4BR1C B4BR1D B6R1 B6R2 B6R3 B6R4 B6R5 B6R6 B6R7 B6R8 B6R9A B6R9B B6R10 B6R11
 B6R11_A B6R12 B6R13A B6R13B B6R13C B6R14B B7R1A B7R1BK2R1 B7R1BK3R1 B7R1BK4R1
 B7R1BK2R2 B7R1BK3R2 B7R1BK4R2 B7R1C B7R2A B7R2B B7R2C B7R3A B7R3B B7R3C B7R3D
 B7R3E B7R3F B7R3G B7R3H B7R3I B7R3J B7R4A B7R4B1 B7R4B2 B7R4B3 B7R4B4 B7R4B5
 B7R4B6 B7R4B7 B7R4B8 B7R4B9 B7R4B9L B7R5A B7R5B B7R5C B7R5D B7R5E B7R5F B7R5G
 B7R5GL B7R6A B7R6B B7R6C B7R6D B7R6E B7R6F B7R6G B7R6H B7R6I B7R7A B7R7B B7R7C
 B7R7D B7R7E B7R8A B7R8B B7R8C B7R8D B7R8E B7R8F B7R8FL B8R1 B8R2A B8R2B B8R2C
 B8R3A B8R3B B9R1A B9R1AL B9R1B FWT_TAHUN Light_source urban B6R15 /COMPRESSED.

*Use merge command to join access variables with file with remainder of demographic variables.

MATCH FILES /FILE='KOR13IND_English_121917 only vars needed for analysis.sav'

 /FILE='KOR13RT_English_access variables only.sav'

  /BY URUT.

EXECUTE.

SAVE OUTFILE='file1_all demographic variables 121917.sav'.

****URBAN/RURAL ELECTRICITY ACCESS****.

*Using new merged file, recode lighting variable to indicate access.

RECODE B6R14A (1=1) (2=1) (3=0) (4=0) (5=0) (MISSING=1) INTO elect_access.

EXECUTE.

VARIABLE LABELS  elect_access 'Access to electricity'.

VALUE LABELS elect_access 1 'Yes' 0 'No'.

EXECUTE.

*Compute Urban and Rural access variables.

DO IF  (B1R5=1 and elect_access=1).

RECODE B1R5 (1=1) INTO urban.

Else if (B1R5=1).

Recode B1R5 (1=2) INTO urban.

END IF.
```

```
DO IF (B1R5=2 and elect_access=1).

RECODE B1R5 (2=3) INTO urban.

Else if (B1R5=2).

Recode B1R5 (2=4) INTO urban.

End If.

EXECUTE.

VARIABLE LABELS  urban 'Urban/rural'.

EXECUTE.

VALUE LABELS urban 1 'urbanacs' 2 'urbannoacs' 3 'ruralacs' 4'ruralnoacs'.

execute.
```

NEW FILE - Changed files for following code. Will join files by URUT variables later.

*Compute food variables using 'BLOK41_all food kodes_1016_USE' file. Note that consumption information is listed for a period of the past 7 days, so we multiplied by a factor of 52.142 (365/7) to obtain consumption information for whole year.

*BEGIN FOOD VARIABLES.

```
WEIGHT BY weind.
```

*This code is for FOD110 - Total food.

```
IF  (kode = 1 or kode = 10 or kode = 20 or kode = 53 or kode = 71 or kode = 85 or kode = 115 or kode = 127 or kode = 151 or kode=158 or kode = 167 or kode = 181 or kode = 191 or kode = 223)

FOD110y=SUM(b41k5)*52.142.

EXECUTE.
```

*This code is for FOD111 - Rice consumption.

```
IF  (kode= 2 or kode = 3 or kode = 6) FOD111y=SUM(b41k5)*52.142.

EXECUTE.
```

*This code is for FOD112 - Total crops.

```
IF  (kode = 1 or kode = 10 or kode = 85 or kode = 115 or kode = 127 or kode = 151 or kode=158 or kode = 167 or kode = 183 or kode = 184 or kode = 185 or kode = 223)
```

```
FOD112y=SUM(b41k5)*52.142.

EXECUTE.

*This code is for FOD113 - beef.

IF  (kode = 54 or kode = 55 or kode = 56) FOD113y=SUM(b41k5)*52.142.

EXECUTE.

*This code is for FOD114 - consumption of fish.

IF  (kode = 20) FOD114y=SUM(b41k5)*52.142.

EXECUTE.

*This code is for FOD115 - total animal products.

IF  (kode = 20 or kode = 53 or kode = 71)

FOD115y=SUM(b41k5)*52.14.

EXECUTE.

*This code is for FOD116 - processed beef.

IF  (kode = 62 or kode = 63 or kode = 64)

FOD116y=SUM(b41k5)*52.14.

EXECUTE.

*This code is for FOD117 - processed animal products.

IF  (kode = 62 or kode = 63 or kode = 64 or kode = 79 or kode = 80 or kode = 81 or kode = 82 or
kode = 83 or kode = 84)

FOD117y=SUM(b41k5)*52.142.

EXECUTE.

*This code is for FOD118 - total processed food.

IF  (kode = 62 or kode = 63 or kode = 64 or kode = 79 or kode = 80 or kode = 81 or kode = 82 or
kode = 83 or kode = 84 or kode=151 or kode = 158 or kode = 182 or kode = 186 or kode = 187 or
kode = 188 or kode = 189 or kode = 190)

FOD118y=SUM(b41k5)*52.142.

EXECUTE.
```

```
WEIGHT OFF.
```

*Save results.

*Sort in advance of aggregate command.

```
SORT CASES BY urut(A).
```

*Aggregate out food variables. Used sum command to get all total food expenditures per household.

```
AGGREGATE
  /OUTFILE= 'C:\Users\laidlaw\Documents\Household_survey_data\Indonesia_SUSENAS
2013\Translated Data\SPSS format USE\Final files for shared drive
0118\aggregated_food_1016.sav'
  /PRESORTED
  /BREAK=urut
  /WEIGHT=FIRST(weind)
  /FOD110maxy=SUM(FOD110y)
  /FOD111maxy=SUM(FOD111y)
  /FOD112maxy=SUM(FOD112y)
  /FOD113maxy=SUM(FOD113y)
  /FOD114maxy=SUM(FOD114y)
  /FOD115maxy=SUM(FOD115y)
  /FOD116maxy=SUM(FOD116y)
  /FOD117maxy=SUM(FOD117y)
  /FOD118maxy=SUM(FOD118y).
```

NEW FILE - Changed files for following code. Will join files by URUT variables later.

*Compute energy, transportation, and other goods and services variables using 'BLOK42_all other kodes_1016_USE' file.

*BEGIN ENERGY VARIABLES. (Using same file as food variables).

*To calculate energy expenditures, we used the variable that recorded consumption for the previous 3 months, so we multiplied by a factor of 4 to obtain consumption information for the entire year.

```
WEIGHT BY WEIND.

*This code is for ENG100 - energy total.

IF  (kode = 238 or kode = 242 or kode = 244 or kode = 246 or kode = 250 or kode = 253 or kode =
254) ENG100y=SUM(B42K6)*4.

EXECUTE.

*This code is for ENG101 - electricity consumption.

IF  (kode = 238) ENG101y=SUM(B42K6)*4.

EXECUTE.

*This code is for ENG102 - natural gas consumption.

IF  (kode = 242 or kode = 244) ENG102y=SUM(B42K6)*4.

EXECUTE.

*This code is for ENG103 - petroleum products.

IF  (kode = 246 or kode = 250) ENG103y=SUM(B42K6)*4.

EXECUTE.

*We did not calculate ENG104y (coal) because it was impossible to separate coal from coal products as
recorded in the survey.

*This code is for ENG105 - coal products.

IF  (kode = 253) ENG105y=SUM(B42K6)*4.

EXECUTE.

*This code is for ENG106 - biomass.

IF  (kode = 254) ENG106y=SUM(B42K6)*4.

EXECUTE.

WEIGHT OFF.

*END ENERGY VARIABLES.

*BEGIN TRANSPORTATION VARIABLES.

*Calculate transportation expenditures using same 'BLOK42_all other kodes_1016_USE' file.
```

*To calculate energy expenditures, we used the variable that recorded consumption for the previous 3 months, so we multiplied by a factor of 4 to obtain consumption information for the entire year.

WEIGHT BY WEIND.

*This code is for TRP120 - transport total.

IF (kode = 292 or kode = 294 or kode = 296 or kode = 297

or kode = 298 or kode = 327) TRP120y=SUM(B42K6)*4.

EXECUTE.

*This code is for TRP121 - transport fuels.

IF (kode= 292 or kode = 294 or kode = 296) TRP121y=SUM(B42K6)*4.

EXECUTE.

*This code is for TRP122 - transport equipment.

IF (kode = 327) TRP122y=SUM(B42K6)*4.

EXECUTE.

*This code is for TRP123 - transport services.

IF (kode = 297 or kode = 298) TRP123y=SUM(B42K6)*4.

EXECUTE.

WEIGHT OFF.

*END TRANSPORTATION VARIABLES.

*BEGIN OTHER SERVICES AND OTHER GOODS VARIABLES.

*Calculate other services and other goods expenditures using same 'BLOK42_all other kodes_1016_USE' file.

WEIGHT BY WEIND.

*This code is for OTR131 - other services.

IF (kode = 233 or kode = 234 or kode = 236 or kode = 251 or kode = 256 or kode = 257 or kode = 258 or kode = 260 or kode = 264 or kode = 269 or kode = 270 or kode = 271 or kode = 272 or kode = 273 or kode = 274 or kode = 275 or kode = 278 or kode = 280 or kode = 281 or kode = 282 or kode = 283 or kode = 285 or kode = 286 or kode = 287 or kode = 299 or kode = 300 or

```
        kode = 301 or kode = 302 or kode = 328 or kode = 329 or kode = 333 or kode = 334 or kode =
        335 or kode = 337)

        OTR131y=SUM(B42K6)*4.

        EXECUTE.

*This code is for OTR132 - other goods.

        IF (kode = 255 or kode = 259 or kode = 262 or kode = 263 or kode = 265 or kode = 266 or kode =
        267 or kode = 268 or kode = 276 or kode = 277 or kode = 279 or kode = 284 or kode = 288 or
        kode = 289 or kode = 290 or kode = 303 or kode = 313 or kode = 314 or kode = 315 or kode =
        316 or kode = 317 or kode = 318 or kode = 319 or kode = 320 or kode = 321 or kode = 322 or
        kode = 323 or kode = 324 or kode = 325 or kode = 326)

        OTR132y=SUM(B42K6)*4.

        EXECUTE.

        WEIGHT OFF.

*END OTHER SERVICES AND OTHER GOODS VARIABLES.

*BEGIN TAX AND SAVINGS VARIABLES.

*Calculate other services and other goods expenditures using same 'BLOK42_all other kodes_1016_USE'
file.

        WEIGHT BY WEIND.

*This code is for TAX155 - income tax.

        IF  (kode = 336) TAX155y=SUM(B42K6)*4.

        EXECUTE.

*This code is for TAX156 - total tax.

        IF  (kode = 331 or kode = 332 or kode = 336) TAX156y=SUM(B42K6)*4.

        EXECUTE.

        WEIGHT OFF.

*Sort in advance of aggregate command.

        SORT CASES BY URUT(A).

*END TAX AND SAVINGS VARIABLES.
```

*Save file.

*Aggregate out all energy, transportation, other services, other goods, tax, and savings variables using code below. Used sum command to get all total expenditures per household.

```
AGGREGATE
  /OUTFILE= 'C:\Users\laidlaw\Documents\Household_survey_data\Indonesia_SUSENAS 2013\Translated Data\SPSS format USE\Final files for shared drive 0118\aggregated_other vars_1016.sav'
  /PRESORTED
  /BREAK=URUT
  /WEIGHT=FIRST(weind)
  /ENG100maxy=SUM(ENG100y)
  /ENG101maxy=SUM(ENG101y)
  /ENG102maxy=SUM(ENG102y)
  /ENG103maxy=SUM(ENG103y)
  /ENG105maxy=SUM(ENG105y)
  /ENG106maxy=SUM(ENG106y)
  /TRP120maxy=SUM(TRP120y)
  /TRP121maxy=SUM(TRP121y)
  /TRP122maxy=SUM(TRP122y)
  /TRP123maxy=SUM(TRP123y)
  /OTR131maxy=SUM(OTR131y)
  /OTR132maxy=SUM(OTR132y)
  /TAX155maxy=SUM(TAX155y)
  /TAX156maxy=SUM(TAX156y).
```

*Note that there is no information value information in the dataset to calculate ICM140, ICM142, ICM143, TFE151, TFE152, TFI153, TFI154, or SAV161.

*Values for ICM140 (total income) and ICM142 (asset income) were later imputed in Excel using proportions from the 2002 dataset.

***Now use match files command to make the first of two additional files: 1) one for all expenditure information and 2) one that combines individual file expenditure file.

*First recoded URUT in food file to numeric variable of the same length so that code below would work.

```
COMPUTE urut_num = NUMBER(URUT, F26.0).

EXECUTE.
```

*Save file.

*Manually renamed variables in food file (urut to urut_orig and urut_num to urut).

```
MATCH FILES /FILE= 'C:\Users\laidlaw\Documents\Household_survey_data\Indonesia_SUSENAS
2013\Translated Data\SPSS format USE\Final files for shared drive
0118\aggregated_food_1016.sav'

 /FILE= 'C:\Users\laidlaw\Documents\Household_survey_data\Indonesia_SUSENAS
2013\Translated Data\SPSS format USE\Final files for shared drive 0118\aggregated_other
vars_1016.sav'

 /BY urut.

EXECUTE.
```

```
SAVE OUTFILE= 'indonesia_2013_all_expenditures.sav'.
```

*Need to add in household size from 'original_hhsize_laborincome.sav' file.

*First recoded URUT in hhsize file to numeric variable of the same length so that code below would work.

```
COMPUTE urut_num = NUMBER(URUT, F26.0).

EXECUTE.
```

*Save file.

*Manually renamed variables in food file (URUT to urut_orig and urut_num to urut).

```
MATCH FILES

  /FILE= 'indonesia_2013_all_expenditures.sav'

  /FILE= 'original_hhsize_laborincome.sav'
```

```
    /BY urut.
EXECUTE.
SAVE OUTFILE= 'indonesia_2013_all_expenditures_use.sav'.
*Now compute per capita variables/values.
COMPUTE ENG100 = (ENG100maxy/hhsize_orig).
EXECUTE.
COMPUTE ENG101 = (ENG101maxy/hhsize_orig).
EXECUTE.
COMPUTE ENG102=(ENG102maxy/hhsize_orig).
EXECUTE.
COMPUTE ENG103=(ENG103maxy/hhsize_orig).
EXECUTE.
COMPUTE ENG105=(ENG105maxy/hhsize_orig).
EXECUTE.
COMPUTE ENG106=(ENG106maxy/hhsize_orig).
EXECUTE.
COMPUTE FOD110=(FOD110maxy/hhsize_orig).
EXECUTE.
COMPUTE FOD111=(FOD111maxy/hhsize_orig).
EXECUTE.
COMPUTE FOD112=(FOD112maxy/hhsize_orig).
EXECUTE.
COMPUTE FOD113=(FOD113maxy/hhsize_orig).
EXECUTE.
COMPUTE FOD114=(FOD114maxy/hhsize_orig).
```

```
EXECUTE.

COMPUTE FOD115=(FOD115maxy/hhsize_orig).

EXECUTE.

COMPUTE FOD116=(FOD116maxy/hhsize_orig).

EXECUTE.

COMPUTE FOD117=(FOD117maxy/hhsize_orig).

EXECUTE.

COMPUTE FOD118=(FOD118maxy/hhsize_orig).

EXECUTE.

COMPUTE TRP120=(TRP120maxy/hhsize_orig).

EXECUTE.

COMPUTE TRP121=(TRP121maxy/hhsize_orig).

EXECUTE.

COMPUTE TRP122=(TRP122maxy/hhsize_orig).

EXECUTE.

COMPUTE TRP123=(TRP123maxy/hhsize_orig).

EXECUTE.

COMPUTE OTR131=(OTR131maxy/hhsize_orig).

EXECUTE.

COMPUTE OTR132=(OTR132maxy/hhsize_orig).

EXECUTE.

COMPUTE ICM141=(ICM141maxy/NART).

EXECUTE.

COMPUTE TAX155=(TAX155maxy/hhsize_orig).

EXECUTE.
```

```
COMPUTE TAX156=(TAX156maxy/hhsize_orig).

EXECUTE.
```

*Save file.

*Now match file with demographic and labor income information to file with expenditures information.

```
MATCH FILES /FILE= 'indonesia_2013_all_expenditures_use'

 /FILE= 'file1_all demographic variables 121917'

 /BY urut.

EXECUTE.

SAVE OUTFILE= 'indonesia_2013_all_data.sav'.
```

*Save new file with only relevant Indonesia variables.

```
SAVE OUTFILE='combined__indonesia_data_final.sav'

 /DROP=ENG100maxy ENG101maxy ENG102maxy ENG103maxy ENG104maxy ENG105maxy
ENG106maxy FOD110maxy FOD111maxy FOD112maxy FOD113maxy FOD114maxy
FOD115maxy FOD116maxy FOD117maxy FOD118maxy FOD118Test TRP120maxy TRP121maxy
TRP122maxy TRP123maxy OTR131maxy OTR132maxy ICM141maxy TAX155maxy TAX156maxy

 /COMPRESSED.
```

*Run initial means for all variables.

```
MEANS TABLES=ALL BY URBAN BY EDUGROUP BY hhsize by agegroup

/CELLS=MEAN.

EXECUTE.
```

*Calculate 10 equal cut points for income deciles.

*Note that we didn't have Indonesian data for total income, so we imputed this using 2003 data. The syntax for this procedure is in the file "proportion syntax to impute total income 111816.sps".

*Compute income deciles for all data together.

```
FREQUENCIES VARIABLES=ICM140

 /FORMAT=NOTABLE

 /NTILES=10
```

```
  /ORDER=ANALYSIS.

RECODE ICM140 (Lowest thru 2385607.84 =1) (2385607.85 thru 3635995.40=2) (3635995.41
thru 4731455.56=3) (4731455.57 thru 5914319.44=4) (5914319.45 thru 7192349.42=5)
(7192349.423 thru 8946029.41=6) (8946029.42 thru 11238224.90=7) (11238224.91 thru
14837317.07=8) (14837317.08 thru 22530740.74=9) (22530740.75 thru Highest=10) INTO
INC_dec.

VARIABLE LABELS  INC_dec 'income decile'.

EXECUTE.

*Now compute income deciles for rural and urban separately.

*Rural income deciles.

USE ALL.

COMPUTE filter_$=(urban = 2).

VARIABLE LABELS filter_$ 'urban = 2 (FILTER)'.

VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.

FORMATS filter_$ (f1.0).

FILTER BY filter_$.

EXECUTE.

FREQUENCIES VARIABLES=ICM140

  /FORMAT=NOTABLE

  /NTILES=10

  /ORDER=ANALYSIS.

RECODE ICM140 (Lowest thru 2147047.06 =1) (2147047.07 thru 3185793.57=2) (3185793.58
thru 4087498.13=3) (4087498.14 thru 5268615.88=4) (5268615.89 thru 6421261.11=5)
(6421261.12 thru 7763449.52=6) (7763449.53 thru 9856394.40=7) (9856394.41 thru
12877908.05=8) (12877908.06 thru 17176376.47=9) (17176376.48 thru Highest=10) INTO
INC_dec_rur.

VARIABLE LABELS  INC_dec_rur 'income decile rural'.

EXECUTE.

FILTER OFF.
```

```
USE ALL.

EXECUTE.

*Urban income deciles

USE ALL.

COMPUTE filter_$=(urban = 1).

VARIABLE LABELS filter_$ 'urban = 1 (FILTER)'.

VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.

FORMATS filter_$ (f1.0).

FILTER BY filter_$.

EXECUTE.

FREQUENCIES VARIABLES=ICM140

 /FORMAT=NOTABLE

 /NTILES=10

 /ORDER=ANALYSIS.

RECODE ICM140 (Lowest thru 3536802.33 =1) (3536802.34 thru 5147407.69=2) (5147407.70
thru 6584277.65=3) (6584277.66 thru 8111066.67=4) (8111066.68 thru 9867860.94=5)
(9867860.95 thru 12070039.69=6) (12070039.70 thru 15172465.88=7) (15172465.89 thru
20030378.05=8) (20030378.06 thru 29674634.15=9) (29674634.16 thru Highest=10) INTO
INC_dec_urb.

VARIABLE LABELS  INC_dec_urb 'income decile urban'.

EXECUTE.

FILTER OFF.

USE ALL.

EXECUTE.

*Recode current four-category urban/rural classification into two-category urban/rural classification to
use for some analyses.

RECODE URBAN (1=1) (2=1) (3=2) (4=2) INTO urban_2cat.
```

```
FORMATS urban_2cat (F1.0).

VARIABLE LABELS urban_2cat 'two category urban vs rural'.

VALUE LABELS urban_2cat 1 'urban' 2 'rural'.

EXECUTE.

*Use the following code for all income deciles with urban and rural together.

        MEANS TABLES=ALL BY urban_2cat by INC_dec

        /CELLS=MEAN.

        EXECUTE.

*Use the following code for rural income deciles.

        MEANS TABLES=ALL BY urban_2cat by INC_dec_rur

        /CELLS=MEAN.

        EXECUTE.

*Use the following code for urban income deciles.

        MEANS TABLES=ALL BY urban_2cat by INC_dec_urb

        /CELLS=MEAN.

        EXECUTE.

*Code for headship variables - POP 101 - POP 104.

*Do this analysis using file 'combined_indonesia_data_final.sav'.

*POP 101: Unweighted number of households by rural/urban, education, hh size, and age of
householder.

*First need to recode household size variable into 7 groups needed for headship analysis.

        RECODE hhsize_orig (1=1) (2=2) (3=3) (4=4) (5=5) (6=6) (7 thru Highest=7) INTO hhsizeheadship.

        FORMATS agegroup (F1.0).

        EXECUTE.

        MEANS TABLES=urban_2cat BY urban_2cat BY edugroup BY hhsizeheadship BY agegroup

         /CELLS COUNT SUM.
```

*POP 103: Weighted number of households by rural/urban, education, hh size, and age of householder (Identical code to Pop 101 but using weight).

```
WEIGHT BY Weight.

MEANS TABLES=urban_2cat BY urban_2cat BY edugroup BY hhsizeheadship BY agegroup

 /CELLS COUNT SUM.

WEIGHT OFF.
```

*POP 102: Weighted population (based on individuals) living in the household by rural/urban, education, hh size, and age of householder.

*For this use 'file1_all demographic variables 121917'.

*Recode household size variable into 7 groups needed for headship analysis.

```
RECODE hhsize (1=1) (2=2) (3=3) (4=4) (5=5) (6=6) (7 thru Highest=7) INTO hhsizeheadship.

FORMATS hhsizeheadship (F1.0).

EXECUTE.

WEIGHT BY FWT_TAHUN.

MEANS TABLES=B1R5 BY B1R5 BY edugroup BY hhsizeheadship BY agegroup

 /CELLS COUNT SUM.

WEIGHT OFF.
```

*POP 104: Weighted population by age, education and rural/urban.

```
WEIGHT BY FWT_TAHUN.

MEANS TABLES=B1R5 BY B1R5 BY edugroup  BY agegroup

 /CELLS COUNT SUM.

WEIGHT OFF.
```