Data Cleaning and Aggregation

Living Conditions Monitoring Survey, 1998
Survey period: November to December, 1998

Living Conditions Monitoring Unit
Central Statistical Office, Zambia

August 1999

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Introduction

The Living Conditions Monitoring Survey (LCMS) is intended to highlight and monitor the living conditions of the Zambia society. The survey includes a set of priority indicators on poverty and living conditions to be repeated regularly. The survey has a national coverage on a sample basis. It covers both rural and urban areas in all the nine provinces and every district in Zambia. The final sample of the survey is 16,636, with 91,974 individuals. The survey was carried out between November to December, 1998.

Data reading
Each sections in the questionnaire were read from ASCII files, province by province, to produce corresponding SAS data files in SD2 format (See Appendix I for SAS programs). These data sets are then attached together, to produce section files for the whole survey sample. Table 1 gives the description of the section files. While reading in the ASCII files, corrections were made for the household identifiers, namely, province, district, CSA, SEA, RURURB, STRATUM, CENTRLTY(Centrality), and HHN(Household number). All the corrections are documented in the SAS programs in Appendix I. For detailed variable definitions and survey methods, refer to 'Living Conditions Monitoring Survey II, 1998, Enumerator's Instruction Manual'.

Must reads
Before you use the LCMS data please read this section. Three things you must know before you proceed your data analysis.
First, the industry code should be fourth digits. If it is three digits, it should be read in with a zero in front of it. For example, 130 is corresponding to 0130 in the industry codes.

Second, in principle the household identification code HID is composed of province, district, csa, sea, rururb, stratum, centrality and hhn. However, after HID was constructed, corrections are made on stratum, centrality and sea. Therefore, if one needs to use stratum or centrality in his/her analysis, he/she must use the individual variables of stratum or centrality, not HIDs. For corrections made to stratum and centrality, see Appendix I: STRCTRCR.SAS.

Third, 252 households, 1.5 percent of total sample, did not report any food expenditures. This could due to that the households did not spend for last two weeks or last month, or due to extreme poverty where households survive on wild foods, which were not asked in the questionnaire. For reported total actual spending for last month, 166 households, one percent of total sample, did not report any spending.

Table 1 LCMS 1998: Section files

N	File name	Description of the section	Number of variables	Number of observations
1	HHROSTER	Basic information for each hhd members	25	91,836
2	SEC02	Marital status and orphanhood	20	92,131
3	SEC30	Health	25	92,135
4	SEC3A	Health	25	20,505
5	SEC3B	Health	25	20,434
6	SEC3C	Health	25	20,179
7	SEC3D	Health	24	7,384
8	SEC3E	Health	25	7,272
9	SEC3F	Health	25	7,234
10	SEC4	Education	27	90,413
11	SEC50	Current economic activities	23	90,226
12	SEC5A	Current economic activities	26	83,531
13	SEC5B	Current economic activities	22	84,043
14	SEC60	Income for all hhd members	18	300,021
15	SEC6A	Income for all hhd members	70	16,651
16	SEC6B	Income for all hhd members	23	90,853
17	SEC6C	Income for all hhd members	20	91,019
18	SEC6D	Income for all hhd members	20	90,934
19	SEC6E	Income for all hhd members	20	81,329
20	SEC7	Anthropometry for children 0 to 59 months	41	12,906
21	SEC8	Household amenities and housing conditions	31	16,650
22	SEC9	Household access to facilities	18	166,623
23	SEC10	Household assets	37	16,647
24	SEC11	Self assessed poverty and coping strategies	36	16,645
25	SEC120	Household expenditure	88	16,651
26	SEC12A	Household expenditure	70	16,641
27	SEC12B	Household expenditure	66	16,639
28	SEC12C	Household expenditure	79	16,643
29	SEC13	Development issues and social fund impact	333	16,651
30	SEC14	Household food production	80	16,643
31	SEC15	Deaths in the household	30	16,667

Data aggregation

All aggregated variables are listed in Table 2 'SAS files, input sections from the questionnaire and output files'. This section describe the aggregation procedure for each variable.

Table 2 SAS Files, input sections from the questionnaire and output files

N	Source File	Sections	Output file	Variables in the output file
0	CTRSTRCR.SAS	All sections	All sections	This file is used to correct hhd identifiers that are not consistent with the sample frame.
1	HHSZ98.SAS	HHROSTER & SEC02	HHSZ98.SD2	Household size (HHSIZE); sex (SEXH), age (AGEH) and marital status (MARITH) of household head, relation to household head(RELAT) and id for micro project seas(MICROID).
1b	HHMEMBER.SAS	HHROSTER & SEC02	HHMEMBER.SD2	Sex (SEX), age in years (AGEY), age in months (AGEM), relation to the household head (RELAT) and marital status (MARIT).
2	EXPCLOTH.SAS	SEC120	EXPCLOTH.SD2	Reported total expenditure on clothes (EXPCLOTH) for last month, including expenditures on chitenges (EXPCHITN), clothes (EXPCLOTS), fabric/material (EXPFABRC), tailor charges (EXPTAILR), and footwear (EXPFOOTW).
3	EXPEDU.SAS	SEC120	EXPEDU.SD2	Reported average monthly expenditure on education(EXPEDU), including school fees(EXPSCHFE), uniform fees(EXPSCUNI), PTA contribution(EXPSCPTA), private tuition(EXPSCPRV), books(EXPSCBKS), and other school expenditure(EXPSCHOT).
4	EXPENTCM.SAS	SEC120	EXPENTCM.SD2	Reported last month's expenditure on entertainment and communication, including expenditure on entertainment and cable cable TV (EXPENTN), and telephone (EXPTELEF).
5	EXPFOOD.SAS	SEC120, SEC12A, SEC12B, SEC12C	EXPFDAGG.SD2	Aggregated total food expenditures(EXPFOOD), including home consumption (EXPFDHC), purchased food (EXPFDBY) and food given (EXPFDGV).
5	EXPFOOD.SAS	SEC120, SEC12A, SEC12B, SEC12C	EXPFDITM.SD2	Reported food expenditures by item on home consumption, purchased and gift foods, respectively. Aggregated expenditures are in EXPFDAGG.SD2.
6	EXPHEALT.SAS	SEC120	EXPHEALT.SD2	Reported total health expenditure(EXPHEALT) for last month, including expenditure on medicines (EXPMEDSN), doctor fees (EXPDOCFE), fees to traditional healers (EXPTRADI), hospitalization/surgery fees (EXPHSPTL), and the pre-payment for scheme (EXPSCHEM).

7	EXPHOUS.SAS	SEC8 and SEC120	EXPHOUS.SD2	Reported last month expenditures on water and electricity (EXPWATER, EXPELECT, from SEC120); reported average expenditures on water and electricity (EXPWATES, EXPELEST, from SEC8). Reported last month expenditure on fuel(EXPLIGHT), including candles, paraffin, diesel, expenditure on firewood (EXPCOOK), including firewood purchased, charcoal purchased and self produced, and house repair (EXPREPAR).
8	EXPINK.SAS	SEC6C	EXPINK.SD2	Reported total monthly inkind payment(EXPINK) from the job(s) of all household members.
9	EXPOTHR.SAS	SEC120	EXPOTHR.SD2	Reported last month expenditure on remittance in cash and in kind (EXPREMIT); expenditure on hair (EXPHAIR), on domestic servants(EXPSERV) and other expenditure (EXPOTHR), including toiletries, cosmetics, laundry, cleaning staff, batteries, and stamps.
10	EXPRENT.SAS	SEC8 & SEC120	EXPRENT.SD2	Reported last month rent (RENT, from SEC120), and reported and imputed average monthly rent (RENTES, from SEC8).
11	EXPTRNSP.SAS	S120	EXPTRNSP.SD2	Total reported expenditure on transportation (EXPTRNSP), including public transportation to work (EXPTRSWK), to school (EXPTRSCH), to other use (EXPTROTH); private transportation for fuel (EXPTRFUL), for repairing motor vehicles (EXPTRMTR), and for repairing bikes (EXPTRBIK);
12	EXPTOT.SAS	The above SD2 files 1, 3, 4, 5, 6, 8, 9, 10, 11, 12, and 13.	EXPTOT.SD2	All the sub-components of household expenditures; total reported monthly expenditure (EXPTOT), in which all the components are from SEC12s; and total estimated monthly expenditure, (EXPTOTES), in which electricity, water expenditure and rent are from SEC8,and imputed rent was also estimated for household who did not pay rent; and household characteristics contained in HHSZ98.SD2 (16,620 observation).

Aggregation and cleaning of variables

Household Characteristics

HHSIZE
Household size was aggregated as total number of persons living in the household as time of survey from HHROSTER.SD2, including servants and non-relatives. Members within a household with identical pid, age, sex and relationship to the head were treated as duplicates and were deleted from the data. Total of 134 observations out of 92,108 observation, less than 0.1 percent of the total sample, were deleted. The final population is thus 91,974 persons. The total number of households with unique household id is 16,636, 20 households with duplicate values for all the variables in HHSZ98.SD2 were deleted out of 16,656. Enumerators have entered a HHSIZE variable in all section files, which was dropped.

SEXH, AGEH and MARITH
These three variables directly read in from the raw data. A few corrections were made to the data due to data entering errors. (See Appendix II, HHSZ98.SAS for details).

Household Expenditures

Expenditures are reported on different time intervals. Education expenditures were reported on school term intervals. For other items, all expenditures are reported on the actual spending for the last month, or last two weeks, in section 120, 12A, 12B, and 12C. Three items, namely rent, electricity and water expenditure were also asked in Section 8, for the estimated average monthly expenditure. All expenditures were converted to one month spending.

The advantage of asking actual spending is that the memory is fresh, so the reported expenditure can be relatively accurate. The problem of this reporting method, however, is that many households in Zambia pay bills on three or even six month intervals, thus the actual spending of last month would overestimate some households' and underestimate other households' monthly expenditures. The extent of the problem were estimated by comparing the actual and average spending on rent, electricity and water, and explained below.

There were many problems in imputed food expenditure, i.e., home consumption and food given. For these items more extensive cleaning was carried out and see EXPFDHC for details. For all other expenditures, there were very few unreasonable values. The original questionnaires were tracked down to confirm these values. Corrections were made based on the actual entries of corresponding questionnaire.

EXPCLOTH
Monthly expenditure on cloth(EXPCLOTH) is a summation of total expenditure for chitenges(EX23A), clothes(EX23B), fabric(EX23C), tailoring charges(EX23D), and food wear (EX23E). For details see Appendix II: EXPCLOTH.SAS.

EXPEDU
Expenditures on education are reported on the first, second and third term. The expenditures on education for all three terms were calculated for school fees(EX1A1,EX1A2 and EX1A3), school uniforms(EX1B1, EX1B2, and EX1B3), PTA fees(EX1C1, EX1C2, EX1C3), private

tuition (EX1D1, EX1D2, and EX1D3), books and stationery(EX1E1, EX1E2, and EX1E3), and other school expenditures(EX1F1, EX1F2, and EX1F3). Each expenditure was then divided by 12 to calculate the average monthly expenditure. The final average monthly education expenditure(EXPEDU) is the summation of all the above sub-component. For details see Appendix II: EXPEDU.SAS.

EXPENTN
The reported actual spending in last month on entertainment(EX212E) and cable TV (EX24K). For details see Appendix II: EXPENTCM.SAS.

EXPTELEF
The reported actual spending in last month on telephone(EX24J). For details see Appendix II: EXPENTCM.SAS.

EXPFDHC
Reported home consumption of each food item in last two weeks were multiplied by two to obtain a monthly expenditure. Major problems exist in measuring accurately the imputed expenditure on home produced food. First, there is no standard unit that is commonly used for all the commodities. For example, maize can be measured in bag, tin or bucket of different weight. For vegetables, they are often sold by piles. Second, the variable of unit was entered as the way it was in questionnaire, which is impossible to process due to too many varieties and too many missing values. Third, some prices were impossibly high for home produced food. It is very possible that the total cost was mistaken as price. In addition, it appears that some household may have reported the food they were vending as home consumption.

Several steps were taken to clean home consumption of unreasonably high values. First, all quantity variables were divided by 10. This is because the decimal point of quantity was entered as a digit. Second, expenditure per capita for two weeks was calculated for each food item by multiplying quantity by price. Then the unreasonably high values for each item were detected. For these unreasonably high values, the price was used as the total cost, instead of multiplying price by quantity. For details see Appendix II: EXPFOOD.SAS.

EXPFDBY
Monthly expenditure on each purchased food item was obtained from reported actual spending on maize in last month(EX213A-EX213E), and from reported actual spending on all other food items in last two weeks(EX2141B_A to EX21434B_A), which were multiplied by two to obtain monthly expenditure. There were not many extremely high values in the purchased food expenditures. Cleaning was very limited, and most of time corrections were made based on the entry in the corresponding questionnaire. The total purchased food expenditure(EXPFDBY) is the summation of the monthly expenditure on all purchased food items. For details see Appendix II: EXPFOOD.SAS.

EXPFDGV
Monthly expenditure on each given food item was obtained from reported expenditure on given food items in last two weeks, which were multiplied by two to obtain monthly expenditure. All the problems in home consumed food also exist in given food items. The same cleaning procedure used in home consumed food was applied to given food items. The

total given food expenditure(EXPFDGV) is the summation of the monthly expenditure on all given food items. For details see Appendix II: EXPFOOD.SAS.

EXPFOOD
Total household monthly expenditure on food, including EXPFDHC, EXPFDBY and EXPFDGV. For details see Appendix II: EXPFOOD.SAS.

EXPHEALT
Monthly expenditure on each heath care item were obtained from the reported actual spending in last month (EX22A-EX22E). The total monthly expenditure on health is the summation of all the sub-component of monthly health expenditure. For details, see Appendix II: EXPHEALT.SAS.

EXPWATER
Reported actual spending on water in last month(EX24B). For details see Appendix II: EXPHOUS.SAS.

EXPWATES
Estimated average monthly expenditure on water(S8Q7). For details see Appendix II: EXPHOUS.SAS.

EXPELECT
Reported actual spending on water in last month(EX24C). For details see Appendix II: EXPHOUS.SAS.

EXPELEST
Estimated average monthly expenditure on electricity(S8Q7). For details see Appendix II: EXPHOUS.SAS.

EXPLIGHT
Reported actual spending in last month on candles, paraffin and diesel(EX24D, EX24E, and EX24F). For details see Appendix II: EXPHOUS.SAS.

EXPCOOK
Reported actual spending on purchased charcoal and firewood, and on home produced charcoal(EX24G, EX24H, and EX25B).

EXPINK
Monthly household inkind expenditure were obtained from all household members' reported monthly inkind payments for all jobs (S6Q32). For details, see Appedix II: EXPINK.SAS.

EXPOTHR
 Reported actual spending in last month for toiletries, cosmetics, laundry, cleaning staff, batteries and stamps(EX212A, EX212B, EX212D, EX212G, EX212H, and EX212I). For details see Appendix II: EXPOTHR.

EXPREMIT
Reported actual remittance in last month, in cash and in kind(EX26 and EX28). For details see Appendix II: EXPOTHR.

EXPHAIR
Reported actual spending in last month on hair dressing(EX212C). For details see Appendix II: EXPOTHR.

EXPSERV
Reported actual spending in last month on domestic servants(EX212F). For details see Appendix II: EXPOTHR.

EXPRENT
Reported actual spending in last month on rent(EX24A). For details see Appendix II: EXPRENT.SAS.

EXPRNTES
Reported average monthly rent for households who pay rent(S8Q3), and imputed rent for households who do not pay rent. The reported rent was regressed on household characteristics, including water source, cook fuel, lighting source, type of toilet, area of residence(rural, low, medium or high cost area), government housing, and household size. The parameters than used to estimate the imputed rent for households who do not pay rent, based on their household characteristics. For details see Appendix II: EXPRENT.SAS.

EXPTRNSP
Reported actual spending in last month for transportation, including public transportation to work(EX210A), to school(EX210B), other public transportation expense(EX210C), and private transportation expenditures on petrol/diesel/oil (EX211A), vehicle, motorbike, bike, and boat/canoe repairs(EX211B, EX211C, EX211D and EX211E). For details see Appendix II: EXPTRNSP.SAS.

EXPTOT
Aggregated total household spending in last month, all sub-components are from section 12s.

EXPTOTES
Aggregated total household spending in last month for all sub-components of expenditure, except rent, water and electricity bills. These three components were calculated from estimated average monthly expenditure from section 8. In addition, for household owners, rent was imputed to capture the actual consumption of housing. The average monthly expenditure and the actual spending could be very different since in Zambia, water, electricity and rent bills can be paid in three or even six month intervals.

Appendix I
Corrections made to STRATUM and CENTRALITY

STRCTRCR.SAS

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OPTIONS OBS=MAX;

LIBNAME Zambia       'C:\sas\zambia\data2\';
Libname x            'C:\sas\zambia\data\';
proc format;
 value $provinc  1='Central'
                 2='Copperbelt'
                 3='Eastern'
                 4='Luapula'
                 5='Lusaka'
                 6='Northern'
                 7='Nwestern'
                 8='Southern'
                 9='Western';

 value centrlty  1='Lusaka City'
                 2='Ndola City'
                 3='Kitwe City'
                 4='Within 50kms of Lk Ndl & Ktw'
                 5='Provincial Capitals'
                 6='Along south-CB rail within 30kms'
                 7='Along TaZaRa within 30kms'
                 8='Within 30kms of Provincial Captl.'
                 9='District centres'
                 10='Within 30kms of District Centres'
                 11='Remote Areas'
                 other='Not Stated';        run;

 data hhsz98;
    set x.hhsz98;




%macro agg(data1,data2,data3,data4,data5,data6,data7,data8,data9,data10);
 data temp;
   set &data1;
  *corrections for the stratum which were not consistant with the rururb coding as shown
   below;
 /*if (rururb='1' and stratum='5') or (rururb='1' and stratum='6') or
     (rururb='1' and stratum='7') or (rururb='2' and stratum='1') or
     (rururb='2' and stratum='2') or (rururb='2' and stratum='3') or
     (rururb='2' and stratum='4');*/

 if province='1' and district='103' and csa='049' and sea='1' and rururb='2' and stratum='1'
     then rururb='1';
 if province='1' and district='103' and csa='049' and sea='1' and rururb='2' and stratum='2'
     then rururb='1';
 if province='1' and district='103' and csa='049' and sea='1' and rururb='2' and stratum='3'
     then rururb='1';
 if province='1' and district='103' and csa='049' and sea='1' and rururb='2' and stratum='4'
     then rururb='1';
 if province='1' and district='104' and csa='010' and sea='4' and rururb='2' and stratum='1'
     then stratum='7';
 if province='2' and district='202' and csa='026' and sea='2' and rururb='2' and stratum='1'
     then stratum='5';
 if province='2' and district='202' and csa='050' and sea='1' and rururb='2' and stratum='2'
     then stratum='5';
 if province='2' and district='202' and csa='060' and sea='2' and rururb='2' and stratum='1'
     then stratum='5';
 if province='2' and district='204' and csa='053' and sea='3' and rururb='2' and stratum='3'
     then stratum='5';
 if province='2' and district='204' and csa='073' and sea='4' and rururb='1' and stratum='7'
     then rururb= '2';
 if province='2' and district='204' and csa='093' and sea='2' and rururb='2' and stratum='2'
     then stratum='5';
 if province='2' and district='204' and csa='096' and sea='3' and rururb='2' and stratum='1'
     then stratum='5';
 if province='2' and district='204' and csa='100' and sea='1' and rururb='2' and stratum='1'
     then stratum='5';
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if province='2' and district='209' and csa='025' and sea='2' and rururb='2' and stratum='2'
    then stratum='5';
if province='2' and district='209' and csa='049' and sea='1' and rururb='2' and stratum='2'
    then stratum='5';
if province='2' and district='210' and csa='069' and sea='4' and rururb='2' and stratum='2'
    then stratum='5';
if province='2' and district='210' and csa='072' and sea='1' and rururb='2' and stratum='3'
    then stratum='5';
if province='2' and district='210' and csa='094' and sea='5' and rururb='2' and stratum='1'
    then stratum='5';
if province='2' and district='205' and csa='042' and sea='1' and rururb='2' and stratum='7'
    then stratum='5';
if province='3' and district='302' and csa='016' and sea='3' and rururb='2' and stratum='2'
    then stratum='5';
if province='3' and district='305' and csa='038' and sea='2' and rururb='2' and stratum='3'
    then stratum='5';
if province='4' and district='402' and csa='027' and sea='1' and rururb='2' and stratum='2'
    then stratum='6';
if province='4' and district='403' and csa='102' and sea='4' and rururb='1' and stratum='5'
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if province='4' and district='403' and csa='102' and sea='4' and rururb='1' and stratum='6'
    and centrlty='09' then rururb='2';
if province='4' and district='403' and csa='102' and sea='4' and rururb='2' and stratum='6'
    and centrlty='09' then stratum='5';
if province='4' and district='403' and csa='102' and sea='4' and rururb='2' and stratum='5'
    and centrlty='09' then centrlty='5';
if province='5' and district='501' and csa='014' and sea='2' and rururb='1' and stratum='7'
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if province='5' and district='503' and csa='011' and sea='2' and rururb='1' and stratum='6'
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    then stratum='7';
if province='5' and district='504' and csa='102' and sea='2' and rururb='2' and stratum='3'
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if province='6' and district='604' and csa='002' and sea='2' and rururb='2' and stratum='1'
    then stratum='5';
if province='6' and district='605' and csa='022' and sea='1' and rururb='1' and stratum='6'
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if province='6' and district='605' and csa='047' and sea='2' and rururb='2' and stratum='2'
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if province='6' and district='608' and csa='040' and sea='1' and rururb='1' and stratum='6'
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if province='6' and district='610' and csa='055' and sea='3' and rururb='1' and stratum='5'
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if province='7' and district='701' and csa='002' and sea='4' and rururb='1' and stratum='7'
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if province='7' and district='704' and csa='003' and sea='2' and rururb='2' and stratum='1'
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if province='7' and district='704' and csa='003' and sea='2' and rururb='2' and stratum='2'
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if province='7' and district='704' and csa='003' and sea='2' and rururb='2' and stratum='4'
    then rururb='1';
if province='7' and district='705' and csa='034' and sea='2' and rururb='2' and stratum='2'
    then stratum='6';
if province='8' and district='803' and csa='008' and sea='2' and rururb='1' and stratum='7'
    then stratum='4';
if province='8' and district='804' and csa='044' and sea='1' and rururb='2' and stratum='1'
    then rururb='1';
if province='8' and district='804' and csa='044' and sea='1' and rururb='1' and stratum='1'
    then sea='3';
if province='8' and district='804' and csa='044' and sea='1' and rururb='2' and stratum='2'
    then rururb='1';
if province='8' and district='804' and csa='044' and sea='1' and rururb='1' and stratum='2'
    then sea='3';
if province='8' and district='804' and csa='061' and sea='1' and rururb='2' and stratum='2'
    then rururb='1';
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if province='8' and district='804' and csa='061' and sea='1' and rururb='1'
     then sea='2';
if province='8' and district='807' and csa='018' and sea='2' and rururb='2' and stratum='2'
     then stratum='7';
if province='8' and district='807' and csa='021' and sea='2' and rururb='2' and stratum='2'
     then stratum='6';
if province='8' and district='807' and csa='021' and sea='2' and rururb='2' and stratum='1'
     then stratum='5';
if province='8' and district='809' and csa='016' and sea='3' and rururb='2' and stratum='2'
     then stratum='6';
if province='8' and district='811' and csa='014' and sea='2' and rururb='2' and stratum='2'
     then stratum='6';
if province='8' and district='804' and csa='044' and sea='1' and rururb='2'
     then rururb='1';
if province='9' and district='901' and csa='014' and sea='1' and rururb='2' and stratum='1'
     then rururb='1';
if province='9' and district='901' and csa='014' and sea='1' and rururb='2' and stratum='4'
     then rururb='1';
if province='9' and district='901' and csa='018' and sea='2' and rururb='1' and stratum='5'
     then stratum='1';
if province='9' and district='901' and csa='034' and sea='1' and rururb='2' and stratum='3'
     then stratum='6';
if province='9' and district='903' and csa='022' and sea='3' and rururb='2' and stratum='1'
     then stratum='6';
if province='9' and district='904' and csa='081' and sea='4' and rururb='2' and stratum='1'
     then stratum='5';
if province='9' and district='906' and csa='045' and sea='1' and rururb='2' and stratum='2'
     then rururb='1';
if province='9' and district='907' and csa='043' and sea='2' and rururb='2' and stratum='1'
     then rururb='1';
if province='9' and district='907' and csa='043' and sea='2' and rururb='2' and stratum='4'
     then rururb='1';
if province='9' and district='907' and csa='095' and sea='2' and rururb='2' and stratum='1'
     then rururb='1';
 *end of correction, the correct coding were obtained from the sample listing;
 *the following are corrections for centrality, which were not consistant with the sampling
  frame.  The centrality is the unit for weight for rural areas;
 if province='1' and district='104' and csa='041' and sea='2' and centrlty='07'
     then centrlty='11';
 if province='1' and district='104' and csa='046' and sea='2' and centrlty='07'
     then centrlty='11';
 if province='1' and district='105' and csa='020' and sea='2' and centrlty='09'
     then stratum='5';
 if province='1' and district='105' and csa='021' and sea='1' and centrlty='09'
     then stratum='7';
 if province='1' and district='105' and csa='061' and sea='3' and centrlty='04'
     then district='103';
 if province='1' and district='103' and csa='061' and sea='3' and centrlty='04'
     then centrlty='05';
 if province='1' and district='103' and csa='061' and sea='3' and centrlty='05'
     then stratum='5';
 if province='1' and district='105' and csa='066' and sea='2' and centrlty='10'
     then centrlty='11';
 if province='1' and district='106' and csa='008' and sea='3' and centrlty='07'
     then centrlty='11';
 if province='1' and district='102' and csa='018' and sea='3' and centrlty='05'
     then district='103';
 if province='1' and district='103' and csa='018' and sea='3' and centrlty='05'
     then stratum='6';
 if province='1' and district='102' and csa='040' and sea='3' and centrlty='05'
     then district='103';
 if province='1' and district='102' and csa='055' and sea='3' and centrlty='05'
     then district='103';
 if province='1' and district='103' and csa='055' and sea='3' and centrlty='05'
     then stratum='7';
 if province='1' and district='104' and csa='010' and sea='2' and centrlty='09'
     then stratum='5';
 if province='1' and district='104' and csa='010' and sea='3' and centrlty='09'
     then stratum='6';
 if province='1' and district='104' and csa='010' and sea='4' and centrlty='09'
     then stratum='7';
 if province='2' and district='208' and csa='074' and sea='3' and centrlty='09'
     then centrlty='11';
   if province='3' and district='302' and csa='009' and sea='1' and centrlty='11'
     then centrlty='10';
   if province='4' and district='401' and csa='008' and sea='2' and centrlty='11'
```

```
    then centrlty='09';
 if province='4' and district='402' and csa='038' and sea='3' and centrlty='11'
    then centrlty='10';
 if province='4' and district='403' and csa='034' and sea='2' and centrlty='10'
    then centrlty='08';
 if province='4' and district='403' and csa='052' and sea='3' and centrlty='11'
    then centrlty='08';
 if province='4' and district='404' and csa='062' and sea='2' and centrlty='11'
    then centrlty='08';
 if province='4' and district='405' and csa='001' and sea='3' and centrlty='10'
    then centrlty='11';
 if province='4' and district='405' and csa='010' and sea='3' and centrlty='11'
    then centrlty='10';
 if province='4' and district='406' and csa='071' and sea='2' and centrlty='11'
    then centrlty='10';
 if province='5' and district='501' and csa='048' and sea='1' and centrlty='04'
    then centrlty='11';
 if province='5' and district='501' and csa='053' and sea='2' and centrlty='09'
    then centrlty='04';
 if province='5' and district='502' and csa='015' and sea='2' and centrlty='01'
    then centrlty='04';
 if province='5' and district='502' and csa='018' and sea='1' and centrlty='01'
    then centrlty='04';
 if province='5' and district='502' and csa='043' and sea='1' and centrlty='01'
    then centrlty='11';
 if province='5' and district='502' and csa='095' and sea='2' and centrlty='02'
    then centrlty='11';
 if province='6' and district='601' and csa='005' and sea='1' and centrlty='09'
    then centrlty='11';
 if province='6' and district='601' and csa='010' and sea='1' and centrlty='11'
    then centrlty='10';
 if province='6' and district='601' and csa='022' and sea='3' and centrlty='09'
    then centrlty='10';
 if province='6' and district='601' and csa='027' and sea='2' and centrlty='09'
    then centrlty='10';
 if province='6' and district='603' and csa='047' and sea='2' and centrlty='10'
    then centrlty='11';
 if province='6' and district='603' and csa='061' and sea='2' and centrlty='09'
    then centrlty='10';
 if province='6' and district='604' and csa='008' and sea='4' and centrlty='11'
    then centrlty='10';
 if province='6' and district='604' and csa='017' and sea='4' and centrlty='11'
    then centrlty='10';
 if province='6' and district='605' and csa='015' and sea='3' and centrlty='11'
    then centrlty='07';
 if province='6' and district='606' and csa='036' and sea='2' and centrlty='09'
    then centrlty='10';
 if province='6' and district='608' and csa='069' and sea='2' and centrlty='08'
    then centrlty='10';
 if province='6' and district='610' and csa='048' and sea='1' and centrlty='09'
    then centrlty='11';
 if province='6' and district='611' and csa='036' and sea='1' and centrlty='08'
    then centrlty='11';
 if province='6' and district='612' and csa='006' and sea='2' and centrlty='10'
    then centrlty='11';
 if province='6' and district='612' and csa='022' and sea='1' and centrlty='10'
    then centrlty='11';
 if province='6' and district='603' and csa='009' and sea='3' and centrlty='06'
     then district='612';
 if province='6' and district='612' and csa='009' and sea='3' and centrlty='06'
     then centrlty='11';
 if province='7' and district='702' and csa='029' and sea='1' and centrlty='09'
     then centrlty='10';
 if province='7' and district='702' and csa='029' and sea='1' and centrlty='09'
     then centrlty='10';
 if province='7' and district='702' and csa='043' and sea='1' and centrlty='11'
     then centrlty='10';
 if province='7' and district='706' and csa='031' and sea='4' and centrlty='11'
     then centrlty='08';
 if province='8' and district='801' and csa='020' and sea='1' and centrlty='10'
     then centrlty='11';
 if province='8' and district='811' and csa='231' and sea='1' and centrlty='10'
     then csa='023';
 if province='9' and district='903' and csa='031' and sea='1' and centrlty='11'
     then centrlty='10';
 if province='9' and district='904' and csa='081' and sea='4' and centrlty='04'
```

```
        then centrlty='05';
    if province='9' and district='904' and csa='084' and sea='3' and centrlty='06'
        then centrlty='05';
    if province='9' and district='905' and csa='010' and sea='2' and centrlty='10'
        then centrlty='11';
    if province='9' and district='905' and csa='028' and sea='1' and centrlty='11'
        then centrlty='10';
    if province='9' and district='905' and csa='057' and sea='1' and centrlty='08'
        then centrlty='10';
    if province='9' and district='906' and csa='045' and sea='1' and centrlty='07'
        then centrlty='09';
    if province='9' and district='906' and csa='048' and sea='1' and centrlty='10'
        then centrlty='11';
    if province='9' and district='907' and csa='043' and sea='2' and centrlty='04'
        then centrlty='11';
    if province='9' and district='907' and csa='077' and sea='4' and centrlty='09'
        then sea='1';


  *end of correction, the correct coding were obtained from the sample frame;
  Data &data1;
      set  temp;
  run;

%mend;

%agg(x.hhsz98);
*All other files were corrected as above;
```

SAS Programs of reading ASCII files into sectional files in SD2 format

When reading in ASCII files, corrections were made for missing and incorrect values on household identifiers, namely province, district, csa, sea, rural urban areas, stratum, centrality, and household number. Panel number was omitted from household identifiers since household number (hhn) itself can identify a unique household. All the corrections for each province are recorded below. The reading file is same for all the province, thus only Central province reading file listed below.

Corrections for hid

1. Central province

```
        if district='101' and csa='056' and sea='4' and centrlty='01'
        then centrlty='11';

    else if district='102' and csa='017' and sea='1' and centrlty='25'

            then centrlty='05';

    else centrlty=centrlty;
  *above centrality are wrong coding, correct coding were obtained from the
sample listing;


 if district='104' and csa='010' and sea='4' and rururb='2' and
 stratum='5' and centrlty='09' and panel='08' and hhn='0002'
            then hhn='0008';

    else hhn=hhn;

        if district='105' and csa='021' and sea='2' and rururb='2' and
stratum='6' and centrlty='09' and panel='18' and hhn='0044'
            then hhn='0018';

    else hhn=hhn;
```

above household number were duplicate numbers within a sea, thus the panel
number were used for hhn instead;


```
    run;



2. Copperbelt

if district='210' and csa='117' and sea='2' and rururb='6' then rururb='2';

    else rururb=rururb;
*rururb coding was wrong, correct coding was found from the sample listing;
                  run;
    data cop;
       set cop;

        if district='210' and csa='117' and sea='2' and rururb='2' and
stratum='6' then stratum='5';
    else if district='209' and csa='048' and sea='3' and rururb='2' and
stratum='0'
        then stratum='5';
    else if district='204' and csa='043' and sea='3' and rururb='2' and
stratum=' '
        then stratum='5';
    else if district='204' and csa='043' and sea='5' and rururb='2'and
stratum=' '
        and centrlty='03' then stratum='5';
    else stratum=stratum;

      *The wrong stratum codes were corrected from the sample listing;

        if district='210' and csa='108' and sea='1' and rururb='2' and
stratum='5'
        and centrlty='22' then centrlty='02';
   else if district='204' and csa='093' and sea='2' and rururb='2'and
stratum='5'
        and centrlty='55' then centrlty='03';
   else if district='204' and csa='093' and sea='2' and rururb='2'and
stratum='5'
        and centrlty=' ' then centrlty='03';
   else if district='204' and csa='093' and sea='2' and rururb='2'and
stratum='2'
        and centrlty=' ' then centrlty='03';
  else if district='210' and csa='100' and sea='2' and rururb='2' and
stratum='5'
        and centrlty='88' then centrlty='02';
  else  if district='210' and csa='087' and sea='3' and rururb='2' and
stratum='7'
        and centrlty='43' then centrlty='02';
  else  if district='208' and csa='064' and sea='2' and rururb='1' and
stratum='3'
        and centrlty='01' then centrlty='11';
  else  if district='206' and csa='005' and sea='3' and rururb='1' and
stratum='1'
        and centrlty=' ' then centrlty='11';
  else  if district='208' and csa='076' and sea='1' and rururb='2' and
stratum='5'
        and centrlty='26' then centrlty='04';
  else centrlty=centrlty;

  *the wrong centrlty codes were corrected from the sample listing;
   run;

 data cop;
```

```
   set cop;
        if district='201' and csa='026' and sea='2' and rururb='2' and
stratum='5'
          and centrlty='09' and panel='19' and hhn='0094' then hhn='0019';
 else if district='202' and csa='025' and sea='2' and rururb='2' and
stratum='6'
          and centrlty='09' and panel='01' and hhn='0011' then hhn='0001';
 else if district='202' and csa='025' and sea='2' and rururb='2' and
stratum='6'
          and centrlty='09' and panel='06' and hhn='0043' and hhsize=5 then
hhn='0041';
 else if district='202' and csa='026' and sea='2' and rururb='2' and
stratum='5'
          and centrlty='09' and panel='24' and hhn='0117' then hhn='0024';
 else if district='202' and csa='026' and sea='2' and rururb='2' and
stratum='6'
          and centrlty='09' and panel='25' and hhn='0132' then hhn='0025';
 else if district='203' and csa='010' and sea='4' and rururb='2' and
stratum='5'
          and centrlty='09' and panel='16' and hhn='0014' then hhn='0016';
 else if district='204' and csa='033' and sea='3' and rururb='2' and
stratum='5'
          and centrlty='03' and panel='16' and hhn='0029' then hhn='0016';
 else if district='204' and csa='033' and sea='3' and rururb='2' and
stratum='5'
          and centrlty='03' and panel='02' and hhn='0107' then hhn='0002';
 else if district='204' and csa='051' and sea='3' and rururb='2' and
stratum='5'
          and centrlty='10' and panel='24' and hhn='0071' then hhn='0024';
 else if district='205' and csa='037' and sea='1' and rururb='2' and
stratum='6'
          and centrlty='09' and panel='12' and hhn='0006' then hhn='0012';
 else if district='206' and csa='014' and sea='1' and rururb='1' and
stratum='1'
          and centrlty='11' and panel='06' and hhn='0042' then hhn='0006';
 else if district='208' and csa='076' and sea='1' and rururb='2' and
stratum='5'
          and centrlty='04' and panel='14' and hhn='0142' then hhn='0014';
 eles hhn=hhn;

 *the above are duplicates hhn panel numbers are used for duplicated hhn;
  run;
```

3. Eastern

```
if district='307' and csa='045' and sea='1' and rururb='1' and stratum='1'
and

          centrlty='01' then centrlty='10';

      else if district='303' and csa='131' and sea='4' and rururb='1' and
stratum='1' and
          centrlty='02' then centrlty='08';
      else centrlty=centrlty;

          if district='304' and csa='018' and sea='1' and rururb='2' and
stratum='' then
          stratum='5';

      else if district='307' and csa='047' and sea='2' and rururb='2' and
stratum='' then
          stratum='5';
       else stratum=stratum;
```

```
    *centrality and stratum codes were wrong and some were missing,
corrected code were;
    *found from the sample listing;


      if district='301' and csa='031' and sea='1' and rururb='1' and
stratum='4' and panel='02'
       and hhn='0003' then hhn='0002';

      if district='302' and csa='016' and sea='4' and rururb='2' and
stratum='7' and panel='14'
       and hhn='0091' then hhn='0014';

      if district='302' and csa='016' and sea='5' and rururb='2' and
stratum='6' and panel='17'
       and hhn='0096' then hhn='0017';

      if district='305' and csa='059' and sea='2' and rururb='1' and
stratum='1' and panel='09'
       and hhn='0132' then hhn='0009';
   else hhn=hhn;

  * The above come out as duplicates but they were not true duplicates.
these were corrected by;
  * replacing the hhn by the panel number;
```

4. Luapula

```
if centrlty='02' then centrlty='09';

 else if centrlty='01' then centrlty='11';

 else if centrlty='18' then centrlty='05';

 else centrlty=centrlty;

   *the wrong centrality codes were corrected from the sample listing;

        if hhn=' ' then hhn='0036';
 else hhn=hhn;

 *the above missing hhn was substituted by its panel number;

  run;
```

 5. Lusaka

```
 if district='504' and csa='154' and sea='2' and rururb='2' and
centrlty='01' and hhn=''

        then hhn='0013';

     else if district='504' and csa='154' and sea='2' and rururb='2' and
hhn='0000'
        then hhn='0011';
     else hhn=hhn;

        if district='502' and csa='015' and sea='2' and rururb='1' and
centrlty='13' then
        centrlty='01';

     else if district='502' and csa='015' and sea='2' and rururb='1' and
centrlty='15' then
```

```
        centrlty='01';

     else if district='501' and csa='053' and sea='2' and rururb='1' and
stratum='4' and centrlty=''
        then centrlty='04';

     else if district='501' and csa='034' and sea='2' and rururb='1' and
stratum='1' and centrlty=''
        then centrlty='11';

     else if district='504' and csa='071' and sea='1' and rururb='2' and
stratum='5' and centrlty=''
        then centrlty='01';
     else centrlty=centrlty;

        if district='504' and csa='036' and sea='5' and rururb='2' and
stratum='' then
        stratum='5';

     else if district='501' and csa='028' and sea='4' and rururb='2' and
stratum='' then
        stratum='6';

     else if district='504' and csa='133' and sea='1' and rururb='2' and
stratum='' then
        stratum='5';
     else stratum=stratum;

   *centrality and stratum codes were wrong and some were missing,
corrected code were;
   *found from the sample listing;

    if district='501' and csa='013' and sea='5' and rururb='1' and
stratum='1' and panel='16'
    and hhn='0044' then hhn='0016';

     else if district='501' and csa='039' and sea='2' and rururb='1' and
stratum='1' and panel='03'
        and hhn='0030' then hhn='0003';

     else if district='504' and csa='164' and sea='3' and rururb='2' and
stratum='5' and panel='13'
        and hhn='0072' then hhn='0013';

     else if district='504' and csa='177' and sea='2' and rururb='2' and
stratum='5' and panel='15'
        and hhn='0161' then hhn='0015';

     else if district='504' and csa='187' and sea='3' and rururb='2' and
stratum='6' and panel='23'
        and hhn='0024' then hhn='0023';

     else if district='504' and csa='187' and sea='3' and rururb='2' and
stratum='6' and panel='04'
        and hhn='0024' then hhn='0004';
     else hhn=hhn;

  * The above come out as duplicates but they were not true duplicates.
these were corrected by;
  * replacing the hhn by the panel number;
```

6. Northern

```
        if district='607' and csa='032' and sea='4' and centrlty='02' then
centrlty='10';
```

```
         else if district='608' and csa='056' and sea='2' and centrlty='01' then
centrlty='07';

     else centrlty=centrlty;
          if centrlty='15' then centrlty='11';
     else if centrlty='46' then centrlty='10';
     else if centrlty='19' then centrlty='09';
     else if centrlty='88' then centrlty='08';
     else centrlty=centrlty;
          if rururb='3' then rururb='2';
     else rururb=rururb;
          if stratum='0' then stratum='5';
     else if stratum=' ' then stratum='1';
     else stratum=stratum;
        *codes were a wrong code, corrected code was found from the sample
listing;

          if district='605' and csa='047' and sea='2' and rururb='2' and
stratum='5'
            and centrlty='05' and panel='12' and hhn='0037' then
hhn='0012';
     else if district='605' and csa='047' and sea='3' and rururb='2' and
stratum='5'
            and centrlty='05' and panel='03' and hhn='0157' then
hhn='0003';
     else if district='605' and csa='047' and sea='3' and rururb='2' and
stratum='5'
            and centrlty='05' and panel='22' and hhn='0197' then
hhn='0022';
     else if district='611' and csa='116' and sea='2' and rururb='1' and
stratum='1'
            and centrlty='07' and panel='12' and hhn='0067' then
hhn='0012';
     else hhn=hhn;
   *these are duplicate hhn, panel numbers are used for the hhn;




7.  North western

          if district='504' then delete;

          if district='705' and csa='031' and sea='4' and rururb='1' and
centrlty='44'
            then centrlty='10';
     else if district='705' and csa='034' and sea='2' and rururb='2' and
centrlty='19'
            then centrlty='09';  else centrlty=centrlty;
          if district='702' and csa='033' and sea='3' and rururb='2' and
stratum=' '
            then stratum='5';
     else if district='704' and csa='007' and sea='1' and rururb='1' and
stratum=' '
            then stratum='1';
     else stratum=stratum;
 *44 and 19 centrality codes and missing stratum were  wrong codes,
  corrected codes were found from the sample listing;

       if district='705' and csa='034' and sea='2' and rururb='2' and
centrlty='01'
            then centrlty='09';
   else if district='702' and csa='029' and sea='1' and rururb='1' and
centrlty='01'
            then centrlty='10';
```

```
   else centrlty=centrlty;
 *Centrality 01 was a wrong code. it was corrected from the neighbouring
households;

       if district='703' and csa='006' and sea='1' and rururb='1' and
stratum='4'
          and centrlty='10' and panel='28' and hhn='0061' then
hhn='0028';
    else hhn=hhn;
  *61 was a duplicate hhn in sea1 thus we used panel number to replace it.;
      run;
```

<u>8.   Southern</u>

```
if csa='601' then csa='061';

    else csa=csa;

        if csa='061' and sea='2' then sea='1';

    else sea=sea;

        if rururb='5' or rururb='6' then rururb=2;

    else rururb=rururb;

         if district='801' and centrlty=' ' then centrlty='11';
    else if district='804' and centrlty='01' then centrlty='09';
    else if district='808' and centrlty='14' then centrlty='10';
    else if district='804' and centrlty='16' then centrlty='10';
    else if district='805' and centrlty='60' then centrlty='06';
    else if district='807' and centrlty='07' then centrlty='09';
    else if district='806' and centrlty='07' then centrlty='05';
    else centrlty=centrlty;
         if district='802' and csa='008' and sea='2' and stratum=' ' then
stratum='1';
     else if district='809' and csa='017' and sea='1' and stratum='9' then
stratum='7';
     else if district='809' and csa='016' and sea='3' and stratum='9' then
stratum='6';
   else if district='803' and csa='005' and sea='2' and stratum=' ' then
stratum='1';
     else stratum=stratum;
          if district='801' and csa='100' and sea='2' and rururb='1' and
stratum='1'
         and centrlty='11' and panel='29' and hhn='0033' then hhn='0040';
   else if district='809' and csa='017' and sea='2' and rururb='2' and
stratum='5'
         and centrlty='09' and panel='23' and hhn='0089' then hhn='0023';
   else if district='811' and csa='018' and sea='3' and rururb='1' and
stratum='1'
         and centrlty='10' and panel='09' and hhn='0016' then hhn='0009';
   else hhn=hhn;
```

<u>9.   Western</u>

```
 if csa='984' then csa='084';

        else csa=csa;

        if district='904' and csa='024' and sea='1' and rururb='1' and
stratum='0'
```

```
                    then stratum='1';
        else if district='901' and csa='032' and sea='2' and rururb='2' and
stratum='7'
                    then stratum='5';
        else if district='901' and csa='032' and sea='2' and rururb='2' and
centrlty='09'
                    and panel='10' and hhn='0073' then stratum='5';
        else stratum=stratum;
            *The wrong stratum codes were corrected from the sample listing;

             if district='901' and csa='032' and sea='2' and rururb='1' then
rururb='2' ;
        else if district='901' and csa='032' and sea='2' and rururb='0' then
rururb='2';
        else rururb=rururb;
        *the wrong rururb codes were corrected from the sample listing;

             if district='905' and csa='055' and sea='2' and centrlty='02' then
centrlty='09';
        else if district='905' and csa='056' and sea='1' and centrlty='02' then
centrlty='09';
        else centrlty=centrlty;
          *the wrong centrlty codes were corrected from the sample listing;
             if district='904' and csa='063' and sea='2' and rururb='1' and
stratum='1'
             and centrlty='10' and panel='14' and hhn='0007' then hhn='0014';
      else if district='905' and csa='021' and sea='1' and rururb='1' and
stratum='1'
             and centrlty='11' and panel='10' and hhn='0019' then hhn='0010';
      else if district='905' and csa='041' and sea='1'and rururb='1' and
stratum='1'
          and centrlty='10' and panel='15' and hhn='0065' then hhn='0015';
      else if district='906' and csa='010' and sea='2'and rururb='1' and
stratum='2'
          and centrlty='06' and panel='09' and hhn='0094' then hhn='0009';
      else hhn=hhn;
 *the above are duplicates hhn panel numbers are used for duplicated hhn;
```

SAS program to read in ASCII files

```
OPTIONS OBS=MAX;

FILENAME LCMS2 'C:\sas\zambia\data3\Central\Central.all\';

LIBNAME LCMS 'C:\sas\zambia\data3\Central\';


%macro hhid(data1,data2);

             if district='101' and csa='056' and sea='4' and centrlty='01'
                then centrlty='11';
        else if district='102' and csa='017' and sea='1' and centrlty='25'
                then centrlty='05';
        else centrlty=centrlty;
             if district='104' and csa='010' and sea='4' and rururb='2' and
stratum='5'
             and centrlty='09' and panel='08' and hhn='0002' then hhn='0008';
        else hhn=hhn;
             if district='105' and csa='021' and sea='2' and rururb='2' and
stratum='6'
             and centrlty='09' and panel='18' and hhn='0044' then hhn='0018';
```

```
          else hhn=hhn;

           province='1';

data &data2;
      set &data2;

     hid=province!!district!!csa!!sea!!rururb!!stratum!!centrlty!!hhn;
proc sort data=&data2 out=&data1;
      BY HID;
      run;
 PROC DELETE DATA=&DATA2;
   RUN;
 proc means data=&data1;
      run;
%mend;

DATA HHROSTER(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "01" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S1Q1 37-38 S1Q3A 39 S1Q3B 40-41 S1Q4 42-43 S1Q5 44 S1Q6 45 S1Q7 46-48 S1Q8
49
S1Q9 50-51;
END;
LENGTH DEFAULT=4;

%hhid(lcms.hhroster, hhroster);
   run;


DATA SEC02(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "02" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S2Q1 37-38 S2Q2 39 S2Q3 40 S2Q4 41;
END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC02, SEC02);
run;


DATA SEC30(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "03" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1
```

```
PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0 37-38 S3Q1 39 S3Q2 40-41 S3Q3 42 S3Q4 43-48 S3Q5A 49-50 S3Q5B 51-52
S3Q5C 53-54
S3Q5D 55-56;
END;
LENGTH S3Q4 5 DEFAULT=4;
%hhid(LCMS.SEC30, SEC30);
run;

DATA SEC3A(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "04" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0A 37-38 S3Q6 39-42 S3Q7 43 S3Q8A 44 S3Q8B 45 S3Q8C 46 S3Q8D 47 S3Q8E 48
S3Q8F 49;
END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC3A, SEC3A);
run;

DATA SEC3B(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "05" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0B 37-38 S3Q8G 39 S3Q8H 40 S3Q8I 41 S3Q9 42-44 S3Q10A 45-51 S3Q10B 52-58
S3Q10C 59-65 S3Q10D 66-72;
END;
LENGTH S3Q10A S3Q10B S3Q10C S3Q10D 8 DEFAULT=4;
%hhid(LCMS.SEC3B, SEC3B);
run;

DATA SEC3C(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "06" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0C 37-38 S3Q10E 39-45 S3Q10F 46-52 S3Q10G 53-59 S3Q10H 60-66 S3Q11 67
S3Q12 68
S3Q13 69 S3Q14 70-73;
```

```
END;
LENGTH S3Q10E S3Q10F S3Q10G S3Q10H 8 S3Q14 4 DEFAULT=4;
%hhid(LCMS.SEC3C, SEC3C);
run;

DATA SEC3D(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "07" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0D 37-38 S3Q15 39 S3Q16A 40 S3Q16B 41 S3Q16C 42 S3Q16D 43 S3Q16E 44
S3Q16F 45;

END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC3D, SEC3D);
run;

DATA SEC3E(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "08" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0E 37-38 S3Q16G 39 S3Q16H 40 S3Q16I 41 S3Q17 42-44 S3Q18A 45-51 S3Q18B
52-58
S3Q18C 59-65 S3Q18D 66-72;

END;
LENGTH S3Q18A S3Q18B S3Q18C S3Q18D 8 DEFAULT=4;
%hhid(LCMS.SEC3E, SEC3E);
run;


DATA SEC3F(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "09" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S3Q0F 37-38 S3Q18E 39-45 S3Q18F 46-52 S3Q18G 53-59 S3Q18H 60-66 S3Q19 67
S3Q20 68
S3Q21 69 S3Q22 70-73;

END;
LENGTH S3Q18E S3Q18F S3Q18G S3Q18H 8 S3Q22 4 DEFAULT=4;
```

```
%hhid(LCMS.SEC3F, SEC3F);
run;

DATA SEC4(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "10" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S4Q0 37-38 S4Q1 39 S4Q2 40-41 S4Q3 42-43 S4Q4 44 S4Q5 45 S4Q6 46 S4Q7 47-48
S4Q8 49-50 S4Q9 51-52 S4Q10 53;

END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC4,SEC4);
run;

DATA SEC50(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "11" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S5Q0 37-38 S5Q1 39-40 S5Q2 41-44 S5Q3 45-48 S5Q4 49 S5Q5 50 S5Q6 51;

END;
LENGTH S5Q2 S5Q3 8 DEFAULT=4;
%hhid(LCMS.SEC50, SEC50);
run;

DATA SEC5A(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "12" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S5Q0B 37-38 S5Q7 39 S5Q8 40 S5Q9 41-42 S5Q10 43 S5Q11 44-47 S5Q12 48-51
S5Q13 52
S5Q14 53 S5Q15 54;

END;
LENGTH S5Q11 S5Q12 8 DEFAULT=4;
%hhid(LCMS.SEC5A, SEC5A);
run;

DATA SEC5B(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
```

```
IF SECT NE "13" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S5Q0D 37-38 S5Q16 39 S5Q17 40 S5Q18 41-42 S5Q19 43 S5Q20 44-45;

END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC5B, SEC5B);
run;


DATA SEC60(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "14" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S6Q0 37-38 S6Q01 39-48;
END;
LENGTH S6Q01 8 DEFAULT=4;
%hhid(LCMS.SEC60, SEC60);
run;

DATA SEC6A(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "15" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S6Q191A 37-45 S6Q191B 46-54 S6Q192A 55-63 S6Q192B 64-72 S6Q193A 73-81
S6Q193B 82-90
S6Q201A 91-99 S6Q201B 100-108 S6Q202A 109-117 S6Q202B 118-126 S6Q203A 127-
135
S6Q203B 136-144 S6Q211A 145-153 S6Q211B 154-162 S6Q212A 163-171 S6Q212B
172-180
S6Q213A 181-189 S6Q213B 190-198 S6Q221A 199-207 S6Q221B 208-216 S6Q222A
217-225
S6Q222B 226-234 S6Q223A 235-243 S6Q223B 244-252 S6Q23B 253-261 S6Q241A 262-
270
S6Q241B 271-279 S6Q242A 280-288 S6Q242B 289-297 S6Q243A 298-306 S6Q243B
307-315
S6Q244A 316-324 S6Q244B 325-333 S6Q245A 334-342 S6Q245B 343-351 S6Q246A
352-360
S6Q246B 361-369 S6Q247A 370-378 S6Q247B 379-387 S6Q248A 388-396 S6Q248B
397-405
S6Q249A 406-414 S6Q249B 415-423 S6Q2410A 424-432 S6Q2410B 433-441 S6Q2411A
442-450
S6Q2411B 451-459 S6Q2412A 460-468 S6Q2412B 469-477 S6Q2413A 478-486
```

```
S6Q2413B 487-495 S6Q2414A 496-504 S6Q2414B 505-513 S6Q25B 514-522;

END;
LENGTH CHIEF CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4 DEFAULT=8;
%hhid(LCMS.SEC6A, SEC6A);
run;

DATA SEC6B(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "16" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S6Q0B 37-38 S6Q26 39-46 S6Q27 47-54 S6Q28 55-62 S6Q29 63-70 S6Q30 71-78
S6Q31 79-86 ;

END;
LENGTH S6Q26 S6Q27 S6Q28 S6Q29 S6Q30 S6Q31 8 DEFAULT=4;
%hhid(LCMS.SEC6B, SEC6B);
run;

DATA SEC6C(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "17" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S6Q0C 37-38 S6Q32 39-46 S6Q33 47-54 S6Q34 55-62;

END;
LENGTH S6Q32 S6Q33 S6Q34 8 DEFAULT=4;
%hhid(LCMS.SEC6C, SEC6C);
run;


DATA SEC6D(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "18" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S6Q0D 37-38 S6Q35 39-46 S6Q36 47-54 S6Q37 55-62;

END;
LENGTH S6Q35 S6Q36 S6Q37 8 DEFAULT=4;
%hhid(LCMS.SEC6D, SEC6D);
run;
```

```
DATA SEC6E(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "19" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S6Q0E 37-38 S6Q38 39-46 S6Q39 47-54 S6Q40 55-62;

END;
LENGTH S6Q38 S6Q39 S6Q40 8 DEFAULT=4;
%hhid(LCMS.SEC6E, SEC6E);
run;


DATA SEC7(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "20" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S7Q1 37-38 S7Q2 39-40 S7Q4A 41-42 S7Q4B 43-44 S7Q4C 45-46 S7Q5 47 S7Q61 48
S7Q62 49 S7Q63 50 S7Q64 51 S7Q7 52 S7Q8 53-54 S7Q9 55 S7Q10A1 56 S7Q10A2 57
S7Q10B2 58 S7Q10C2 59 S7Q10D2 60 S7Q11 61 S7Q12 62 S7Q13 63 S7Q14 64-66
S7Q15A 67-69 S7Q15B 70 S7Q16 71;

END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC7, SEC7);
run;


DATA SEC8(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "21" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S8Q1 37 S8Q2 38 S8Q3 39-45 S8Q4A 46 S8Q4B 47 S8Q5A 48-49 S8Q5B 50-51 S8Q6A
52
S8Q6B 53 S8Q7 54-60 S8Q8 61 S8Q9 62 S8Q10 63-69 S8Q11 70-71 S8Q12 72;

END;
LENGTH S8Q3 S8Q7 S8Q10 8 DEFAULT=4;
%hhid(LCMS.SEC8, SEC8);
run;

DATA SEC9(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "22" THEN DELETE;ELSE
```

```
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S9CODE 37-38 S9Q1 39-40;

END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC9, SEC9);
run;

DATA SEC10(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "23" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S10Q1 37 S10Q2 38 S10Q3 39 S10Q4 40 S10Q5 41 S10Q6 42 S10Q7 43 S10Q8 44
S10Q9 45
S10Q10 46 S10Q11 47 S10Q12 48 S10Q13 49 S10Q14 50 S10Q15 51 S10Q16 52
S10Q17 53
S10Q18 54 S10Q19 55 S10Q20 56 S10Q21 57;

END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC10, SEC10);
run;


DATA SEC11(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "24" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S11Q1 37 S11Q2 38-39 S11Q371 40 S11Q372 41 S11Q373 42 S11Q374 43
S11Q375 44 S11Q376 45 S11Q377 46 S11Q378 47 S11Q379 48 S11Q3710 49
S11Q3711 50 S11Q3712 51 S11Q3713 52 S11Q3714 53 S11Q3715 54 S11Q3716 55
S11Q3717 56 S11Q3718 57;
END;
LENGTH DEFAULT=4;
%hhid(LCMS.SEC11, SEC11);
run;

DATA SEC120(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "25" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1
```

```
PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
EX1A1 37-44    EX1A2 45-52    EX1A3 53-60
EX1B1 61-68    EX1B2 69-76    EX1B3 77-84
EX1C1 85-92    EX1C2 93-100   EX1C3 101-108
EX1D1 109-116 EX1D2 117-124 EX1D3 125-132
EX1E1 133-140 EX1E2 141-148 EX1E3 149-156
EX1F1 157-164 EX1F2 165-172 EX1F3 173-180
EX22A 181-187 EX22B 188-194 EX22C 195-201 EX22D 202-208 EX22E 209-215
EX23A 216-222 EX23B 223-229 EX23C 230-236 EX23D 237-243 EX23E 244-250
EX24A 251-257 EX24B 258-264 EX24C 265-271 EX24D 272-278 EX24E 279-285 EX24F
286-292
EX24G 293-299 EX24H 300-306 EX24I 307-313 EX24J 314-320 EX24K 321-327
EX25A $328-342 EX25B 343-345 EX25C 346-350
EX26 351-357
EX27A 358-364 EX27B 365-371 EX27C 372-378
EX28 379-385
EX29A 386-392 EX29B 393-399 EX29C 400-406
EX210A 407-413 EX210B 414-420 EX210C 421-427
EX211A 428-434 EX211B 435-441 EX211C 442-448 EX211D 449-455 EX211E 456-462
EX212A 463-470 EX212B 471-478 EX212C 479-486 EX212D 487-494 EX212E 495-502
EX212F 503-510
EX212G 511-518 EX212H 519-526 EX212I 527-534
EX213A 535-540 EX213B 541-546 EX213C 547-552 EX213D 553-558 EX213E 559-564
;

END;
LENGTH CHIEF
CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4 DEFAULT=8;
%hhid(LCMS.SEC120, SEC120);
run;


DATA SEC12A(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "26" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
E141A_Q 52-54    E141A_P 55-60
E141B_Q 76-78    E141B_P 79-84
E142A_Q 100-102 E142A_P 103-108
E142B_Q 124-126 E142B_P 127-132 E142B_A 133-138
E143A_Q 154-156 E143A_P 157-162
E143B_Q 178-180 E143B_P 181-186 E143B_A 187-192
E144A_Q 208-210 E144A_P 211-216
E144B_Q 232-234 E144B_P 235-240 E144B_A 241-246
E145A_Q 262-264 E145A_P 265-270
E145B_Q 286-288 E145B_P 289-294 E145B_A 295-300
E146A_Q 316-318 E146A_P 319-324
E146B_Q 340-342 E146B_P 343-348 E146B_A 349-354
E147A_Q 370-372 E147A_P 373-378
E147B_Q 394-396 E147B_P 397-402 E147B_A 403-408
E148A_Q 424-426 E148A_P 427-432
E148B_Q 448-450 E148B_P 451-456 E148B_A 457-462
E149A_Q 478-480 E149A_P 481-486
```

```
E149B_Q 502-504 E149B_P 505-510 E149B_A 511-516
E1410A_Q 532-534 E1410A_P 535-540
E1410B_Q 556-558 E1410B_P 559-564 E1410B_A 565-570
E1411A_Q 586-588 E1411A_P 589-594
E1411B_Q 610-612 E1411B_P 613-618 E1411B_A 619-624;

END;

LENGTH CHIEF
CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4 E141A_Q E141B_Q E142A_Q
E142B_Q E143A_Q E143B_Q E144A_Q E144B_Q E145A_Q E145B_Q E146A_Q
E146B_Q E147A_Q E147B_Q E148A_Q E148B_Q E149A_Q E149B_Q E1410A_Q
E1410B_Q E1411A_Q E1411B_Q 3 DEFAULT=6;
%hhid(LCMS.SEC12A, SEC12A);

run;

DATA SEC12B(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "27" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
E1412A_Q 52-54   E1412A_P 55-60
E1412B_Q 76-78   E1412B_P 79-84   E1412B_A 85-90
E1413A_Q 106-108 E1413A_P 109-114
E1413B_Q 130-132 E1413B_P 133-138 E1413B_A 139-144
E1414A_Q 160-162 E1414A_P 163-168
E1414B_Q 184-186 E1414B_P 187-192 E1414B_A 193-198
E1415A_Q 214-216 E1415A_P 217-222
E1415B_Q 238-240 E1415B_P 241-246 E1415B_A 247-252
E1416A_Q 268-270 E1416A_P 271-276
E1416B_Q 292-294 E1416B_P 295-300 E1416B_A 301-306
E1417A_Q 322-324 E1417A_P 325-330
E1417B_Q 346-348 E1417B_P 349-354 E1417B_A 355-360
E1418A_Q 376-378 E1418A_P 379-384
E1418B_Q 400-402 E1418B_P 403-408 E1418B_A 409-414
E1419A_Q 430-432 E1419A_P 433-438
E1419B_Q 454-456 E1419B_P 457-462 E1419B_A 463-468
E1420A_Q 484-486 E1420A_P 487-492
E1420B_Q 508-510 E1420B_P 511-516 E1420B_A 517-522
E1421A_Q 538-540 E1421A_P 541-546
E1421B_Q 562-564 E1421B_P 565-570 E1421B_A 571-576;

END;

LENGTH CHIEF
CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4
E1412A_Q E1412B_Q E1413A_Q
E1413B_Q E1414A_Q E1414B_Q E1415A_Q E1415B_Q E1416A_Q E1416B_Q E1417A_Q
E1417B_Q E1418A_Q E1418B_Q E1419A_Q E1419B_Q E1420A_Q E1420B_Q E1421A_Q
E1421B_Q 3 DEFAULT=6;
%hhid(LCMS.SEC12B, SEC12B);

run;


DATA SEC12C(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
```

```
IF SECT NE "28" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
E1422A_Q 52-54   E1422A_P 55-60
E1422B_Q 76-78   E1422B_P 79-84   E1422B_A 85-90
E1423A_Q 106-108 E1423A_P 109-114
E1423B_Q 130-132 E1423B_P 133-138 E1423B_A 139-144
E1424A_Q 160-162 E1424A_P 163-168
E1424B_Q 184-186 E1424B_P 187-192 E1424B_A 193-198
E1425A_Q 214-216 E1425A_P 217-222
E1425B_Q 238-240 E1425B_P 241-246 E1425B_A 247-252
E1426A_Q 268-270 E1426A_P 271-276
E1426B_Q 292-294 E1426B_P 295-300 E1426B_A 301-306
E1427B_Q 322-324 E1427B_P 325-330 E1427B_A 331-336
E1428A_Q 352-354 E1428A_P 355-360
E1428B_Q 376-378 E1428B_P 379-384 E1428B_A 385-390
E1429A_Q 406-408 E1429A_P 409-414
E1429B_Q 430-432 E1429B_P 433-438 E1429B_A 439-444
E1430A_Q 460-462 E1430A_P 463-468
E1430B_Q 484-486 E1430B_P 487-492 E1430B_A 493-498
E1431A_Q 514-516 E1431A_P 517-522
E1431B_Q 538-540 E1431B_P 541-546 E1431B_A 547-552
E1432A_Q 568-570 E1432A_P 571-576
E1432B_Q 592-594 E1432B_P 595-600 E1432B_A 601-606
E1433A_Q 622-624 E1433A_P 625-630
E1433B_Q 646-648 E1433B_P 649-654 E1433B_A 655-660
E1434A_Q 676-678 E1434A_P 679-684
E1434B_Q 700-702 E1434B_P 703-708 E1434B_A 709-714;

END;

LENGTH E1422A_Q E1422B_Q E1423A_Q E1423B_Q E1424A_Q E1424B_Q E1425A_Q
E1425B_Q
E1426A_Q E1426B_Q E1427B_Q E1428A_Q E1428B_Q E1429A_Q E1429B_Q E1430A_Q
E1430B_Q E1431A_Q E1431B_Q E1432A_Q E1432B_Q E1433A_Q E1433B_Q E1434A_Q
E1434B_Q
CHIEF CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4 DEFAULT=6;
%hhid(LCMS.SEC12C, SEC12C);

run;

DATA SEC13(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "29" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34
S13Q1A 37-38 S13Q1B 39-40 S13Q1C 41-42 S13Q1D 43-44 S13Q2 45 S131Q3 46
S131Q4 47
S131Q5 48 S131Q6 49 S131Q7A 50 S131Q7B 51 S131Q7C 52 S131Q7D 53 S131Q7E 54
S131Q7F 55 S131Q7G 56 S131Q8 57 S131Q9 58 S132Q3 59 S132Q4 60 S132Q5 61
S132Q6 62
S132Q7A 63 S132Q7B 64 S132Q7C 65 S132Q7D 66 S132Q7E 67 S132Q7F 68 S132Q7G
69
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S132Q8 70 S132Q9 71 S133Q3 72 S133Q4 73 S133Q5 74 S133Q6 75 S133Q7A 76 S133Q7B 77

S133Q7C 78 S133Q7D 79 S133Q7E 80 S133Q7F 81 S133Q7G 82 S133Q8 83 S133Q9 84 S134Q3 85 S134Q4 86 S134Q5 87 S134Q6 88 S134Q7A 89 S134Q7B 90 S134Q7C 91 S134Q7D 92

S134Q7E 93 S134Q7F 94 S134Q7G 95 S134Q8 96 S134Q9 97 S135Q3 98 S135Q4 99 S135Q5 100

S135Q6 101 S135Q7A 102 S135Q7B 103 S135Q7C 104 S135Q7D 105 S135Q7E 106 S135Q7F 107

S135Q7G 108 S135Q8 109 S135Q9 110 S136Q3 111 S136Q4 112 S136Q5 113 S136Q6 114

S136Q7A 115 S136Q7B 116 S136Q7C 117 S136Q7D 118 S136Q7E 119 S136Q7F 120 S136Q7G 121

S136Q8 122 S136Q9 123 S137Q3 124 S137Q4 125 S137Q5 126 S137Q6 127 S137Q7A 128

S137Q7B 129 S137Q7C 130 S137Q7D 131 S137Q7E 132 S137Q7F 133 S137Q7G 134 S137Q8 135 S137Q9 136 S138Q3 137 S138Q4 138 S138Q5 139 S138Q6 140 S138Q7A 141

S138Q7B 142 S138Q7C 143 S138Q7D 144 S138Q7E 145 S138Q7F 146 S138Q7G 147 S138Q8 148 S138Q9 149 S139Q3 150 S139Q4 151 S139Q5 152 S139Q6 153 S139Q7A 154

S139Q7B 155 S139Q7C 156 S139Q7D 157 S139Q7E 158 S139Q7F 159 S139Q7G 160 S139Q8 161 S139Q9 162 S1310Q3 163 S1310Q4 164 S1310Q5 165 S1310Q6 166 S1310Q7A 167

S1310Q7B 168 S1310Q7C 169 S1310Q7D 170 S1310Q7E 171 S1310Q7F 172 S1310Q7G 173

S1310Q8 174 S1310Q9 175 S1311Q3 176 S1311Q4 177 S1311Q5 178 S1311Q6 179 S1311Q7A 180

S1311Q7B 181 S1311Q7C 182 S1311Q7D 183 S1311Q7E 184 S1311Q7F 185 S1311Q7G 186

S1311Q8 187 S1311Q9 188 S1312Q3 189 S1312Q4 190 S1312Q5 191 S1312Q6 192 S1312Q7A 193

S1312Q7B 194 S1312Q7C 195 S1312Q7D 196 S1312Q7E 197 S1312Q7F 198 S1312Q7G 199

S1312Q8 200 S1312Q9 201

S1313Q3 202 S1313Q4 203 S1313Q5 204 S1313Q6 205 S1313Q7A 206 S1313Q7B 207 S1313Q7C 208 S1313Q7D 209 S1313Q7E 210 S1313Q7F 211 S1313Q7G 212 S1313Q8 213

S1313Q9 214 S1314Q3 215 S1314Q4 216 S1314Q5 217 S1314Q6 218 S1314Q7A 219 S1314Q7B 220 S1314Q7C 221 S1314Q7D 222 S1314Q7E 223 S1314Q7F 224 S1314Q7G 225

S1314Q8 226 S1314Q9 227

S1315Q3 228 S1315Q4 229 S1315Q5 230 S1315Q6 231 S1315Q7A 232 S1315Q7B 233 S1315Q7C 234 S1315Q7D 235 S1315Q7E 236 S1315Q7F 237 S1315Q7G 238 S1315Q8 239

S1315Q9 240

S1316Q3 241 S1316Q4 242 S1316Q5 243 S1316Q6 244 S1316Q7A 245 S1316Q7B 246 S1316Q7C 247 S1316Q7D 248 S1316Q7E 249 S1316Q7F 250 S1316Q7G 251 S1316Q8 252

S1316Q9 253

S1317Q3 254 S1317Q4 255 S1317Q5 256 S1317Q6 257 S1317Q7A 258 S1317Q7B 259 S1317Q7C 260 S1317Q7D 261 S1317Q7E 262 S1317Q7F 263 S1317Q7G 264 S1317Q8 265

S1317Q9 266

S1318Q3 267 S1318Q4 268 S1318Q5 269 S1318Q6 270 S1318Q7A 271 S1318Q7B 272 S1318Q7C 273 S1318Q7D 274 S1318Q7E 275 S1318Q7F 276 S1318Q7G 277 S1318Q8 278

S1318Q9 279

S1319Q3 280 S1319Q4 281 S1319Q5 282 S1319Q6 283 S1319Q7A 284 S1319Q7B 285

```
 S1319Q7C 286 S1319Q7D 287 S1319Q7E 288 S1319Q7F 289 S1319Q7G 290 S1319Q8
291
 S1319Q9 292

 S1320Q3 293 S1320Q4 294 S1320Q5 295 S1320Q6 296 S1320Q7A 297 S1320Q7B 298
 S1320Q7C 299 S1320Q7D 300 S1320Q7E 301 S1320Q7F 302 S1320Q7G 303 S1320Q8
304
 S1320Q9 305

 S1321Q3 306 S1321Q4 307 S1321Q5 308 S1321Q6 309 S1321Q7A 310 S1321Q7B 311
 S1321Q7C 312 S1321Q7D 313 S1321Q7E 314 S1321Q7F 315 S1321Q7G 316 S1321Q8
317
 S1321Q9 318

 S1322Q3 319 S1322Q4 320 S1322Q5 321 S1322Q6 322 S1322Q7A 323 S1322Q7B 324
 S1322Q7C 325 S1322Q7D 326 S1322Q7E 327 S1322Q7F 328 S1322Q7G 329 S1322Q8
330
 S1322Q9 331

 S1323Q3 332 S1323Q4 333 S1323Q5 334 S1323Q6 335 S1323Q7A 336 S1323Q7B 337
 S1323Q7C 338 S1323Q7D 339 S1323Q7E 340 S1323Q7F 341 S1323Q7G 342 S1323Q8
343
 S1323Q9 344

 S1324Q3 345 S1324Q4 346 S1324Q5 347 S1324Q6 348 S1324Q7A 349 S1324Q7B 350
 S1324Q7C 351 S1324Q7D 352 S1324Q7E 353 S1324Q7F 354 S1324Q7G 355 S1324Q8
356
 S1324Q9 357;

END;

LENGTH DEFAULT=4;
%hhid(LCMS.SEC13, SEC13);
run;

DATA SEC14(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "30" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34 S14Q1  37-37
S14Q2A 38-42 S14Q2B 43-47 S14Q2C 48-52
S14Q3A 53-53 S14Q3A4 54-58 S14Q3A5 59-63 S14Q3A6 64-70
S14Q3B 71-71 S14Q3B4 72-76 S14Q3B5 77-81 S14Q3B6 82-88
S14Q3C 89-89 S14Q3C4 90-94 S14Q3C5 95-99 S14Q3C6 100-106
S14Q3D 107-107 S14Q3D4 108-112 S14Q3D5 113-117 S14Q3D6 118-124
S14Q3E 125-125 S14Q3E4 126-130 S14Q3E5 131-135 S14Q3E6 136-142
S14Q3F 143-143 S14Q3F4 144-148 S14Q3F5 149-153 S14Q3F6 154-160
S14Q3G 161-161 S14Q3G4 162-166 S14Q3G5 167-171 S14Q3G6 172-178
S14Q3H 179-179 S14Q3H4 180-184 S14Q3H5 185-189 S14Q3H6 190-196
S14Q3I 197-197 S14Q3I4 198-202 S14Q3I5 203-207 S14Q3I6 208-214
S14Q3J 215-215 S14Q3J4 216-220 S14Q3J5 221-225 S14Q3J6 226-232
S14Q3K 233-233 S14Q3K4 234-238 S14Q3K5 239-243 S14Q3K6 244-250
S14Q7A1 251-251 S14Q7A2 252-257
S14Q7B1 258-258 S14Q7B2 259-264
S14Q7C1 265-265 S14Q7C2 266-271
S14Q7D1 272-272 S14Q7D2 273-278
S14Q8A1 279-279 S14Q8A2 280-285
S14Q8B1 286-286 S14Q8B2 287-292
S14Q8C1 293-293 S14Q8C2 294-299
```

```
S14Q8D1 300-300 S14Q8D2 301-306;


END;


LENGTH S14Q1 S14Q3A S14Q3B S14Q3C S14Q3D S14Q3E S14Q3F S14Q3G S14Q3H S14Q3I
S14Q3J S14Q3K S14Q7A1 S14Q7B1 S14Q7C1 S14Q7D1 S14Q8A1 S14Q8B1 S14Q8C1
S14Q8D1
CHIEF CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4 DEFAULT=5;
%hhid(LCMS.SEC14, SEC14);

run;

DATA SEC15(DROP=SECT);
INFILE LCMS2  MISSOVER LRECL=714;
INPUT SECT $ 35-36@;
IF SECT NE "31" THEN DELETE;ELSE
IF SECT=. THEN DELETE;ELSE DO;
INPUT @1

PROVINCE $1 DISTRICT $2-4 CSA $5-7 SEA $8 RURURB $9 STRATUM $10 CENTRLTY
$11-12
PANEL $13-14 HHN $15-18 CHIEF 19-21 CONSTITU 22-24 STATUS 25 REASON 26
HH_SERL 27-30
RESPNDNT 31-32 HHSIZE 33-34 S15Q1  37-37 S15Q2 38-39 S15Q31 40-41 S15Q31A
42-42
S15Q32 43-44 S15Q32A 45-45 S15Q33 46-47 S15Q33A 48-48 S15Q34 49-50 S15Q34A
51-51
S15Q35 52-53 S15Q35A 54-54 S15Q36 55-56 S15Q36A 57-57;

END;

LENGTH  S15Q1 CHIEF CONSTITU STATUS REASON HH_SERL RESPNDNT HHSIZE 4
DEFAULT=5;
%hhid(LCMS.SEC15, SEC15);

run;
```

Appendix II
SAS Programs for Aggregation

1. HHSZ98. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x     'c:\sas\zambia\data\';

data temp;
  input hid1 $ hid2 $ s1q1 s1q4 s1q3b s1q5;

  cards;
    33070493  11100006 1 1 30 1
    33070493  11100006 2 2 24 2
    ;
  *These two hhd members were omitted from the hhroster, thus entered here based on the data
    from the qn.  they were, however, entered in sec02, thus no correction needed bellow;
 data temp;
   set temp;
 hid=hid1!!hid2;
  drop hid1 hid2;
 run;


data hhroster;
   set lcms.hhroster temp;
  pid=s1q1;
  relat=s1q4;
  hhmember=1;
  if relat>0;
   if hid='5504023225010265' and s1q3b=48 and s1q4=3 then delete; /*duplicates*/
 proc sort out=hhroster nodupkey;
   by hid pid relat s1q5 s1q3a s1q3b;
    run;

  proc means noprint;
  var hhmember;
   output out=hhsize sum=hhsize;
    by hid;
    run;


 data head;
   set hhroster;
    by hid;
    if first.hid;
 /*for where hid='5504081125010125' and hid='5504187326010101' the household head
      was not entered in the hhroster, thus fowllowing corrections*/

      if hid='5504081125010125' then sexh=2;
  else if hid='5504187326010101' then sexh=2;
  else sexh=s1q5;

      if hid='1105021125090097' then ageh=38;*age for head was 3, a mistake, 38 indicated in
qn;
  else if hid='5504081125010125' then ageh=32;
  else if hid='5504187326010101' then ageh=41;
  else ageh=s1q3b;

/* these households have a head age less than 2 years old:
      where hid='2205040327090083' the recorded age was 23 from the questionnaire,
    where hid='5504187326010039' and hid='5504187326010065' the ages were not entered;
   the ages are estimated from the age of their children's ages and their employment
    section (one man just retired last year, thus given age 56.  Their wife's ages will be
    subtract by 4 years from their ages) */

      if hid='2205040327090083' then ageh=23;
  else if hid='5504187326010039' then ageh=56;
  else if hid='5504187326010065' then ageh=49;
  else ageh=ageh;

 data head;
  merge head hhsize;
```

```
       by hid;
        if hid='5504081125010125' or hid='5504187326010101' then hhsize=hhsize+1;
       else hhsize=hhsize; /*this correction due to the two heads were not entered into
       the hhroster*/
         run;

  proc sort out=head; by hid pid;

   proc sort data=lcms.sec02 out=sec02;
     by hid s2q1;


  data sec02;
    set sec02;
    pid=s2q1;
    run;



  data head;
    merge head(in=in1) sec02(in=in2);
     by hid pid;
     if in2=in1;

        if hid='5504081125010125' then marith=5;
    else if hid='5504187326010101' then marith=2;
    else marith=s2q2;
       /* this correction due to these hhds
    heads pid cannot be picked up by data set 'head' since the two hheads were not in
hhroster. */

        if marith=8 then do;
        if hid='1101133211040029' then marith=2;
 else if hid='1105006312100079' then marith=2;
 else if hid='2202010314100001' then marith=4;
 else if hid='2202026225090022' then marith=2;
 else if hid='2202049325090046' then marith=2;
 else if hid='2202060226090050' then marith=2;
 else if hid='2204087326050040' then marith=2;
 else if hid='2204094125030036' then marith=2;
 else if hid='2205029126090056' then marith=2;
 else if hid='2210094526020003' then marith=2;
 else if hid='2704009411110147' then marith=2;
 else if hid='3305038326090068' then marith=2;
 else if hid='3307049311100006' then marith=2;
 else if hid='5502043111010049' then marith=1;
 else if hid='5502087311040139' then marith=2;
 else if hid='5504056125010100' then marith=2;
 else if hid='5504068425010127' then marith=2;
 else if hid='5504164325010178' then marith=4;
 else if hid='5504182326010171' then marith=5;
 else if hid='6607037125090067' then marith=2;
 else if hid='9905056126090131' then marith=2;
 else if hid='9906044125090156' then marith=2;
 else if hid='7704009411110147' then marith=5;
 else if hid='8803002225090062' then marith=2;
 else if hid='8805021111060021' then marith=1;
 else if hid='8807021326090016' then marith=1;
 else if hid='8809016322090061' then marith=2;
 else if hid='8809016326090126' then marith=2;
 * the marith 8 was wrong code. the above corrections were based on the questionnaire entries;
    end;


   if hid='6612020425090225' and pid=1 then relat=1;
     else relat=relat;
     *the relat was miscoded as 11, there was no head;
  run;

  proc sort data=head out=hhsz98 nodup;
    by hid;
     run;
proc sort out=temp;
      by hid;
      run;
```

```
     proc means noprint;
       var hhsize;
       by province district rururb csa sea;
     output out=temp n=micn;


  data temp;
     set temp;
     if micn ge 30 then microid=1;
   else microid=2;
         if district='504' and csa='107' and sea='1' then microid=1;
   else if district='805' and csa='030' and sea='3' then microid=1;
   else if district='504' and csa='035'   then microid=1;
   else if district='703' and csa='015'   then microid=1;
   else if district='501' and csa='013' and sea='5' then microid=2;
   else if district='504' and csa='126' and sea='3' then microid=2;
   else if district='601' and csa='005' and sea='1' then microid=2;
   else if district='608' and csa='069' and sea='2' then microid=2;
   else if district='702' and csa='037' and sea='3' then microid=2;
   else if district='707' and csa='041' and sea='1' then microid=2;
   else microid=microid;

data x.hhsz98;
     set hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
     s1q3a marith relat microid;
run;
```

2.   EXPCLOTH SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';


data hhsz98;
     set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
       marith;


proc sort data=lcms.sec120 out=sec120;
  by hid;
 run;

data house;
   merge sec120 hhsz98(in=in);
     by hid;
     if in;
     expchitn=ex23a;
     expclots=ex23b;
     expfabrc=ex23c;
     exptailr=ex23d;
     expfootw=ex23e;
     expcloth=sum(expchitn, expclots, expfabrc, exptailr, expfootw);

  data x.expcloth;
     set house;
       keep hid province district csa sea rururb stratum centrlty panel hhn expchitn expclots
           expfabrc exptailr expfootw expcloth;

     proc means;
     run;
```

3.   EXPEDU. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';

proc sort data=lcms.sec4 out=sec4;
   by hid;
 data sec4;
     set sec4;
     if s4q1 in(1,2);
     proc means noprint;
```

```
      var s4q1;
     by hid;
     output out=enroll n=enroll;
     proc means;
     run;

data hhsz98;
     set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
       marith;

 proc sort data=lcms.sec120 nodup out=edu;
   by hid;


 data edu;
    merge edu hhsz98(in=in) enroll;
     by hid;
     if in;
       array ea ex1a1 ex1a2 ex1a3;
       array eb ex1b1 ex1b2 ex1b3;

     do i=1 to 3;
     if hid='5504146325010089' or hid='2210054227020021' or hid='2210054227020005'
        then   ea[i]=ea[i]/10;
        else if hid='2210054227020021' then ea[i]=450000;
     else ea[i]=ea[i];
      if hid='2210054227020021' then eb[i]=100000;
     else if hid='8810019426090066' then eb[i]=24000;
     else eb[i]=eb[i];
*these corrections were based on the actual entries in the corresponding questionnaires;
     end;


     expschfe=sum(ex1a1, ex1a2, ex1a3)/12;
     expscuni=sum(ex1b1, ex1b2, ex1b3)/12;
     expscpta=sum(ex1c1, ex1c2, ex1c3)/12;
     expscprv=sum(ex1d1, ex1d2, ex1d3)/12;
     expscbks=sum(ex1e1, ex1e2, ex1e3)/12;
     expschot=sum(ex1f1, ex1f2, ex1f3)/12;
     expedu=sum(expschfe, expscuni, expscpta, expscprv, expscbks, expschot);

data x.expedu;
     set edu;
     keep hid province district csa sea rururb stratum centrlty panel hhn expschfe expscuni
      expscpta expscprv expscbks expschot expedu;
     run;
```

4.   EXPENTCM SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';


data hhsz98;
    set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
    marith;


proc sort data=lcms.sec120 out=sec120;
  by hid;
 run;

data house;
    merge sec120 hhsz98(in=in);
     by hid;
     if in;

     expentn=sum(ex212e,ex24k);
     exptelef=ex24j;

 data x.expentcm;
    set house;
     keep hid province district csa sea rururb stratum centrlty panel hhn expentn exptelef;
      run;
```

5.   EXPFOOD. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';

data hhsz98;
    set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
    marith;

proc sort data=lcms.sec120 out=sec120 nodup;
  by hid;
proc sort data=lcms.sec12a out=sec12a nodup;
  by hid;
 run;
proc sort data=lcms.sec12b out=sec12b nodup;
  by hid;

proc sort data=lcms.sec12c out=sec12c nodup;
  by hid;
 run;

data food;
  merge sec120 sec12a sec12b sec12c;
   by hid;
   run;

data house;
    merge food(in=in1) hhsz98(in=in2);
     by hid;
     if in1=in2;
    exbrekml=ex213a;
    exrollml=ex213b;
    exhammml=ex213c;
    exmaizgr=ex213d;
    exgrind =ex213e;
    maizby=sum(exbrekml,exrollml,exhammml,exmaizgr,exgrind);

    maizhcp=e141a_p;   maizhcq=e141a_q/10;
    maizgvp=e141b_p;   maizgvq=e141b_q/10;
    casvhcp=e142a_p;   casvhcq=e142a_q/10;
    casvgvp=e142b_p;   casvgvq=e142b_q/10;
    casvby=e142b_a*2;
    milehcp=e143a_p;   milehcq=e143a_q/10;
    milegvp=e143b_p;   milegvq=e143b_q/10;
```

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```
mileby=e143b_a*2;
sorghcp=e144a_p;    sorghcq=e144a_q/10;
sorggvp=e144b_p;    sorggvq=e144b_q/10;
sorgby=e144b_a*2;
ricehcp=e145a_p;    ricehcq=e145a_q/10;
ricegvp=e145b_p;    ricegvq=e145b_q/10;
riceby=e145b_a*2;
swtphcp=e146a_p;    swtphcq=e146a_q/10;
swtpgvp=e146b_p;    swtpgvq=e146b_q/10;
swtpby=e146b_a*2;
irsphcp=e147a_p;    irsphcq=e147a_q/10;
irspgvp=e147b_p;    irspgvq=e147b_q/10;
irspby=e147b_a*2;
grdnhcp=e148a_p;    grdnhcq=e148a_q/10;
grdngvp=e148b_p;    grdngvq=e148b_q/10;
grdnby=e148b_a*2;
kapnhcp=e149a_p;    kapnhcq=e149a_q/10;
kapngvp=e149b_p;    kapngvq=e149b_q/10;
kapnby=e149b_a*2;
fishhcp=e1410a_p;   fishhcq=e1410a_q/10;
fishgvp=e1410b_p;   fishgvq=e1410b_q/10;
fishby=e1410b_a*2;
beefhcp=e1411a_p;   beefhcq=e1411a_q/10;
beefgvp=e1411b_p;   beefgvq=e1411b_q/10;
beefby=e1411b_a*2;
goathcp=e1412a_p;   goathcq=e1412a_q/10;
goatgvp=e1412b_p;   goatgvq=e1412b_q/10;
goatby=e1412b_a*2;
sheephp=e1413a_p;   sheephq=e1413a_q/10;
sheepgp=e1413b_p;   sheepgq=e1413b_q/10;
sheepby=e1413b_a*2;
porkhcp=e1414a_p;   porkhcq=e1414a_q/10;
porkgvp=e1414b_p;   porkgvq=e1414b_q/10;
porkby=e1414b_a*2;
gamehcp=e1415a_p;   gamehcq=e1415a_q/10;
gamegvp=e1415b_p;   gamegvq=e1415b_q/10;
gameby=e1415b_a*2;
chikhcp=e1416a_p;   chikhcq=e1416a_q/10;
chikgvp=e1416b_p;   chikgvq=e1416b_q/10;
chikby=e1416b_a*2;
beanhcp=e1417a_p;   beanhcq=e1417a_q/10;
beangvp=e1417b_p;   beangvq=e1417b_q/10;
beanby=e1417b_a*2;
tomahcp=e1418a_p;   tomahcq=e1418a_q/10;
tomagvp=e1418b_p;   tomagvq=e1418b_q/10;
tomaby=e1418b_a*2;
oninhcp=e1419a_p;   oninhcq=e1419a_q/10;
oningvp=e1419b_p;   oningvq=e1419b_q/10;
oninby=e1419b_a*2;
vegihcp=e1420a_p;   vegihcq=e1420a_q/10;
vegigvp=e1420b_p;   vegigvq=e1420b_q/10;
vegiby=e1420b_a*2;
bredhcp=e1421a_p;   bredhcq=e1421a_q/10;
bredgvp=e1421b_p;   bredgvq=e1421b_q/10;
bredby=e1421b_a*2;
fruthcp=e1422a_p;   fruthcq=e1422a_q/10;
frutgvp=e1422b_p;   frutgvq=e1422b_q/10;
frutby=e1422b_a*2;
eggshcp=e1423a_p;   eggshcq=e1423a_q/10;
eggsgvp=e1423b_p;   eggsgvq=e1423b_q/10;
eggsby=e1423b_a*2;
mlkfhcp=e1424a_p;   mlkfhcq=e1424a_q/10;
mlkfgvp=e1424b_p;   mlkfgvq=e1424b_q/10;
mlkfby=e1424b_a*2;
mlkdhcp=e1425a_p;   mlkdhcq=e1425a_q/10;
mlkdgvp=e1425b_p;   mlkdgvq=e1425b_q/10;
mlkdby=e1425b_a*2;
butrhcp=e1426a_p;   butrhcq=e1426a_q/10;
butrgvp=e1426b_p;   butrgvq=e1426b_q/10;
butrby=e1426b_a*2;
sugagvp=e1427b_p;   sugagvq=e1427b_q/10;
sugaby=e1427b_a*2;
salthcp=e1428a_p;   salthcq=e1428a_q/10;
saltgvp=e1428b_p;   saltgvq=e1428b_q/10;
saltby=e1428b_a*2;
coilhcp=e1429a_p;   coilhcq=e1429a_q/10;
```

```
coilgvp=e1429b_p;  coilgvq=e1429b_q/10;
coilby=e1429b_a*2;
bevehcp=e1430a_p;  bevehcq=e1430a_q/10;
bevegvp=e1430b_p;  bevegvq=e1430b_q/10;
beveby=e1430b_a*2;
teachcp=e1431a_p;  teachcq=e1431a_q/10;
teacgvp=e1431b_p;  teacgvq=e1431b_q/10;
teacby=e1431b_a*2;
alcohcp=e1432a_p;  alcohcq=e1432a_q/10;
alcogvp=e1432b_p;  alcogvq=e1432b_q/10;
alcoby=e1432b_a*2;
cigrhcp=e1433a_p;  cigrhcq=e1433a_q/10;
cigrgvp=e1433b_p;  cigrgvq=e1433b_q/10;
cigrby=e1433b_a*2;
bafdhcp=e1434a_p;  bafdhcq=e1434a_q/10;
bafdgvp=e1434b_p;  bafdgvq=e1434b_q/10;
bafdby=e1434b_a*2;


array qn maizhcq maizgvq casvhcq casvgvq milehcq milegvq sorghcq sorggvq ricehcq
          ricegvq swtphcq swtpgvq irsphcq irspgvq grdnhcq grdngvq kapnhcq kapngvq
          fishhcq fishgvq beefhcq beefgvq goathcq goatgvq sheephq sheepgq porkhcq
          porkgvq gamehcq gamegvq chikhcq chikgvq beanhcq beangvq tomahcq tomagvq
          oninhcq oningvq vegihcq vegigvq bredhcq bredgvq fruthcq frutgvq eggshcq
          eggsgvq mlkfhcq mlkfgvq mlkdhcq mlkdgvq butrhcq butrgvq sugagvq salthcq
          saltgvq coilhcq coilgvq bevehcq bevegvq teachcq teacgvq alcohcq alcogvq
          cigrhcq cigrgvq bafdhcq bafdgvq;

array pr maizhcp maizgvp casvhcp casvgvp milehcp milegvp sorghcp sorggvp ricehcp
          ricegvp swtphcp swtpgvp irsphcp irspgvp grdnhcp grdngvp kapnhcp kapngvp
          fishhcp fishgvp beefhcp beefgvp goathcp goatgvp sheephp sheepgp porkhcp
          porkgvp gamehcp gamegvp chikhcp chikgvp beanhcp beangvp tomahcp tomagvp
          oninhcp oningvp vegihcp vegigvp bredhcp bredgvp fruthcp frutgvp eggshcp
          eggsgvp mlkfhcp mlkfgvp mlkdhcp mlkdgvp butrhcp butrgvp sugagvp salthcp
          saltgvp coilhcp coilgvp bevehcp bevegvp teachcp teacgvp alcohcp alcogvp
          cigrhcp cigrgvp bafdhcp bafdgvp;

array pc maizhcpc maizgvpc casvhcpc casvgvpc milehcpc milegvpc sorghcpc sorggvpc ricehcpc
          ricegvpc swtphcpc swtpgvpc irsphcpc irspgvpc grdnhcpc grdngvpc kapnhcpc kapngvpc
          fishhcpc fishgvpc beefhcpc beefgvpc goathcpc goatgvpc sheephpc sheepgpc porkhcpc
          porkgvpc gamehcpc gamegvpc chikhcpc chikgvpc beanhcpc beangvpc tomahcpc tomagvpc
          oninhcpc oningvpc vegihcpc vegigvpc bredhcpc bredgvpc fruthcpc frutgvpc eggshcpc
          eggsgvpc mlkfhcpc mlkfgvpc mlkdhcpc mlkdgvpc butrhcpc butrgvpc sugagvpc salthcpc
          saltgvpc coilhcpc coilgvpc bevehcpc bevegvpc teachcpc teacgvpc alcohcpc alcogvpc
          cigrhcpc cigrgvpc bafdhcpc bafdgvpc;

array tc  maizhc maizgv casvhc casvgv milehc milegv sorghc sorggv ricehc
          ricegv swtphc swtpgv irsphc irspgv grdnhc grdngv kapnhc kapngv
          fishhc fishgv beefhc beefgv goathc goatgv sheephc sheepgv porkhc
          porkgv gamehc gamegv chikhc chikgv beanhc beangv tomahc tomagv
          oninhc oningv vegihc vegigv bredhc bredgv fruthc frutgv eggshc
          eggsgv mlkfhc mlkfgv mlkdhc mlkdgv butrhc butrgv sugagv salthc
          saltgv coilhc coilgv bevehc bevegv teachc teacgv alcohc alcogv
          cigrhc cigrgv bafdhc bafdgv;

do i=1 to 67;

    if qn[i]<0.5 then qn[i]=qn[i]*10;
  else qn[i]=qn[i];
    end;

  do i=1 to 67;
    pc[i]=pr[i]*qn[i]/hhsize;
    tc[i]=pr[i]*qn[i]*2;
    end;

%macro crt(var1,var2,var3,n);
    if &var1>&n then &var3=&var2*2;
  else &var3=&var3;
%mend;
%crt(maizhcpc,maizhcp,maizhc,10000);
%crt(maizgvpc,maizgvp,maizgv,10000);
%crt(casvhcpc,casvhcp,casvhc, 5000);
%crt(casvgvpc,casvgvp,casvgv, 5000);
%crt(milehcpc,milehcp,milehc,10000);
```

```
       %crt(milegvpc, milegvp, milegv, 10000);
       %crt(sorghcpc, sorghcp, sorghc, 10000);
       %crt(sorggvpc, sorggvp, sorggv, 10000);
       %crt(ricehcpc, ricehcp, ricehc, 10000);
       %crt(ricegvpc, ricegvp, ricegv, 10000);
       %crt(swtphcpc, swtphcp, swtphc,  7500);
       %crt(swtpgvpc, swtpgvp, swtpgv,  7500);
       %crt(irsphcpc, irsphcp, irsphc,  7500);
       %crt(irspgvpc, irspgvp, irspgv,  7500);
       %crt(grdnhcpc, grdnhcp, grdnhc,  7500);
       *grdngvpc ok;
       %crt(kapnhcpc, kapnhcp, kapnhc,  7500);
       *kapnhcpc ok;
       %crt(fishhcpc, fishhcp, fishhc, 20000);
       %crt(fishgvpc, fishgvp, fishgv, 20000);
       %crt(beefhcpc, beefhcp, beefhc, 50000);
       *beefgvpc ok;
       %crt(goathcpc, goathcp, goathc, 12000);
       *goatgvpc ok;
       *porkhcpc and porkgvpc ok;
       %crt(sheephpc, sheephp, sheephc, 12000);
       %crt(sheepgpc, sheepgp, sheepgv, 12000);
       %crt(gamehcpc, gamehcp, gamehc, 22000);
       *gamegvpc ok;
       %crt(chikhcpc, chikhcp, chikhc, 30000);
       %crt(chikgvpc, chikgvp, chikgv, 30000);
       %crt(beanhcpc, beanhcp, beanhc,  5000);
       %crt(beangvpc, beangvp, beangv,  5000);
       %crt(tomahcpc, tomahcp, tomahc,  5000);
       %crt(tomagvpc, tomagvp, tomagv,  5000);
       %crt(oninhcpc, oninhcp, oninhc,  5000);
       %crt(oningvpc, oningvp, oningv,  5000);
       %crt(vegihcpc, vegihcp, vegihc, 10000);
       %crt(vegigvpc, vegigvp, vegigv, 10000);
       %crt(bredhcpc, bredhcp, bredhc,  9000);
       %crt(bredgvpc, bredgvp, bredgv,  9000);
       %crt(fruthcpc, fruthcp, fruthc, 10000);
       %crt(frutgvpc, frutgvp, frutgv, 10000);
       %crt(eggshcpc, eggshcp, eggshc,  5000);
       %crt(eggsgvpc, eggsgvp, eggsgv,  5000);
       %crt(mlkfhcpc, mlkfhcp, mlkfhc, 15000);
       %crt(mlkfgvpc, mlkfgvp, mlkdgv, 15000);
       *%mlkdhcpc ok;
       *mlkdgvpc ok;
       *butrhcpc, butrgvpc ok;
       %crt(teachcpc, teachcp, teachc,  6000);
       %crt(teacgvpc, teacgvp, teacgv,  6000);
       *alcohcpc ok, and check alcogvpc;
       *cigrhcpc cigrgvpc ok;
       *bafdhcpc, bafdgvpc ok;

   %macro c(var1, var2, var3, var4, n);
     if &var1>&n and &var2>1 then &var3=&var4*2;
    else &var3=&var3;
   %mend;
    %c(salthcpc, salthcq, salthc, salthcp,    500);
    %c(saltgvpc, saltgvq, saltgv, saltgvp,    500);
    %c(coilhcpc, coilhcq, coilhc, coilhcp,   2000);
    %c(coilgvpc, coilgvq, coilgv, coilgvp,   2000);
    %c(bevehcpc, bevehcq, bevehc, bevehcp, 20000);
    *bevegvpc ok;

    expfdhc=sum(maizhc, casvhc, milehc, sorghc, ricehc, swtphc, irsphc, grdnhc, kapnhc, fishhc, beefhc,
    goathc, sheephc, porkhc, gamehc, chikhc, beanhc, tomahc, oninhc, vegihc, bredhc, fruthc, eggshc,
    mlkfhc, mlkdhc, butrhc, salthc, coilhc, bevehc, teachc, alcohc, cigrhc, bafdhc);

    expfdby=sum(exbrekml, exrollml, exhammml, exmaizgr, exgrind,
    casvby, mileby, sorgby, riceby, swtpby, irspby, grdnby, kapnby, fishby, beefby,
    goatby, sheepby, porkby, gameby, chikby, beanby, tomaby, oninby, vegiby, bredby, frutby, eggsby,
    mlkfby, mlkdby, butrby, saltby, coilby, beveby, teacby, alcoby, cigrby, bafdby, exbrekml, exrollml,
    exhammml, exgrind);

    expfdgv=sum(maizgv, casvgv, milegv, sorggv, ricegv, swtpgv, irspgv, grdngv, kapngv, fishgv, beefgv,
    goatgv, sheepgv, porkgv, gamegv, chikgv, beangv, tomagv, oningv, vegigv, bredgv, frutgv, eggsgv,
    mlkfgv, mlkdgv, butrgv, saltgv, coilgv, bevegv, teacgv, alcogv, cigrgv, bafdgv);
    expfood=sum(expfdhc, expfdby, expfdgv);
```

```
  data x.expfdagg;
     set house;
      keep hid province district csa sea rururb stratum centrlty panel hhn
      expfood expfdhc expfdby expfdgv;
     proc means;
       run;

  data x.expfditm;
     set house;
     keep hid province district csa sea rururb stratum centrlty panel hhn
        exbrekml exrollml exhammml exmaizgr exgrind
        maizhc  maizgv           casvhc casvgv casvby milehc milegv mileby sorghc sorggv
sorgby
        ricehc  ricegv  riceby  swtphc swtpgv swtpby irsphc irspgv irspby grdnhc grdngv
grdnby
        kapnhc  kapngv  kapnby  fishhc fishgv fishby beefhc beefgv beefby goathc goatgv
goatby
        sheephc sheepgv sheepby porkhc porkgv porkby gamehc gamegv gameby chikhc chikgv
chikby
        beanhc  beangv  beanby  tomahc tomagv tomaby oninhc oningv oninby vegihc vegigv
vegiby
        bredhc  bredgv  bredby  fruthc frutgv frutby eggshc eggsgv eggsby mlkfhc mlkfgv
mlkfby
        mlkdhc  mlkdgv  mlkdby  butrhc butrgv butrby        sugagv sugaby salthc saltgv
saltby
        coilhc  coilgv  coilby  bevehc bevegv beveby teachc teacgv teacby alcohc alcogv
alcoby
        cigrhc  cigrgv  cigrby  bafdhc bafdgv bafdby;
      proc means;
     run;
```

6.   EXPHEALT. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x     'c:\sas\zambia\data\';


data hhsz98;
     set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
     marith;

 proc sort data=lcms.sec120 nodup out=health;
  by hid;


 data health;
   merge health hhsz98(in=in);
     by hid;
     if in=in;
  if hid='5502058112040023' then ex22a=314000;
   else ex22a=ex22a;
   *The value was 3,140,000, but the correct value was found from the questionnaire;
   expmedsn=ex22a;
   expdocfe=ex22b;
   exptradi=ex22c;
   exphsptl=ex22d;
   expschem=ex22e;
   exphealt=sum(expmedsn, expdocfe, exptradi, exphsptl, expschem);


data x.exphealt;
     set health;
   keep province district csa sea rururb stratum centrlty panel hhn hid expmedsn expdocfe
        exptradi exphsptl expschem exphealt;
     run;
```

7.   EXPHOUS. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x     'c:\sas\zambia\data\';
```

```
data hhsz98;
    set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
     marith;

data house;
   set lcms.sec8;
    proc sort out=house;
     by hid;
  run;


proc sort data=lcms.sec120 out=sec120;
  by hid;
 run;

data house;
   merge house sec120 hhsz98(in=in);
    by hid;
    if in;
    if hid='2204087326030052' then ex24c=ex24d;
  else exp24c=ex24c;
 *electricity expenditure was mistaken for candles, corrections was found
     from the questionnaire;

   if hid='8803005212110019' then ex24e=50000;
 else ex24e=ex24e;
       if hid='2203020427090123' then ex24g=20000;
 else if hid='8806122225050195' then ex24g=50000;
 else ex24g=ex24g;
       if hid='5504023225010282' then ex24d=12000;
 else if hid='2204087326030052' then ex24d=0;
 else if hid='5504154227010017' then ex24d=0;
 else ex24d=ex24d;
       if hid='5504122225010247' then ex24c=100000;
 else ex24c=ex24c;
  *The above corrections are found from the questionnaires;

   expwater=ex24b;
   expwates=s8q7;
   expelect=ex24c;
   expelest=s8q10;
  explight=sum(ex24d, ex24e, ex24f);
  cq=ex25b/10;
  if cq<0.5 then cq=cq*10;
   else cq=cq;
   *quantity was entered with no decimal point, that's why divided by 10;
  expcook=sum(ex24h, ex25c*cq, ex24g);
  exprepar=ex24i;

data x.exphous;
   set house;
    keep hid province district csa sea rururb stratum centrlty panel hhn expwater expwates
         expelect expelest explight expcook exprepar;
                         proc means; run;
```

8.   EXPINK.SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';


data hhsz98;
    set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
     marith;


proc sort data=lcms.sec6c out=sec6c;
  by hid;
 run;


data inkind;
```

```
   merge sec6c hhsz98(in=in);
     by hid;
     if in;
   expink=s6q32;
   if hid='2205052325090043' then expink=0;
  else expink=expink;
 *the above correction is based on the questionnaire entry;
  proc means noprint;
     var expink;
     by hid;
   output out=inkind sum=;
     run;
data x.expink;
    set inkind;
     keep hid province district csa sea rururb stratum centrlty panel hhn expink;
      run;
```

9. EXPOTHR. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';


data hhsz98;
     set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid
hhsize sexh ageh
       marith;
     proc print; where district='804' and csa='061' and sea='1';
     run;
      proc print; where district='804' and csa='058' and sea='1';
     run;
proc sort data=lcms.sec120 out=sec120;
  by hid;
 run;

data house;
   merge sec120 hhsz98(in=in);
     by hid;
     if in;
     if hid='1106020313070066' then ex212a=60000;
  else ex212a=ex212a;
     if hid='5504149327010085' then ex212g=100000;
  else ex212g=ex212g;

  *the above corrections were made based on the questionnaire's entries;
  *the first two largest values for servant expenditure were above one and
two million
   K,respectively, which were the actual entries in the questionnaire.
one hhd was running a
   business and one hhd was a minister;

   if hid='8810019426090101' then ex212a=10000; *this household reported
1000000 on toiletries
  which is too high, we did adjustment;
  else ex212a=ex212a;

   expremit=sum(ex26,ex28);
   if hid='1104009420900056' then expremit=0;
   else expremit=expremit;
   exphair=ex212c;
   expserv=ex212f;
   expothr=sum(ex212a,ex212b,ex212d,ex212g,ex212h,ex212i);

 data x.expothr;
    set house;
```

```
          keep hid province district csa sea rururb stratum centrlty panel hhn
expremit
               expserv expothr exphair;
            proc means;
               run;
```

10.   EXPRENT. SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x     'c:\sas\zambia\data\';


data hhsz98;
     set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid hhsize sexh ageh
     marith;


proc sort data=lcms.sec120 out=sec120 nodup;
  by hid;
 run;
proc sort data=lcms.sec8 out=sec8 nodup;
  by hid;
   run;

 data house;
   merge sec120 sec8 hhsz98(in=in);
    by hid;
    if in;

    ARRAY WATER WATER1-WATER8;
    IF (1<=s8q4a<=8) THEN DO;
       DO OVER WATER; WATER=0; END;
       IF s8q4a=1         THEN WATER1=1;
       IF s8q4a=2         THEN WATER2=1;
       IF s8q4a=3         THEN WATER3=1;
       IF s8q4a=4         THEN WATER4=1;
       IF s8q4a=5         THEN WATER5=1;
       IF s8q4a=6         THEN WATER6=1;
       IF s8q4a=7         THEN WATER7=1;
       IF s8q4a=8         THEN WATER8=1;

    END;

         if s8q8 in (1,6) then light=1;
       else if s8q8 in (4,5,7) then light=4;
       else if s8q8 =8 then light=5;
       else light=s8q8;

    /* 1=kerosene/diesel, 2=electricity, 3=candle, 4=open fire, torch and other,
       5=none. */

    ARRAY TLIGHT LIGHT1-LIGHT5;
    IF (1<=light<=5) THEN DO;
       DO OVER TLIGHT; TLIGHT=0; END;
       IF light=1        THEN LIGHT1=1;
       IF light=2        THEN LIGHT2=1;
       IF light=3        THEN LIGHT3=1;
       IF light=4        THEN LIGHT4=1;
       IF light=5        THEN LIGHT5=1;
   END;

       IF LIGHT=2 THEN LIGHTELE=1;
     ELSE LIGHTELE=0;

          if s8q11 IN (1) then toilet=1;
        else if s8q11 in (2,3) then toilet=2;
        else if s8q11 in (4) then toilet=3;
        else if s8q11 in (5,6,7,8,9) then toilet=4;
        else if s8q11=10 then toilet=5;

   /* 1=own flush toilet, 2=flush outside/shared, 3=Pit latrine toilet 4=bucket,aqua privy
      5=none */
```

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```
      ARRAY TTOIT TTOIT1-TTOIT5;
    IF (1<=TOILET<=5) THEN DO;
      DO OVER TTOIT; TTOIT=0; END;
      IF TOILET=1         THEN TTOIT1=1;
      IF TOILET=2         THEN TTOIT2=1;
      IF TOILET=3         THEN TTOIT3=1;
      IF TOILET=4         THEN TTOIT4=1;
      IF TOILET=5         THEN TTOIT5=1;
    END;

    IF S8Q12 IN(1) THEN REFUSE1=1;
  ELSE REFUSE1=0;
    IF S8Q12 IN (2,3,4,5) THEN REFUSE2=1;
  ELSE REFUSE2=0;
    IF S8Q9 IN(6,7) THEN COOKELEC=1;
  ELSE COOKELEC=0;

    if rururb='1' then rural=1;
  else if rururb='2' then rural=0;
    if stratum='5' then lowcost=1;
  else lowcost=0;
    if stratum='6' then midcost=1;
  else midcost=0;
    if stratum='7' then hicost=1;
  else hicost=0;

    RENTES=S8Q3;
    RENT=EX24a;
  IF S8Q1 IN(2,3) THEN GOV=1;
  ELSE GOV=0;
    rentespc=rentes/hhsize;
    rentpc=rent/hhsize;

%macro big(var1);
   proc sort data=house out=big;
     by descending &var1;
   data big;
     set big(obs=20);
    proc print;
      var hid panel &var1 hhsize;
        run;
%mend;
%big(rentespc);
%big(rentpc);

    DATA RENTES;
      SET HOUSE;
       IF RENTES>4000;
    LOGRENT=LOG(RENTES/HHSIZE);

      PROC REG DATA=RENTES OUTEST=HPARA;
        MODEL LOGRENT= GOV WATER3 WATER4 WATER5 WATER6 WATER7 LIGHTELE COOKELEC TTOIT1
                   MIDCOST HICOST HHSIZE;
        RUN;

    DATA hpara;
       set hpara;

    ARRAY P [i] GOV    WATER3  WATER4  WATER5  WATER6  WATER7  LIGHTELE COOKELEC TTOIT1
                   MIDCOST  HICOST  HHSIZE ;
    ARRAY PP [i] PGOV PWATER3 PWATER4 PWATER5 PWATER6 PWATER7 PLIGHTEL PCOOKELE PTTOIT1
                   PMIDCOST PHICOST PHHSIZE ;
    DO I=1 TO 12;
    PP[I]=P[I];
    END;
KEEP INTERCEP PGOV PWATER3 PWATER4 PWATER5 PWATER6 PWATER7 PLIGHTEL PCOOKELE PTTOIT1
                   PMIDCOST PHICOST PHHSIZE ;


    DATA X.EXPRENT;
    IF _N_=1 THEN SET HPARA;
             SET HOUSE;
     IF RENTES > 4000 THEN RENTES=RENTES;
       ELSE DO;
```

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```
        LGEXPREN=SUM(INTERCEP,  GOV*PGOV,  WATER3*PWATER3, WATER4*PWATER4, WATER5*PWATER5,
        WATER6*PWATER6, WATER7*PWATER7, LIGHTELE*PLIGHTEL,  COOKELEC*PCOOKELE, PTTOIT1*TTOIT1,
        MIDCOST*PMIDCOST, HICOST*PHICOST, HHSIZE*PHHSIZE);

     RENTES=(EXP(LGEXPREN))*HHSIZE;

  END;

   exprent=rent;
   exprntes=rentes;
  KEEP HID PROVINCE DISTRICT CSA SEA RURURB STRATUM CENTRLTY PANEL HHN EXPRNTES EXPRENT;

 PROC MEANS data=x.exprent; RUN;
 PROC MEANS data=x.exprent; WHERE EXPRENT>0;

RUN;
```

Regression results:

Model: MODEL1
Dependent Variable: LOGRENT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	12	1528.33394	127.36116	222.496	0.0001
Error	2522	1443.64389	0.57242		
C Total	2534	2971.97783			

Root MSE	0.75658	R-square	0.5142	
Dep Mean	8.53292	Adj R-sq	0.5119	
C.V.	8.86665			

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Definition
INTERCEP	1	8.749463	0.06200429	141.111	
GOV	1	-1.133110	0.04552845	-24.888	gov subsidized=1
WATER3	1	0.208449	0.10051687	2.074	protected well
WATER4	1	0.226857	0.08760652	2.590	borehole
WATER5	1	0.375774	0.06134492	6.126	public tap
WATER6	1	0.588064	0.06298596	9.336	own tap
WATER7	1	0.383435	0.06772768	5.661	other tap
LIGHTELE	1	0.237110	0.05260215	4.508	electricity lighting
COOKELEC	1	0.437735	0.05195494	8.425	electricity cooking
TTOIT1	1	0.261496	0.04807343	5.440	own flush toilet
MIDCOST	1	0.065793	0.04587989	1.434	urban mid cost area
HICOST	1	0.320678	0.05296086	6.055	urban high cost area
HHSIZE	1	-0.173206	0.00597892	-28.969	household size

11. EXPTRNSP.SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';


data hhsz98;
     set x.hhsz98;
 keep province district csa sea rururb stratum centrlty panel hhn hid pid
hhsize sexh ageh
       marith;


proc sort data=lcms.sec120 out=sec120;
  by hid;
 run;

data house;
   merge sec120 hhsz98(in=in);
    by hid;
    if in;
    if hid='5504023225010401' then ex210a=15000;
  else ex210a=ex210a;
    if hid='8807015212100041' then ex211d=13000;
  else ex211d=ex211d;
 *the above corrections made based on the questionnaire entries;
    exptrswk=ex210a;
    exptrsch=ex210b;
    exptroth=ex210c;
    exptrful=ex211a;
    exptrmtr=sum(ex211b,ex211c,ex211e);
    exptrbik=ex211d;
```

```
          exptrnsp=sum(exptrswk,exptrsch,exptroth,exptrful,exptrmtr,exptrbik);
   data x.exptrnsp;
       set house;
          keep hid province district csa sea rururb stratum centrlty panel hhn
exptrswk
          exptrsch exptroth exptrful exptrmtr exptrbik exptrnsp;
            proc means;
       run;
```

12. EXPTOT.SAS

```
OPTIONS ps=100 ls=100;
LIBNAME LCMS 'C:\sas\zambia\data2\';
libname x    'c:\sas\zambia\data\';

%macro srt(data1,data2);
   proc sort data=&data1 out=&data2;
       by hid;
%mend;

%srt(x.hhsz98,hhsz98);
%srt(x.expcloth,expcloth);
%srt(x.expedu,expedu);
%srt(x.expentcm,expentcm);
%srt(x.expfdagg,expfdagg);
%srt(x.exphealt,exphealt);
%srt(x.exphous,exphous);
%srt(x.expink,expink);
%srt(x.expothr,expothr);
%srt(x.exprent,exprent);
%srt(x.exptrnsp,exptrnsp);

   data exp;
     merge expcloth expedu expentcm expfdagg exphealt exphous expink
                     expothr exprent exptrnsp;
   by hid;
   run;
 data exptot;
 merge hhsz98(in=in1) exp(in=in2) ;
   by hid;
   if in1=in2 ;
     exptot  =sum(expcloth, expedu, expcloth, expentn, exptelef, expfood, exphealt, expwater, expelect,
            explight, expcook, exprepar, expink, expremit, exphair, expserv, expothr, exprent, exptrnsp);


     exptotes=sum(expcloth, expedu, expcloth, expentn, exptelef, expfood, exphealt, expwates, expelest,
          explight, expcook, exprepar, expink, expremit, exphair, expserv, expothr, exprntes, exptrnsp);

 data x.exptot;
   set exptot;
   run;

 %macro big(var1);

   proc sort data=exptot out=exptot;
     by decending &var1;
   data temp;
     set exptot(obs=100);
      proc print;
       var hid panel &var1 hhsize;
      run;
%mend;
%big(exptot);
%big(exptotes);
```