# Imputation of Non-Response on Economic Variables in the Mexican Health and Aging Study (MHAS/ENASEM) 2012 

Project Report

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#### Abstract

The report describes the levels of non-response and the imputation procedure used in the Mexican Health and Aging Study (MHAS/ENASEM) 2012, to assign an exact amount to questions on economic value that had a non-response or a response using unfolding brackets. We used a multiple imputation technique, involving the regression sequencing method with a SAS-based software routine (IVEware) developed by researchers at the Survey Methodology Program, Survey Research Center, Institute for Social Research at the University of Michigan ${ }^{1}$. We completed the imputation for economic variables such as income, assets, health care expenditures, and monetary help received.

Similar methodology was used to impute non-response in the MHAS 2001 and 2003 surveys. For a more detailed description of the imputation process, the reader of this document can refer to the companion MHAS project documents: "Imputation of Non-Response on Economic Variables in the Mexican Health and Aging Study 2001" and "Imputation of NonResponse on Economic Variables in the Mexican Health and Aging Study 2003". The MHAS data files used in the imputation process correspond to each raw Section of the survey instrument, containing the original variables as they were recorded in the survey interview. All constructed variables of the monetary amounts (with missing values) and the corresponding imputed variables (without missing values) are provided to the user in separate data files. In addition, we provide a separate file at the individual level that contains variables for income, and a file at the household level with variables for net worth. It is important to note, that the process used to construct the income and net worth variables is slightly different between 2012 and 2001/2003. The difference is due to the changes implemented to the survey instruments. The table below provides a list of data files, containing the imputed and constructed variables corresponding to 2012, which are available to the user in the study website in the Constructed Data section.


| Section | Section Name | Record unit | No. of <br> variables | No. of <br> observations |
| :--- | :--- | :--- | ---: | ---: |
| Section D - imp | Health Care Services | Individual | 21 | 15,723 |
| Section F - imp | Parents and Help to Parents | Individual | 6 | 15,723 |
| Section G - imp | Help and Children | Individual/Couple | 44 | 9,696 |
| Section J - imp | Housing | Individual/Couple | 17 | 10,427 |
| Section K - imp | Pension, Income and Assets | Individual/Couple | 164 | 10,427 |
| Section SD - imp | Next of kin | Indvidual | 12 | 2,742 |
| INCOME | Total Individual Income | Individual | 12 | 15,723 |
| ASSETS | Total Net Worth | Individual/Couple | 11 | 10,427 |

[^1]
## Introduction

The 2001 baseline survey of the Mexican Health and Aging Study (MHAS/ENASEM) is a national representative survey of individuals born prior to 1951 , referred as the population aged 50 or older as of the year 2001. The baseline survey was conducted in the summer of 2001, and a follow-up visit to the same individuals was carried out in the summer of 2003 and fall of 2012. The sample for the MHAS baseline was selected from residents of both rural and urban areas, from the National Employment Survey (Encuesta Nacional de Empleo, ENE), carried out by the Mexican Statistical Bureau (Instituto Nacional de Estadística, Geografía e Informática, INEGI) in Mexico.

The ENE survey covered both urban and rural areas and has sample in all 32 states of Mexico. Households with at least one resident of ages 50 or older were eligible to be part of the MHAS baseline sample. From this sample frame, there were 11,000 households selected with at least one person of eligible age. If more than one age-eligible person resided in the household, then one was randomly selected to be part of MHAS prior to the fieldwork. If the selected MHAS person was married or in a consensual union, with the spouse residing in the same household, then the spouse or partner was also interviewed as part of MHAS regardless of his/her age. Experienced personnel from INEGI conducted the surveys. The goal was to obtain direct interviews with the person of interest (selected or spouse). When it was not possible to obtain a direct interview due to illness, hospitalization, or temporary absence, a proxy interview was conducted.

For the 2003 re-visit, all age-eligible persons interviewed in 2001 were targeted for follow-up, as well as their spouse/partner. This was attempted even if the household had moved from its 2001 location. If couples had split from their 2001 situation to reside in two different households, a separate interview was attempted with each individual and their new spouse if applicable. In addition, if a baseline respondent had died, an interview was sought in 2003 with a next-of-kin or informed respondent.

The 2012 follow-up visit to all panel individuals included all age-eligible persons interviewed in 2001 and/or 2003. In addition, the sample was refreshed by adding a representative sample of the population from the 1952-1961 birth cohorts, as well as their spouses/partners regardless of age. Similar to the baseline interview, the sampling frame for the new cohort
sample was the Mexican National Employment and Occupation Survey (ENOE, previously named National Employment Survey, ENE) 2012.

Thus MHAS/ENASEM 2012 included three types of questionnaires according to the type of interview: a) direct, b) proxy, or c) next-of-kin. Respondents were also classified by their status in the study: a) follow-up, for those who completed an interview in 2001 and/or 2003, or b) new sample, for those who were interviewed in 2012 for the first time, either because they were new spouses of a respondent, or because they were part of the new sample.

A household code was created to capture changes in the situation of the individual or couple interviewed to reflect modifications by 2012 in the couple-composition of the target individual, and the spouse/partner if applicable. This is referred to as "updated household," and the codes reflect the type of change experienced, including divorce/separation, death, or new spouse. In the case of split couples as mentioned above, an interview was sought with both baseline respondents in their respective households and their new spouses if applicable. The updated-household codes also capture whether the household observed contains the sampled respondent, or the spouse of the selected person. Thus in 2012, the unique household identifier CUNICAH is supplemented with SUBHOG_12 to form the unique household identifier. ${ }^{2}$

The MHAS instrument was designed with a common strategy, using bracket questions, to reduce non-response on questions that involved a monetary amount. This report describes the patterns of non-response obtained in MHAS 2012 for the economic variables, with emphasis on the questions used to calculate total income and net worth of an individual or couple. We first present a summary of the economic variables that were asked about in MHAS, followed by a description of the response rates obtained, the imputation methodology used, and a comparison of the distribution of the original variables and the imputed variables.

[^2]
## Economic Variables in MHAS

The questions used to measure income and assets were asked in MHAS within three sections of the questionnaire: Family Help (section G), Housing (section J), and Income \& Assets (section K ). In addition, there were questions on health care expenditures (section D and SD ) by the individuals and on economic help to parents (section F). The survey instrument was designed to ask the help from children, housing, and financial sections only from one of the two respondents in couple-households, usually the first interviewed, although the individuals were offered the choice about who could best provide answers to the economic sections. The chosen financial respondent provided information on each of the spouses' labor income, pension income, and other public transfers. For couples, the questions on business income, real estate rents, financial assets income, and private transfers refer to the couple (jointly). For the cases of single-person households, these questions refer only to the individual respondent. For assets, the information was asked about the individual's or couple's net worth of assets in the form of homes, businesses, rental properties, capital, vehicles, other debts, and other assets.

Similar to the previous waves, the 2012 survey included questions with unfolding brackets to recover non-response on the questions about income, assets and other variables that asked for monetary amounts. This technique has been applied in the U.S. Health and Retirement Survey (HRS) with random entry-point, and the advantages of the strategy to reduce non-response in financial questions has been reported in the literature (Hurd 1998, Hurd 1999). Hurd shows that the point of entry of the bracket questions affects the respondents' answers on income and may bias the distribution of the financial variables, thus a random entry point is recommended. In a paper-and-pencil instrument such as the one used in MHAS in 2001/2003, a random entry point seemed impractical, thus we opted for a mid-point entry. We continued this practice in 2012. According to the yes/no response to the initial bracket question, the instrument proceeds to ask about a lower or higher amount. See Diagram 1 (p.17) for an example of the unfolding bracket questions. In the example, if the respondent provides no exact amount in K.88, then the series of questions in K. 89 are asked. If an amount is given in K. 88 , then the interview proceeds to ask K. 90 .

MHAS 2012 included 42 different components of annual flows to measure total income of a person (and his/her spouse if applicable), and 19 different types of assets to calculate total net
worth of the individual (or couple). Table 1 provides a list of items that were asked regarding income, and Table 2 provides the equivalent for assets (See pp. 19 and 20).

## Income, Assets Variables, and the Distribution of Non-Response

We summarize first the results for the components of income. The first column of Table 1 presents the 42 components of income and 3 components on pensions around the death of a person that were asked in the survey, and the number of cases that responded each series of questions. The second column decomposes the total number of observations into those that stated that they receive the source of income, those that replied that they do not receive such source, and those who refused or don't know the answer. Column 3 of the table decomposes those who receive the source of income into: those that give an exact value for the amount, those that provide an answer through brackets, and those that refuse/don't know the amount.

Among the components of income, from Column 2 it is evident that a relatively small proportion of respondents report receiving income from each type considered. The source of income with more than $20 \%$ of cases stating that they receive it is: family help_1 (34\%) and family help_2 $2^{3}(19 \%)$. The column of (No-Response/Don't Know) shows low prevalence, with a maximum of $1 \%$ for capital assets income-1. From the results in Column 3 about those that report receiving each source of income, we obtain high exact-amount response (74 to $98 \%$ of cases for the most important components), and relatively good recovery through the bracket questions as well (an additional 2 to $12 \%$ of cases for the most relevant components of income). The prevalence of (Refuse/Don't know) the amount, conditional on receiving income, exhibits low prevalence. For the main sources of income mentioned above, we obtain non-response rates as follows: own labor (3\%), spouse's labor (9\%), business income (10\%), family help_1 (3\%) and family help_2 (3\%). These results reveal that non-response is low for the components of total income considered by the survey ${ }^{4}$. The overall distribution of nonresponse indicates that imputing the missing values can be a good strategy, since there are a relatively large number of cases that can be used in the imputation equations to assign a missing value for a relatively small number of cases.

[^3]Table 2 presents the distribution of responses for the components of total net worth considered in the study. Most respondents report that they have assets in the form of their home (77.7\%). In addition to this type, relatively few cases report ownership of assets. Business (14\%), vehicles ( $27 \%$ ) and Other Assets ( $66 \%$ ) were the next most-prevalent types reported by respondents. The non-response to the question about ownership (\% DK \& NR) shows lowprevalence (less than 2\%), with one exception.

Conditional on reporting ownership of the asset, we find low rates of non-response on the value. If we focus on the most commonly owned type of asset, the home, column number 6 shows that $49 \%$ provided an exact amount for their home value and for the debt on the home. Another $33 \%$ of the cases provided the value through the use of brackets, and $18 \%$ provided no value. Thus the combined non-response (DK whether own or not, and missing value of the asset) is around $20 \%$ for the respondent's home.

We conclude also from Table 2 that the number of cases that provided bracket information (column number 7) is small compared to those that provided an exact amount (column number 6).

## The Impact of the Unfolding Brackets to Reduce Non-Response

As indicated by the numbers provided in Tables 1 and 2, only a small proportion of the respondents receive or own most of the income sources or types of assets that were asked about in the survey. The results in Table 1 indicate, for example, that among those who report business income (in business income-1), the initial non-response was $24 \%$, but two-thirds of these cases were recovered through the use of brackets ( $15 \%$ of the $24 \%$ ). According to the results presented in Table 2, among those who own a home, the initial non-response on the value was $51 \%$, but in more than two-thirds of these cases ( $33 \%$ of those who own a home) the value response was recovered through the use of follow-up brackets. Significant recovery of non-response was obtained also for the gross value of business, gross value of vehicles, and net value of other assets (see column number 7 of Table 2).

In conclusion, the impact of the use of brackets as a strategy to minimize non-response seems to be advantageous in general, but particularly beneficial for the variables measuring the total net worth of the individuals/couples in MHAS.

## Imputation Methodology

The bracketed unfolding techniques to reduce item non-response were used extensively in the collection of amount data in MHAS, including not only economic quantity variables such as income and assets but also amount of help hours, health care expenditures, household rent and household consumption. Individuals unable or unwilling to provide an exact amount in their response to such questions were asked a series of unfolding bracket questions.

The non-response on amounts -- either complete non-response or when information was provided by the bracket questions -- was imputed in order to calculate income and assets by major categories, and to provide total income and total net worth estimates.

We used a multiple imputation technique (Diagram 2, p. 18), involving the method of sequence of regressions with a SAS-based software routine (IVEware), developed by researchers at the Survey Methodology Program, Survey Research Center, Institute for Social Research at the University of Michigan (Raghunathan et al. 2000; Raghunathan 2001). The method was selected because it offers several appealing characteristics for the MHAS data:

1) Allows for imputation of zero as a possible value for amounts. This is an important characteristic of the methodology, since we have a large proportion of cases with noincome or no-assets in most of the categories asked, and thus the value of zero needs to be one of the value options for imputations.
2) Takes into account other variables being imputed as regressors in the imputation of a particular variable. This is appealing since we have multiple variables that need to be imputed in order to derive a summary variable, e.g. total income.
3) Takes advantage of the brackets used to recover the non-response. This is a valuable attribute of the methodology, since there were an appreciable number of cases that although provided non-response initially, opted for a bracket response upon further query.
4) Allows for transformations to the imputed variable, which is particularly important for variables with skewed distributions, such as those for income and assets ${ }^{5}$.
[^4]For a more detailed description of the imputation methodology implemented in the IVEware software refer to the imputation method description in Raghunathan (2001) and Honggao (2001).

The methodology we are using for 2012 imputation is similar to that used for non-response imputation in MHAS 2001 and 2003. For a more detailed description of the imputation methodology, the reader of this document can refer to the companion MHAS project documents: "Imputation of Non-Response on Economic Variables in the Mexican Health and Aging Study 2001" and "Imputation of Non-Response on Economic Variables in the Mexican Health and Aging Study 2003". In addition, flow charts that illustrate the procedures for the construction of the imputed variable are available in Appendix B of this document. The IVEware program codes used in the imputation procedure are included in Appendix C.

We imputed separately the missing values for the sampled respondent's items, the spouse's, and the variables that were asked in the next of kin, core and proxy questionnaires. Transformations were made in all cases to express all sources of income in monthly terms. We grouped variables to be imputed together according to the list provided in Tables 3.1 to 3.8 (See p. 21-23). This means that the variables that are grouped together are used in the imputation program for each of the variables in the group. The table presents the groupings of the variables as well as the names of the derived, imputed and flag variables as they appear in the MHAS/ENASEM 2012 imputed data files. The column "Question number" refers to the question numbers as they appear in the questionnaire. The "Derived" variables refer to the amount of income or value of an asset as it was derived from the answers to the corresponding questions on the survey, and these may contain missing values. The "Imputed" variables contain no missing values. Finally, the "Flag" variable is a dummy that indicates if the variable was imputed or not.

## Comparison of Variables With- and Without-Imputed Values

Tables 4 (See pp. 21-23) contain the distribution of the derived and imputed variables, for a select group of survey items. The tables show that the imputed values tend to shift the distributions to the right, as compared to the derived variables containing missing values. Part of the reason for this shift, is that most non-response occurred among the cases that declared
that the individual receives income from such source. Even among the cases that are greater than zero though, the imputation seems to be shifting the distribution rightwards. That is, most missing values are imputed a value towards the high end of the distribution. For example, in Table 4.2 for the variable of spouse's earned income, the derived variable contained $86.4 \%$ of the cases with 0 , whereas the imputed variable contains $83.6 \%$ of cases with value 0 . Among those with earned income greater than zero, the un-imputed variable contained $41.7 \%$ of the cases in the range of values 1 to 3,600 pesos, whereas the imputed variable contains $35.5 \%$ of the cases in such range. In the upper range, the derived variable contains $16.3 \%$ of cases with values $>8,000$ pesos, whereas the imputed variable contains $24.3 \%$ of the cases in such range.

Table 4.8 presents the distribution for the variable gross value of the home. The derived (unimputed) variable contains a higher percentage of zero value compared to the imputed variable ( $35.1 \%$ versus $21.3 \%$ ). In the derived variable, conditional on having a value $>0$, $19.3 \%$ of the cases were in the range $>800,000$ pesos. This is compared to $25.5 \%$ of the cases in the imputed variable.

The descriptive statistics for all the variables that were imputed are presented in Appendix A. The description includes the number of cases, mean, standard deviation, minimum and maximum values, including and excluding the observations with value zero, for each derived variable, followed by the corresponding imputed variable.

## Construction of the Variables for Total Income at the Individual Level and Net Worth at the Household Level

The MHAS 2012 imputed data files contain all the variables on amounts that were derived (with missing values) and the corresponding imputed variables (containing no missing values) for each observation. In the files, we also include a calculated value of total income and value of total net worth at the individual and household level, respectively, after adding all the items needed to obtain these variables. For the case of total net worth of the individual (or couple), we constructed and added the variables of the net value for each type of the following assets: houses, business, other properties, capital assets, vehicles and other assets, and subtract other debts. Table 5.1 include the list of imputed variables as well as the variables used to calculate each variable by type of assets and the total net worth variable. The table also includes the
name of each asset and indicates whether each variable was added or subtracted for these calculations.

To calculate total income, we constructed and added the variables by income sources: family help, business, property rent, earned, pension and transfer income. Table 5.2 shows the list of imputed variables and the variables used to calculate each income variable by source and the total income variable; all variables were added for these calculations, except for "Property rent income" which adds income and subtracts expenditures. Unlike 2001, in 2003 and 2012 the reported "business profits" is used instead of deriving the variable using "business income" less "business expenditures". Also different to 2001, in 2003 and 2012 "transfer income" was included to the calculation since the variable "own and spouse's transfer income from properties" was added after the Wave 1 (2001).

Furthermore, since incomes were calculated at the individual level, in the case of individuals who have no spouse or partner residing in the same household, we simply added all the income variables that represent in-flows and subtract those measuring out-flows to calculate income by sources and total income. However, in the case of couples, the variables for income received different treatment. When a particular income source was asked referring to the two members of a couple, such as the business profits, the value amount was divided by two and assigned to each member of the couple. The variables that received such treatment are listed as "joint" in Tables 5.1 and 5.2. (See pp. 28-30). To determine whether an income source that was "joint" was to be divided by two or by one, we constructed the variable NUMBER_12 (also included in the data files). This variable takes the value 1 if there is no information on the spouse-income variables, i.e. all information refers to one person; and takes the value 2 if there was information on the spouse-income variables in Section K.

The survey instrument was designed so that the information on income and assets is asked only of one of two persons in a couple. Thus in order to assign the corresponding "individual" income to each of two persons in a couple household, such as earned income, we also had to determine whom the questions on own-income and on spouse's income refer to ${ }^{6}$. This means that data files at the household level (Sections G and K) were merged with records at the individual level to construct all income variables. In the file at the individual level, we include

[^5]the constructed variable CLAVE_12 to indicate who the information on own income refers to, when there is a couple in the household (that is, the cases for which NUMBER_12=2). To construct the variable CLAVE_12, we used the interviewer report included in K.96a, a variable that indicates the code of the person that provided the information in Section K. In most of the cases, the variable takes the value of the identification variable Person Number $(\mathrm{NP})$, since it is the selected person or the spouse the ones providing the information. However, the variable can also be the registration number of the informant from the roster. The following are the three different criteria we used to define CLAVE_12.

First, if the value of K.96a_12 was equal to the variable NP (Person Number), then the informant is identified as the subject. For hence, we determined the values of the income variables as OWN and recorded CLAVE_12=1.

Second, if the value of K96a_12 was different than NP, but it is a code for a sample individual (e.g. $010,020,011,012,013,021,022,023^{7}$ ), we determined that the income variable referred to the SPOUSE'S variables. Then, we assigned CLAVE_12=2.

Third, if the value of K96a_12 was a registration number from a roster, that is a number equal or greater to 103 (that indicates other household members) or a number equal or greater than 201 (that indicates a non-resident children), we assigned as the OWN income variables to person who provided the first interview in the household, and the SPOUSE'S income variables to person who provided the second interview. Thus the constructed variable CLAVE_12 takes the following values:

CLAVE_12=1 If the record was identified as OWN, and is assigned the values of OWN income for individual variables.

CLAVE_12=2 If the record was identified as SPOUSE'S, and is assigned the values of SPOUSE'S income for individual variables.

The MHAS 2012 files contain the income variables at the individual level, and net worth at the individual/couple level constructed as mentioned above. MHAS users can easily obtain the total income of a couple by adding the corresponding totals for the two individuals in the couple.

[^6]Tables 6.1 and 6.2 (See p.31) present the distribution of the total individual income and total (individual or couple) net worth variables as they are obtained with- and without- imputation of missing values. The distributions are presented in absolute numbers and in percentage terms. The relative numbers present the proportion of cases that are $<=0$; and among the cases that are $>0$, the percentage of cases in each range of values. The tables indicate first, that the gain in available information through the use of imputation is substantial. According to Table 6.1, the number of cases for which a total income can be obtained without imputation is 12,912 , compared to a total of 14,810 individuals when we use imputations ${ }^{8}$. For the case of household (individual or couple) total net worth, the number of cases is 4,452 without imputed values and 10,427 with imputed values. Is evident that the imputation process retrieves economic information for a significant number of records, and therefore future research addressing these topics will have a smaller number of missing data. Furthermore, two indicators reflecting the socioeconomic status of the population were created (total individual income and total net worth).

Second, the tables show that the distribution of both total income and total net worth is shifted towards the right with the imputed values. As was mentioned before, this is because prior to imputing, the cases with zero value represent a higher share of the total cases compared to their numerical relative importance after imputing. Another way of explaining this pattern is: a large proportion of the cases that have missing values and thus are imputed, fall in the values that are imputed to be $>0$. This is consistent with our initial results (see Tables 1 and 2), in which the vast majority of the non-response is found among those that declare that they receive a given source of income or own a certain type of asset but provided no value or amount (that is, the value is known to be positive but missing). For the total individual income, $33 \%$ of the cases have value $=0$ without imputation, compared to $30 \%$ after imputation. Around $20 \%$ of the observations with values $>0$ are found in the highest range ( $>7,000$ pesos) without imputation, compared to $21 \%$ with imputations. Similarly, for total net worth, $18 \%$ of the cases have value $<=0$ without imputations, compared to $10 \%$ of cases with imputations. Of those with positive value for net worth, $20 \%$ report a value in the highest

[^7]range ( $>900,000$ or more pesos) prior to imputing, compared to $32 \%$ of the cases after imputations.

Finally in Table 7 (See p. 32) we present the average value of total income (monthly pesos) and distribution of income sources by gender, age and urban/rural. We also present the average of total net worth and distribution across type of assets by number of informant in household (One person or couple).

## References

Heeringa, S.G., R. Little, T.E. Raghunathan (1997), Imputation of Multivariate Data on Household Net Worth, Proceedings of the American Statistical Association, Section on Survey Research Methods, 135-140.

Heeringa, S.G., Hill, D.H., and Howell, D.A. (1995), Unfolding Brackets for Reducing Item Non- Response in Economic Surveys June 1995. HRS Working Paper 94-029. University of Michigan.
Honggao Cao (2001), IMPUTE: A SAS Application System for Missing Value Imputations --With Special Reference to HRS Income/Assets Imputations. Survey Research Center Institute for Social Research University of Michigan, Ann Arbor.

Hurd, M. D. (1999), Anchoring and Acquiescence Bias in Measuring Assets in Household Surveys, Journal of Risk and Uncertainty, 19(1-3): 111-136, December.
Hurd, M.D., F.T. Juster, and J.P. Smith (2003), Enhancing the Quality of Data on Income: Recent Innovations from the HRS, Journal of Human Resources 38(3): 758-772).
Juster, F. T., J.P. Smith (1997), Improving the Quality of Economic Data: Lessons from the HRS and AHEAD, Journal of the American Statistical Association, Vol. 92, No. 440.
Raghunathan, T.E., J. Lepkowski, J. Van Hoewyk, and P. Solenerger (2001), A Multivariate Technique for Multiply Imputing Missing Values Using a Sequence of Regression Models, Survey Methodology, 27(1): 85-95.

Raghunathan, T.E, P. Solenberger, and J. Van Hoewyk (2000), IVEware: Imputation and Variance Estimation Software, Survey Methodology Program, Survey Research Center, Institute for Social Research, University of Michigan.
U.S. Department of Education, National Center for Education Statistics (2001), A Study of Imputation Algorithms, Working Paper No. 2001-17, by Ming-xiu Hu and Sameena Salvucci. Project Officer, Ralph Lee. Washington, D.C. (http://nces.ed.gov)

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Diagrams

## DIAGRAM 1

Example of Bracket Questions used in MHAS 2012

## HOUSEHOLD CONSUMPTION

K. $88 \begin{aligned} & \text { In total, about how much do you spend in a month } \\ & \text { household expenditures? Exclude the value of wh } \\ & \text { produce for home consumption. } \\ & \text { ENTER AMOUNT }\end{aligned}$
AMOUNT....................|e|

IF AMOUNT ENTERED, SKIP TO K. 90

K. 89 Would you say it is ...
K.89a ...more than $\$ 6,000$ pesos per month?

K.89b ...more than $\$ 3,000$ pesos per month?

K.89c ...more than $\$ 10,000$ pesos per month?

Yes.......................... 1
No .......................... 2
DK.......................... 9

## DIAGRAM 2

Procedure for Construction of an Imputed Variable


Tables

Table 1. MHAS/ENASEM 2012
Total (Indivudal or Couple) Income components: Distribution of responses by type

|  | (1) Individual (or Couple) Source of Income (*) | Total n | (2) <br> Receives Income |  |  | (3) <br> If (yes) Receives Income |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  | $\begin{gathered} \% \\ \text { Yes } \end{gathered}$ |  | $\begin{gathered} \% \\ \text { NR/DK } \end{gathered}$ | n |  | \% <br> Bracketed Value | \% <br> Missing |
|  | Family help income_1 (G19_1) | 9,696 | 33.6 | 66.2 | 0.2 | 3,256 | 91.3 | 5.4 | 3.2 |
| 2 | Family help income_2 (G19_2) | 9,696 | 18.6 | 81.4 | 0.0 | 1,808 | 91.3 | 5.6 | 3.1 |
| 3 | Family help income_3 (G19_3) | 9,696 | 8.7 | 91.3 | 0.0 | 840 | 90.5 | 6.2 | 3.3 |
|  | Family help income_4 (G19_4) | 9,696 | 3.7 | 96.3 | 0.0 | 357 | 89.6 | 6.4 | 3.9 |
| 5 | Family help income_5 (G19_5) | 9,696 | 1.6 | 98.4 | 0.0 | 153 | 90.2 | 7.2 | 2.6 |
| 6 | Family help income_6 (G19_6) | 9,696 | 0.8 | 99.2 | 0.0 | 74 | 85.1 | 12.2 | 2.7 |
| 7 | Family help income_7 (G19_7) | 9,696 | 0.3 | 99.7 | 0.0 | 33 | 81.8 | 12.1 | 6.1 |
| 8 | Business income-1 (K11_1) | 10,427 | 8.8 | 90.7 | 0.5 | 918 | 75.8 | 14.6 | 9.6 |
| 9 | Business income-2 (K11_2) | 10,427 | 0.5 | 99.4 | 0.0 | 57 | 84.2 | 7.0 | 8.8 |
| 10 | Business expenditures-1 (K13_1) | 10,427 | 11.2 | 88.5 | 0.3 | 1,168 | 77.0 | 10.4 | 12.6 |
| 11 | Business expenditures-2 (K13_2) | 10,427 | 0.7 | 99.3 | 0.0 | 69 | 76.8 | 10.1 | 13.0 |
| 12 | Business profits-1 (K15_1) | 10,427 | 9.7 | 90.0 | 0.3 | 1,008 | 74.4 | 12.1 | 13.5 |
| 13 | Business profits-2 (K15_2) | 10,427 | 0.6 | 99.4 | 0.0 | 67 | 74.6 | 13.4 | 11.9 |
| 14 | Property rent income-1 (K27_1) | 10,427 | 1.7 | 97.9 | 0.4 | 181 | 80.7 | 14.9 | 4.4 |
| 15 | Property rent income-2 (K27_2) | 10,427 | 0.2 | 99.8 | 0.0 | 16 | 56.3 | 37.5 | 6.3 |
| 16 | Property expenditures-1 (K29_1) | 10,427 | 2.7 | 96.9 | 0.4 | 286 | 71.0 | 16.4 | 12.6 |
| 17 | Property expenditures-2 (K29_2) | 10,427 | 0.2 | 99.8 | 0.0 | 25 | 68.0 | 24.0 | 8.0 |
| 18 | Capital assets income-1 (K36_1) | 10,427 | 1.7 | 97.3 | 1.0 | 178 | 54.5 | 23.0 | 22.5 |
| 19 | Capital assets income-2 (K36_2) | 10,427 | 0.1 | 99.3 | 0.6 | 15 | 73.3 | 6.7 | 20.0 |
| 20 | Capital assets income-3 (K36_3) | 10,427 | 0.1 | 99.4 | 0.5 | 9 | 55.6 | 33.3 | 11.1 |
| 21 | Own earned income-1 (K47a) | 10,427 | 11.4 | 88.5 | 0.1 | 1,191 | 92.4 | 4.5 | 3.1 |
| 22 | Own earned income-2 (K48a) | 10,427 | 9.5 | 90.3 | 0.2 | 995 | 88.9 | 6.8 | 4.2 |
| 23 | Own earned income-3 (K50a) | 10,427 | 0.6 | 99.4 | 0.0 | 58 | 93.1 | 5.2 | 1.7 |
| 24 | Own earned income-4 (K51a) | 10,427 | 0.2 | 99.8 | 0.0 | 25 | 80.0 | 12.0 | 8.0 |
| 25 | Spouse's earned income-1 (K53a) | 5,652 | 16.4 | 83.2 | 0.4 | 927 | 79.6 | 11.3 | 9.1 |
| 26 | Spouse's earned income-2 (K54a) | 5,652 | 10.9 | 88.3 | 0.8 | 615 | 70.7 | 15.6 | 13.7 |
| 27 | Spouse's earned income-3 (K56a) | 5,652 | 0.5 | 99.5 | 0.0 | 31 | 77.4 | 16.1 | 6.5 |
| 28 | Spouse's earned income-4 (K57a) | 5,652 | 0.2 | 99.8 | 0.0 | 10 | 60.0 | 20.0 | 20.0 |
| 29 | Own Pension income - retirement (K61a) | 10,427 | 16.7 | 83.0 | 0.3 | 1,744 | 92.5 | 4.0 | 3.5 |
| 30 | Own pension income - widow (K61b) | 10,427 | 6.2 | 93.5 | 0.3 | 645 | 95.5 | 2.3 | 2.2 |
| 31 | Own pension income - disability (K61c) | 10,427 | 0.8 | 98.8 | 0.4 | 82 | 97.6 | 1.2 | 1.2 |
| 32 | Own other pension income (K61d) | 10,427 | 3.2 | 96.4 | 0.4 | 336 | 96.7 | 2.4 | 0.9 |
| 33 | Spouse's pension income - retirement (K67c) | 5,652 | 15.2 | 84.1 | 0.6 | 861 | 82.9 | 9.3 | 7.8 |
| 34 | Spouse's pension income - widow ( K67d) | 5,652 | 0.2 | 99.2 | 0.6 | 11 | 81.8 | 0.0 | 18.2 |
| 35 | Spouse's pension income - disability (K67e) | 5,652 | 0.7 | 98.6 | 0.7 | 40 | 85.0 | 7.5 | 7.5 |
| 36 | Spouse's other pension income (K67f) | 5,652 | 1.9 | 97.4 | 0.7 | 110 | 95.5 | 0.9 | 3.6 |
| 37 | Own transfer income from institutions (K80a) | 10,427 | 16.9 | 82.7 | 0.4 | 1,766 | 97.6 | 0.0 | 2.4 |
| 38 | Own transfer income from individuals (K80b) | 10,427 | 0.4 | 99.2 | 0.4 | 45 | 84.4 | 0.0 | 15.6 |
| 39 | Own transfer income from properties (K80c) | 10,427 | 0.8 | 98.8 | 0.4 | 82 | 82.9 | 0.0 | 17.1 |
| 40 | Spouse's transfer income from institutions (K83c) | 5,652 | 11.9 | 87.4 | 0.7 | 672 | 95.2 | 0.0 | 4.8 |
| 41 | Spouse's transfer income from individuals (K83d) | 5,652 | 0.1 | 99.3 | 0.7 | 4 | 75.0 | 0.0 | 25.0 |
| 42 | Spouse's transfer income from properties (K83e) | 5,652 | 0.3 | 99.0 | 0.7 | 19 | 84.2 | 0.0 | 15.8 |
| 43 | Pensions income before death (K101) | 1,306 | 2.3 | 96.8 | 0.9 | 30 | 90.0 | 10.0 | 0.0 |
| 44 | Pensions income after death (K103) | 1,306 | 22.6 | 76.5 | 0.9 | 295 | 93.9 | 3.7 | 2.4 |
| 45 | Death expenditures (K111) | 1,306 | 92.0 | 8.0 | 0.0 | 1,201 | 67.4 | 19.2 | 13.3 |

$\left({ }^{*}\right)$ Numbers in parentheses are the corresponding question numbers in the MHAS/ENASEM 2012 questionnaire.

Table 2. MHAS/ENASEM 2012
Total (Individual or Couple) Net Worth Components -- Distribution of Reponses by Type

|  | (1) Individual (or Couple) Type of Asset (*) | Totaln | (2) <br> Owns Type of Asset |  |  | (3) <br> If (yes) Owns Asset, Response to Value |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $\begin{gathered} \% \\ \text { Yes } \end{gathered}$ | $\begin{gathered} \% \\ \text { No } \end{gathered}$ | $\begin{gathered} \% \\ \text { NR/DK } \end{gathered}$ | n |  | ```Bracketed Value``` |  |
| 1 | Gross value houses/apartments (J31) | 10,427 | 77.7 | 20.6 | 1.7 | 8,101 | 49.0 | 32.9 | 18.1 |
| 2 | Total debt houses/apartments (J28) | 10,427 | 3.2 | 96.8 | 0.0 | 332 | 59.6 | 23.5 | 16.9 |
| 3 | Total debt mortgages/loans (J26) | 10,427 | 3.2 | 96.8 | 0.0 | 332 | 81.0 | 7.5 | 11.4 |
| 4 | Net value other houses/apartments (J34) | 10,427 | 9.3 | 89.8 | 0.9 | 968 | 59.5 | 24.8 | 15.7 |
| 5 | Gross value business_1 (K8_1) | 10,427 | 13.6 | 86.0 | 0.3 | 1,420 | 56.5 | 26.5 | 17.0 |
| 6 | Gross value business_2 (K8_2) | 10,427 | 0.8 | 99.2 | 0.0 | 83 | 60.2 | 26.5 | 13.3 |
| 7 | Total debt business_1 (K4_1) | 10,427 | 0.7 | 98.9 | 0.4 | 74 | 79.7 | 9.5 | 10.8 |
| 8 | Total debt business_1 (K4_2) | 10,427 | 0.1 | 99.9 | 0.0 | 7 | 85.7 | 14.3 | 0.0 |
| 9 | Gross value other real estate properties (K24_1) | 10,427 | 6.1 | 93.6 | 0.4 | 634 | 60.6 | 24.6 | 14.8 |
| 10 | Gross value other real estate properties (K24_2) | 10,427 | 0.5 | 99.5 | 0.0 | 49 | 53.1 | 30.6 | 16.3 |
| 11 | Total debt other real estate properties_1 (K20_1) | 10,427 | 0.3 | 99.3 | 0.4 | 27 | 85.2 | 11.1 | 3.7 |
| 12 | Total debt other real estate properties_2 (K20_2) | 10,427 | 0.0 | 99.9 | 0.0 | 5 | 100.0 | 0.0 | 0.0 |
| 13 | Net value capital assets_1 (K33a) | 10,427 | 5.8 | 93.5 | 0.7 | 602 | 59.0 | 25.1 | 15.9 |
| 14 | Net value capital assets_2 (K33b) | 10,427 | 0.7 | 98.8 | 0.6 | 68 | 85.3 | 5.9 | 8.8 |
| 15 | Net value capital assets_3 (K33c) | 10,427 | 0.2 | 99.3 | 0.5 | 16 | 50.0 | 31.3 | 18.8 |
| 16 | Gross value vehicles (K42) | 10,427 | 26.6 | 73.0 | 0.4 | 2,777 | 77.3 | 14.3 | 8.4 |
| 17 | Total debt vehicles (K40) | 10,427 | 1.7 | 97.8 | 0.4 | 182 | 76.4 | 16.5 | 7.1 |
| 18 | Net value other assets (K44) | 10,427 | 66.1 | 33.9 | 0.0 | 6,888 | 54.0 | 25.7 | 20.3 |
| 19 | Other debts (K86) | 10,427 | 10.5 | 89.0 | 0.5 | 1,097 | 92.7 | 4.8 | 2.5 |

${ }^{(*)}$ Numbers in parentheses are the corresponding question numbers in the MHAS/ENASEM 2012 questionnaire.

Tables 3. Groups of Variables and Names Used in the Imputation Procedure
Tabla 3.1. GROUP 1. Respondent's Total Income Components (Own or Joint Income)

|  | Income component | Question number | Derived variable | Imputed variable | Flag variable |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Family help income_1 | G19_1 | amg19_1_12 | imamg19_1_12 | g19_1_imp_12 |
| 2 | Family help income_2 | G19_2 | amg19_2_12 | imamg19_2_12 | g19_2_imp_12 |
| 3 | Family help income_3 | G19_3 | amg19_3_12 | imamg19_3_12 | g19_3_imp_12 |
| 4 | Family help income_4 | G19_4 | amg19_4_12 | imamg19_4_12 | g19_4_imp_12 |
| 5 | Family help income_5 | G19_5 | amg19_5_12 | imamg19_5_12 | g19_5_imp_12 |
| 6 | Family help income_6 | G19_6 | amg19_6_12 | imamg19_6_12 | g19_6_imp_12 |
| 7 | Family help income_7 | G19_7 | amg19_7_12 | imamg19_7_12 | g19_7_imp_12 |
| 8 | Business income-1 | K11_1 | amk11_1_12 | imamk11_1_12 | k11_1_imp_12 |
| 9 | Business income-2 | K11_2 | amk11_2_12 | imamk11_2_12 | k11_2_imp_12 |
| 10 | Business expenditures-1 | K13_1 | amk13_1_12 | imamk13_1_12 | k13_1_imp_12 |
| 11 | Business expenditures-2 | K13_2 | amk13_2_12 | imamk13_2_12 | k13_2_imp_12 |
| 12 | Business profits-1 | K15_1 | amk15_1_12 | imamk15_1_12 | k15_1_imp_12 |
| 13 | Business profits-2 | K15_2 | amk15_2_12 | imamk15_2_12 | k15_2_imp_12 |
| 14 | Property rent income-1 | K27_1 | amk27_1_12 | imamk27_1_12 | k27_1_imp_12 |
| 15 | Property rent income-2 | K27_2 | amk27_2_12 | imamk27_2_12 | k27_2_imp_12 |
| 16 | Property expeditures-1 | K29_1 | amk29_1_12 | imamk29_1_12 | k29_1_imp_12 |
| 17 | Property expeditures-2 | K29_2 | amk29_2_12 | imamk29_2_12 | k29_2_imp_12 |
| 18 | Capital assets income-1 | K36_1 | amk36_1_12 | imamk36_1_12 | k36_1_imp_12 |
| 19 | Capital assets income-2 | K36_2 | amk36_2_12 | imamk36_2_12 | k36_2_imp_12 |
| 20 | Capital assets income-3 | K36_3 | amk36_3_12 | imamk36_3_12 | k36_3_imp_12 |
| 21 | Own earned income-1 | K47a | amk47a_12 | imamk47a_12 | k47a_imp_12 |
| 22 | Own earned income-2 | K48a | amk48a_12 | imamk48a_12 | k48a_imp_12 |
| 23 | Own earned income-3 | K50a | amk50a_12 | imamk50a_12 | k50a_imp_12 |
| 24 | Own earned income-4 | K51a | amk51a_12 | imamk51a_12 | k51a_imp_12 |
| 25 | Own pension income -retirement | K61a | amk61_1_12 | imamk61_1_12 | k61_1_imp_12 |
| 26 | Own pension income -widow | K61b | amk61_2_12 | imamk61_2_12 | k61_2_imp_12 |
| 27 | Own pension income -disability | K61c | amk61_3_12 | imamk61_3_12 | k61_3_imp_12 |
| 28 | Own other pension income | K61d | amk61_4_12 | imamk61_4_12 | k61_4_imp_12 |
| 29 | Own transfer income from institutions | K80a | amk80_1_12 | imamk80_1_12 | k80_1_imp_12 |
| 30 | Own transfer income from individuals | K80b | amk80_2_12 | imamk80_2_12 | k80_2_imp_12 |
| 31 | Own transfer income from properties | K80c | amk80_3_12 | imamk80_3_12 | k80_3_imp_12 |

Note: In the following cases the Question Number (from the questionnaire) and the corresponding variable name in the data files are different: K61a, K61b, K61c, K61d, K80a, K80b, and K80b. For example: Question Number in the questionnaires is K61a, however in the data file the variable name is k61_1_12.

Table 3.2. GROUP 2. Spouse's Total Income Components

|  | Income component | Question number | Derived variable | Imputed variable | Flag variable |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Spouse's earned income-1 | K53a | amk53a_12 | imamk53a_12 | k53a_imp_12 |
| 2 | Spouse's earned income-2 | K54a | amk54a_12 | imamk54a_12 | k54a_imp_12 |
| 3 | Spouse's earned income-3 | K56a | amk56a_12 | imamk56a_12 | k56a_imp_12 |
| 4 | Spouse's earned income-4 | K57a | amk57a_12 | imamk57a_12 | k57a_imp_12 |
| 5 | Spouse's pension income - retirement | K67c | amk67_1_12 | imamk67_1_12 | k67_1_imp_12 |
| 6 | Spouse's pension income - widow | K67d | amk67_2_12 | imamk67_2_12 | k67_2_imp_12 |
| 7 | Spouse's pension income - disability | K67e | amk67_3_12 | imamk67_3_12 | k67_3_imp_12 |
| 8 | Spouse's other pension income | K67f | amk67_4_12 | imamk67_4_12 | k67_4_imp_12 |
| 9 | Spouse's transfer income from institutions | K83c | amk83_1_12 | imamk83_1_12 | k83_1_imp_12 |
| 10 | Spouse's transfer income from individuals | K83d | amk83_2_12 | imamk83_2_12 | k83_2_imp_12 |
| 11 | Spouse's transfer income from properties | K83e | amk83 3_12 | imamk83_3_12 | k83 3 imp 12 |

Note: In the following cases the Question Number (from the questionnaire) and the corresponding variable name in the data files are different: K67c, K67d, K67e, K67f, K83c, K83d, and K83e. For example: Question Number in the questionnaires is K67c, however in the data file the variable name is k67_1_12.

Table 3.3. GROUP 3. Components of Individual (or Couple) Total Net Worth and Household Consumption

|  | Concept | Question number | Derived variable | Imputed variable | Flag variable |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Gross value houses/apartments | J31 | amj31_12 | imamj31_12 | j31_imp_12 |
| 2 | Total debt houses/apartments | J28 | amj28_12 | imamj28_12 | j28_imp_12 |
| 3 | Total debt mortgages/loans | J26 | amj26_12 | imamj26_12 | j26_imp_12 |
| 4 | Net value other houses/apartments | J34 | amj34_12 | imamj34_12 | j34_imp_12 |
| 5 | Gross value business_1 | K8_1 | amk8_1_12 | imamk8_1_12 | k8_1_imp_12 |
| 6 | Gross value business_2 | K8_2 | amk8_2_12 | imamk8_2_12 | k8_2_imp_12 |
| 7 | Total debt business_1 | K4_1 | amk4_1_12 | imamk4_1_12 | k4_1_imp_12 |
| 8 | Total debt business_2 | K4_2 | amk4_2_12 | imamk4_2_12 | k4_2_imp_12 |
| 9 | Gross value other real estate properties_1 | K24_1 | amk24_1_12 | imamk24_1_12 | k24_1_imp_12 |
| 10 | Gross value other real estate properties_2 | K24_2 | amk24_2_12 | imamk24_2_12 | k24_2_imp_12 |
| 11 | Total debt other real estate properties_1 | K20_1 | amk20_1_12 | imamk20_1_12 | k20_1_imp_12 |
| 12 | Total debt other real estate properties_2 | K20_2 | amk20_2_12 | imamk20_2_12 | k20_2_imp_12 |
| 13 | Net value capital assets_1 | K33a | amk33_1_12 | imamk33_1_12 | k33_1_imp_12 |
| 14 | Net value capital assets_2 | K33b | amk33_2_12 | imamk33_2_12 | k33_2_imp_12 |
| 15 | Net value capital assets_3 | K33c | amk33_3_12 | imamk33_3_12 | k33_3_imp_12 |
| 16 | Gross value vehicles | K42 | amk42_12 | imamk42_12 | k42_imp_12 |
| 17 | Total debt vehicles | K40 | amk40_12 | imamk40_12 | k40_imp_12 |
| 18 | Net value other assets | K44 | amk44_12 | imamk44_12 | k44_imp_12 |
| 19 | Other debts | K86 | amk86 _12 | imamk86 _12 | k86 _imp_12 |
| 20 | Total cost household consumption | K88 | amk88_12 | imamk88_12 | k88_imp_12 |

Note: In the following cases the Question Number (from the questionnaire) and the corresponding variable name in the data files are different: K33a, K33b, and K33c. For example: Question Number in the questionnaires is K33a, however in the data file the variable name is k33_1_12.

Table 3.4. GROUP 4. Hospitalizations and other utilization of services

| Concept | Question <br> number | Derived <br> variable | Imputed <br> variable | Flag variable |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Total hospitalization costs | D6 | amd6_12 | imamd6_12 | d6_imp_12 |
| 2 | Total curandero"/ homeopath costs " | D9_1 | amd9_1_12 | imamd9_1_12 | d9_1_imp_12 |
| 3 | Total dentist costs | D9_2 | amd9_2_12 | imamd9_2_12 | d9_2_imp_12 |
| 4 | Total outpatient procedure costs | D9_3 | amd9_3_12 | imamd9_3_12 | d9_3_imp_12 |
| 5 | Total medical visits costs | D9_4 | amd9_4_12 | imamd9_4_12 | d9_4_imp_12 |
| 6 | Medications costs | D12a | amd12a_12 | imamd12a_12 | d12a_imp_12 |
| 7 | Total hospitalization costs - Next of kin | SD5 | amsd5_12 | imamsd5_12 | sd5_imp_12 |
| 8 | Medical visits pay in-kind - Next of kin | SD8 | amsd8_12 | imamsd8_12 | sd8_imp_12 |
| 9 | Medications costs - Next of kin | SD10a | amsd10a_12 | imamsd10a_12 | sd10a_imp_12 |

Table 3.5. GROUP 5. Household Monthly Rent

| Concept | Question <br> number | Derived <br> variable | Imputed <br> variable | Flag <br> variable |  |
| :---: | :--- | :---: | :--- | :--- | :--- |
| 1 | Total cost of monthly rent | J 20 | amj20_12 | imamj20_12 | j20_imp_12 |

Table 3.6. GROUP 6. Pensions Income

|  | Concept | Question number | Derived variable | Imputed variable | Flag variable |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Pensions income before death | K101 | amk101_12 | imamk101_12 | k101_imp_12 |
| 2 | Pensions income after death | K103 | amk103_12 | imamk103_12 | k103_imp_12 |
| 3 | Death expenditures ${ }^{6}$ | K111 | amk111 12 | imamk111_12 | k111_ imp 12 |

${ }^{6}$ Expenditures associated with the death of the spouse such as funeral costs, legal fees, etc.., medical costs are excluded.

Table 3.7. GROUP 7. Help Given

| Concept | Question <br> number | Derived <br> variable | Imputed <br> variable | Flag <br> variable |  |
| :---: | :--- | :--- | :--- | :--- | :--- |
| 1 | Financial assistance given_1 | G8_1 | amg8b1_12 | imamg8b1_12 | g8b1_imp_12 |
| 2 | Financial assistance given_2 | G8_2 | amg8b2_12 | imamg8b2_12 | g8b2_imp_12 |
| 3 | Financial assistance given_3 | G8_3 | amg8b3_12 | imamg8b3_12 | g8b3_imp_12 |
| 4 | Financial assistance given_4 | G8_4 | amg8b4_12 | imamg8b4_12 | g8b4_imp_12 |
| 5 | Financial assistance given_5 | G8_5 | amg8b5_12 | imamg8b5_12 | g8b5_imp_12 |
| 6 | Financial assistance given_6 | G8_6 | amg8b6_12 | imamg8b6_12 | g8b6_imp_12 |
| 7 | Financial assistance given_7 | G8_7 | amg8b7_12 | imamg8b7_12 | g8b7_imp_12 |

Table 3.8. GROUP 8. Economic Help

| Concept | Question <br> number | Derived <br> variable | Imputed <br> variable | Flag <br> variable |  |
| :---: | :--- | :--- | :--- | :--- | :--- |
| 1 | Economic Help to Parents | F41 | amf41_12 | imamf41_12 | f41_imp_12 |

Tables 4. Distribution of Select De rived and Imputed Variables by Range of Amount

Table 4.1. Own earned Income-1

| Amount | Derived Variable |  | Imputed Variable |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-2,200$ | 223 | 20.3 |  | 241 | 20.2 |
| $1,201-3,600$ | 244 | 22.2 |  | 250 | 21.0 |
| $3,601-5,000$ | 233 | 21.2 |  | 239 | 20.0 |
| $5,001-8,000$ | 196 | 17.8 | 205 | 17.2 |  |
| $>8,000$ | 205 | 18.6 | 258 | 21.6 |  |
| Sub-total | 1,101 | 100.0 | 1,193 | 100.0 |  |
| 0 | 9,229 | 89.3 | 9,234 | 88.6 |  |
| Total | 10,330 |  | 10,427 |  |  |

Table 4.2. Spouse's earned income-1

| Amount | Derived Variable |  | Imputed Variable |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-2,400$ | 167 | 22.6 |  | 181 | 19.5 |
| $2,401-3,600$ | 141 | 19.1 |  | 149 | 16.0 |
| $3,601-5,000$ | 165 | 22.4 |  | 180 | 19.4 |
| $5,001-8,000$ | 145 | 19.6 | 193 | 20.8 |  |
| $>8,000$ | 120 | 16.3 | 226 | 24.3 |  |
| Sub-total | 738 | 100.0 | 929 | 100.0 |  |
| 0 | 4,705 | 86.4 | 4,723 | 83.6 |  |
| Total | 5,443 |  | 5,652 |  |  |

Table 4.3. Business income-1

| Amount | Derived Variable |  | Imputed Variable |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-1,000$ | 140 | 20.1 |  | 144 | 15.6 |
| $1,001-3,000$ | 149 | 21.4 |  | 157 | 17.0 |
| $3,001-6,000$ | 134 | 19.3 | 153 | 16.6 |  |
| $6,001-15,000$ | 144 | 20.7 | 196 | 21.3 |  |
| $>15,000$ | 129 | 18.5 | 271 | 29.4 |  |
| Sub-total | 696 | 100.0 | 921 | 100.0 |  |
| 0 | 9,455 | 93.1 | 9,506 | 91.2 |  |
| Total | 10,151 |  | 10,427 |  |  |

Table 4.4. Business expenditures-1

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-500$ | 198 | 22.0 |  | 200 | 17.9 |
| $501-1,500$ | 172 | 19.1 |  | 180 | 16.1 |
| $1,501-3,000$ | 171 | 19.0 |  | 179 | 16.0 |
| $3,001-10,000$ | 219 | 24.4 |  | 251 | 22.5 |
| $>10,000$ | 139 | 15.5 | 307 | 27.5 |  |
| Sub-total | 899 | 100.0 |  | 1,117 | 100.0 |
| 0 | 9,224 | 91.1 | 9,310 | 89.3 |  |
| Total | 10,123 |  | 10,427 |  |  |

Table 4.5. Own pension income retirement

| Amount | Derived Variable |  | Imputed Variable |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-2,000$ | 539 | 33.4 |  | 567 | 32.4 |
| $2,001-2,200$ | 161 | 10.0 | 165 | 9.4 |  |
| $2,201-4,000$ | 316 | 19.6 | 336 | 19.2 |  |
| $4,001-8,000$ | 290 | 18.0 | 321 | 18.4 |  |
| $>8,000$ | 307 | 19.0 | 360 | 20.6 |  |
| Sub-total | 1,613 | 100.0 | 1,749 | 100.0 |  |
| 0 | 8,650 | 84.3 | 8,678 | 83.2 |  |
| Total | 10,263 |  | 10,427 |  |  |

Table 4.6. Family help income-1

| Amount | Derived Variable |  | Imputed Variable |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-200$ | 697 | 23.4 |  | 795 | 24.4 |
| $201-500$ | 737 | 24.8 |  | 797 | 24.5 |
| $501-834$ | 354 | 11.9 |  | 370 | 11.4 |
| $834-1,750$ | 592 | 19.9 | 633 | 19.4 |  |
| $>1,750$ | 594 | 20.0 | 662 | 20.3 |  |
| Sub-total | 2,974 | 100.0 | 3,257 | 100.0 |  |
| 0 | 6,418 | 68.3 | 6,439 | 66.4 |  |
| Total | 9,392 |  | 9,696 |  |  |

Table 4.7. Family help income-2

| Amount | Derived Variable |  | Imputed Variable |  |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-170$ | 340 | 20.6 |  | 388 | 21.5 |
| $171-400$ | 389 | 23.6 |  | 430 | 23.8 |
| $401-720$ | 261 | 15.8 |  | 265 | 14.7 |
| $721-1,200$ | 395 | 23.9 | 406 | 22.5 |  |
| $>1,200$ | 265 | 16.1 | 317 | 17.6 |  |
| Sub-total | 1,650 | 100.0 |  | 1,806 | 100.0 |
| 0 | 7,888 | 82.7 | 7,890 | 81.4 |  |
| Total | 9,538 |  | 9,696 |  |  |

## SELECT NET WORTH COMPONENTS

Table 4.8. Gross value houses

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-120,000$ | 814 | 20.5 |  | 1,296 | 15.8 |
| $120,000-300,000$ | 1,064 | 26.8 |  | 1,700 | 20.7 |
| $300,001-500,000$ | 803 | 20.2 |  | 1,573 | 19.2 |
| $500,001-800,000$ | 523 | 13.2 |  | 1,545 | 18.8 |
| $>800,000$ | 764 | 19.3 |  | 2,093 | 25.5 |
| Sub-total | 3,968 | 100.0 |  | 8,207 | 100.0 |
| 0 | 2,150 | 35.1 |  | 2,220 | 21.3 |
| Total | 6,118 |  |  | 10,427 |  |

Table 4.9. Gross value business-1

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-15,000$ | 166 | 20.7 |  | 205 | 14.4 |
| $15,001-50,000$ | 189 | 23.6 |  | 255 | 17.9 |
| $50,000-150,000$ | 153 | 19.1 |  | 265 | 18.6 |
| $150,001-500,000$ | 157 | 19.6 |  | 321 | 22.6 |
| $>500,000$ | 137 | 17.1 |  | 375 | 26.4 |
| Sub-total | 802 | 100.0 |  | 1,421 | 100.0 |
| 0 | 8,972 | 91.8 |  | 9,006 | 86.4 |
| Total | 9,774 |  | 10,427 |  |  |

Table 4.10. Net value capital assets

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-5,000$ | 85 | 23.9 |  | 101 | 16.6 |
| $5,001-15,000$ | 76 | 21.4 |  | 103 | 17.0 |
| $15,001-30,000$ | 57 | 16.1 |  | 88 | 14.5 |
| $30,001-100,000$ | 72 | 20.3 |  | 135 | 22.2 |
| $>100,000$ | 65 | 18.3 | 180 | 29.7 |  |
| Sub-total | 355 | 100.0 | 607 | 100.0 |  |
| 0 | 9,754 | 96.5 |  | 9,820 | 94.2 |
| Total | 10,109 |  | 10,427 |  |  |

Table 4.11. Gross value vehicles

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-15,000$ | 456 | 21.2 |  | 510 | 18.3 |
| $15,001-30,000$ | 588 | 27.4 |  | 624 | 22.3 |
| $30,001-45,000$ | 260 | 12.1 |  | 300 | 10.7 |
| $45,001-100,000$ | 473 | 22.0 |  | 622 | 22.3 |
| $>100,000$ | 370 | 17.2 |  | 737 | 26.4 |
| Sub-total | 2,147 | 100.0 |  | 2,793 | 100.0 |
| 0 | 7,613 | 78.0 |  | 7,634 | 73.2 |
| Total | 9,760 |  | 10,427 |  |  |

Table 4.12. Net value other assets

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. | $\%$ |
| $1-3,000$ | 936 | 25.2 |  | 940 | 17.5 |
| $3,001-6,500$ | 553 | 14.9 |  | 559 | 10.4 |
| $6,501-15,000$ | 748 | 20.1 |  | 767 | 14.3 |
| $15,001-50,000$ | 825 | 22.2 |  | 923 | 17.2 |
| $>50,000$ | 658 | 17.7 | 2,192 | 40.7 |  |
| Sub-total | 3,720 | 100.0 |  | 5,381 | 100.0 |
| 0 | 3,539 | 48.8 | 5,046 | 48.4 |  |
| Total | 7,259 |  | 10,427 |  |  |

Tables 5. Variables Used in the Calculation of Total Net Worth and Total Income

Table 5.1 Total (Individual or Couple) Net Worth Components
List of variables according to treatment given for the calculation of total net worth

| Type of Net Assets and Variable Name | Constructed variable | Question number | Derived variable | Imputed variable | Treatment |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Total net worth | net assets 12 |  |  |  | Joint |
| Net value of houses (Added) <br> Added <br> Gross value houses/apartments <br> Net value other houses/apartments <br> Deducted <br> Total debt houses/apartments | net_house_12 | $\begin{aligned} & \text { J31 } \\ & \text { J34 } \\ & \text { J28 } \end{aligned}$ | $\begin{aligned} & \text { amj31_12 } \\ & \text { amj34_12 } \\ & \text { amj28_12 } \end{aligned}$ | imamj31_12 <br> imamj34_12 <br> imamj28 12 | Joint <br> Joint <br> Joint <br> Joint |
| Net value of business (Added) <br> Added <br> Gross value business_1 <br> Gross value business_2 <br> Deducted <br> Total debt business_1 <br> Total debt business 2 | net_business_12 | K8_1 <br> K8_2 <br> K4_1 <br> K4 2 | amk8_1_12 <br> amk8_2_12 <br> amk4_1_12 <br> amk4_2_12 | imamk8_1_12 <br> imamk8_2_12 <br> imamk4_1_12 <br> imamk4 2 12 | Joint <br> Joint <br> Joint <br> Joint <br> Joint |
| Net value of other properties (Added) Added <br> Gross value other real estate properties_1 <br> Gross value other real estate properties_2 <br> Deducted <br> Total debt other real estate properties_1 <br> Total debt other real estate properties_2 <br> Net value of capital assets (Added) <br> Added <br> Net value capital assets_1 <br> Net value capital assets_2 <br> Net value capital assets 3 | net_otherprop_12 | K24_1 K24_2 K20_1 K20_2 K33a K33b K33c | amk24_1_12 <br> amk24_2_12 <br> amk20_1_12 <br> amk20_2_12 <br> amk33_1_12 <br> amk33_2_12 <br> amk33_3_12 | imamk24_1_12 imamk24_2_12 <br> imamk20_1_12 <br> imamk20_2_12 <br> imamk33_1_12 <br> imamk33_2_12 <br> imamk33_3_12 | Joint <br> Joint <br> Joint <br> Joint <br> Joint <br> Joint <br> Joint <br> Joint <br> Joint |
| Net value of vehicles (Added) Added Gross value vehicles Deducted Total debt vehicles | net_vehicle_12 | K42 K40 | $\begin{aligned} & \text { amk42_12 } \\ & \text { amk40_12 } \end{aligned}$ | imamk42_12 <br> imamk40 12 | Joint <br> Joint <br> Joint |
| Net value of other assets (Added) <br> Net value other assets | net_others_12 | K44 | amk44_12 | imamk44_12 | Joint <br> Joint |
| Other debts (Deducted) Other debts | net_debts_12 | K86 | amk86_12 | imamk86_12 | Joint Joint |

Table 5.2 Total (Individual or Couple) Income Components
List of variables according to treatment given for the calculation of total income

| Income Sources and Variable Name | Constructed variable | Question number | Derived variable | Imputed variable | Treatment |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Total income | income_12 |  |  |  |  |
| Family help income <br> Added variables <br> Family help income_1 <br> Family help income_2 <br> Family help income_3 <br> Family help income_4 <br> Family help income_5 <br> Family help income_6 <br> Family help income 7 | inc_family_12 | G19 1 <br> G19_2 <br> G19_3 <br> G19_4 <br> G19_5 <br> G19_6 <br> G19 7 | amg19_1_12 <br> amg19_2_12 <br> amg19_3_12 <br> amg19_4_12 <br> amg19_5_12 <br> amg19_6_12 <br> amg19 $7 \quad 12$ | $\begin{aligned} & \text { imamg19_1_12 } \\ & \text { imamg19_2_12 } \\ & \text { imamg19_3_12 } \\ & \text { imamg19_4_12 } \\ & \text { imamg19_5_12 } \\ & \text { imamg19_6_12 } \\ & \text { imamg19_7_12 } \\ & \hline \end{aligned}$ | Joint <br> Joint <br> Joint <br> Joint <br> Joint <br> Joint <br> Joint |
| Business income Added variables Business profits-1 Business profits-2 | inc_business_12 | $\begin{aligned} & \text { K15_1 } \\ & \text { K15_2 } \end{aligned}$ | $\begin{aligned} & \text { amk15_1_12 } \\ & \text { amk15_2_12 } \end{aligned}$ | $\begin{aligned} & \text { imamk15_1_12 } \\ & \text { imamk15_2_12 } \end{aligned}$ | Joint <br> Joint |
| Property rent income Added variables <br> Property rent income-1 <br> Property rent income-2 <br> Deducted variables <br> Property expeditures-1 <br> Property expeditures-2 | inc_property_12 | K27_1 <br> K27_2 <br> K29_1 <br> K29 2 | $\begin{aligned} & \text { amk27_1_12 } \\ & \text { amk27_2_12 } \\ & \text { amk29_1_12 } \\ & \text { amk29_2_12 } \end{aligned}$ | $\begin{aligned} & \text { imamk27_1_12 } \\ & \text { imamk27_2_12 } \\ & \text { imamk29_1_12 } \\ & \text { imamk29_2_12 } \end{aligned}$ | Joint <br> Joint <br> Joint <br> Joint |
| Capital assets income <br> Added variables <br> Capital assets income-1 <br> Capital assets income-2 <br> Capital assets income-3 | inc_capital_12 | $\begin{aligned} & \\ & \text { K36_1 } \\ & \text { K36_2 } \\ & \text { K36_3 } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { amk36_1_12 } \\ & \text { amk36_2_12 } \\ & \text { amk36_3_12 } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { imamk36_1_12 } \\ & \text { imamk36_2_12 } \\ & \text { imamk36_3_12 } \end{aligned}$ | Joint <br> Joint <br> Joint |
| Earned income <br> Added variables <br> Own earned income-1 <br> Own earned income-2 <br> Own earned income-3 <br> Own earned income-4 <br> Added variables <br> Spouse's earned income-1 <br> Spouse's earned income-2 <br> Spouse's earned income-3 <br> Spouse's earned income-4 | inc_earned_12 | K47a <br> K48a <br> K50a <br> K51a <br> K53a <br> K54a <br> K56a <br> K57a | amk47a_12 <br> amk48a_12 <br> amk50a_12 <br> amk51a_12 <br> amk53a_12 <br> amk54a_12 <br> amk56a_12 <br> amk57a 12 | $\begin{aligned} & \text { imamk47a_12 } \\ & \text { imamk48a_12 } \\ & \text { imamk50a_12 } \\ & \text { imamk51a_12 } \\ & \text { imamk53a_12 } \\ & \text { imamk54a_12 } \\ & \text { imamk56a_12 } \\ & \text { imamk57a_12 } \end{aligned}$ | Individual Individual Individual Individual <br> Individual <br> Individual <br> Individual <br> Individual |

## Continue...

Table 5.2 Total (Individual or Couple) Income Components
List of variables according to treatment given for the calculation of total income

| Income Sources and Variable Name | Constructed variable | Question number | Derived variable | Imputed variable | Treatment |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Pension income <br> Added variables <br> Own pension income -retirement Own pension income -widow Own pension income -disability Own other pension income Added variables Spouse's pension income - retirement Spouse's pension income - widow Spouse's pension income - disability Spouse's other pension income | inc_pension_12 | K61a <br> K61b <br> K61c <br> K61d <br> K67c <br> K67d <br> K67e <br> K67f | amk61_1_12 <br> amk61_2_12 <br> amk61_3_12 <br> amk61_4_12 <br> amk67_1_12 <br> amk67_2_12 <br> amk67_3_12 <br> amk67 4-12 | $\begin{aligned} & \operatorname{mamk61\_ 1\_ 12} \\ & \text { mamk61_2_12 } \\ & \text { mamk61_3_12 } \\ & \operatorname{mamk61\_ 4-12} \\ & \operatorname{mamk67\_ 1-12} \\ & \text { mamk67_2_12 } \\ & \text { mamk67_3_12 } \\ & \text { mamk67_4_12 } \end{aligned}$ | Individual <br> Individual <br> Individual <br> Individual <br> Individual <br> Individual <br> Individual <br> Individual |
| Transfer income <br> Added variables <br> Own transfer income from institutions Own transfer income from individuals Own transfer income from properties Added variables Spouse's transfer income from institutions Spouse's transfer income from individuals Spouse's transfer income from properties | inc_trans_ | K80a <br> K80b <br> K80c <br> K83c <br> K83d <br> K83e | $\begin{aligned} & \text { amk80_1_12 } \\ & \text { amk80_2_12 } \\ & \text { amk80_3_12 } \\ & \text { amk83_1_12 } \\ & \text { amk83_2_12 } \\ & \text { amk83_3_12 } \end{aligned}$ |  | Individual <br> Individual <br> Individual <br> Individual <br> Individual <br> Individual |

## Tables 6. Distribution of Income and Assets (Derived and Imputed) by Range of Amount

Table 6.1. 'Total Individual Income

| Amount | Derived Variable |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: |
|  | Freq. | $\%$ |  | Freq. |
|  | 1,726 | 20.0 |  | 2,079 |
| $1-650$ | 1,731 | 20.1 |  | 1,983 |
| $651-1,700$ | 1,732 | 20.1 |  | 1,953 |
| $1,701-3,000$ | 1,725 | 20.0 | 2,256 | 21.6 |
| $3,001-7,000$ | 1,696 | 19.7 | 2,160 | 20.7 |
| $>7,000$ | 8,610 | 100.0 | 10,431 | 100.0 |
| Sub-total | 4,302 | 33.3 | 4,379 | 29.6 |
| 0 | 12,912 |  | 14,810 |  |

Table 6.2. Total Net Worth (Individual or Couple)

| Amount | Derived Variable |  |  | Imputed Variable |  |
| :---: | ---: | ---: | ---: | ---: | ---: |
|  | Freq. |  | $\%$ |  | Freq. |
| $1-70,000$ | 747 | 20.4 |  | 1,021 | 10.9 |
| $70,001-250,000$ | 731 | 20.0 |  | 1,471 | 15.7 |
| $250,001-450,000$ | 718 | 19.6 |  | 1,519 | 16.3 |
| $450,001-900,000$ | 732 | 20.0 |  | 2,338 | 25.0 |
| $>900,000$ | 726 | 19.9 |  | 2,998 | 32.1 |
| Sub-total | 3,654 | 100.0 |  | 9,347 | 100.0 |
| 0 | 798 | 17.9 |  | 1,080 | 10.4 |
| Total | 4,452 |  | 10,427 |  |  |

Tables 7. Mean Total Income at the Individual Level and Total Net Worth al the Household Level, and Distribution across Income Sources and Type of Assets by Key Characteristics

Table 7.1. Mean total income (monthly pesos) and distribution of income sources by characteristics for 2012 MHAS

| Variables | Total income | \% Distribution across Income Sources |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Earned | Pension | Transfer | Business | Property rent | Capital | Family help |
| Total ( $\mathrm{n}=14,810$ ) | 5,614 | 100.0 | 25.6 | 19.7 | 21.7 | 22.2 | 2.4 | 1.2 | 7.3 |
| Gender |  |  |  |  |  |  |  |  |  |
| Male | 7,148 | 100.0 | 32.6 | 21.2 | 19.2 | 20.2 | 1.8 | 1.0 | 4.1 |
| Female | 4,494 | 100.0 | 17.4 | 17.9 | 24.7 | 24.5 | 3.1 | 1.4 | 11.0 |
| Age |  |  |  |  |  |  |  |  |  |
| Less than 50 | 3,335 | 100.0 | 57.8 | 2.7 | 4.9 | 23.8 | 3.8 | 2.2 | 4.9 |
| 50-59 | 5,744 | 100.0 | 43.6 | 9.4 | 17.6 | 20.3 | 3.0 | 1.8 | 4.3 |
| 60-69 | 6,292 | 100.0 | 21.0 | 23.8 | 28.1 | 18.7 | 1.4 | 0.7 | 6.4 |
| 70 and more | 5,070 | 100.0 | 6.1 | 28.1 | 19.0 | 30.0 | 3.0 | 1.2 | 12.7 |
| Urban/Rural |  |  |  |  |  |  |  |  |  |
| Less urban | 4,728 | 100.0 | 17.9 | 13.1 | 17.2 | 40.5 | 2.2 | 1.0 | 8.0 |
| More urban | 6,236 | 100.0 | 29.6 | 23.1 | 24.2 | 12.4 | 2.5 | 1.3 | 6.9 |

Table 7.2. Total net value of assets and distribution of type of assets by key characteristics for 2012 MHAS.

| Variables | Total net value of assets | \% Distribution across Type of Net Assets |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Housing | Business | Real <br> estate | Financial assets | Vehicle | Assets not listed | (-) Debts |
| $\operatorname{Total}(\mathrm{n}=10,427)$ | 837,979 | 100.0 | 69.6 | 8.2 | 4.3 | 1.6 | 3.5 | 13.3 | 0.5 |
| Number_12 |  |  |  |  |  |  |  |  |  |
| One person | 701,686 | 100.0 | 73.2 | 6.5 | 3.1 | 1.1 | 1.8 | 14.6 | 0.3 |
| Couple | 953,124 | 100.0 | 67.4 | 9.2 | 5.1 | 1.8 | 4.6 | 12.5 | 0.6 |

## Appendix A

Descriptive Statistics of Derived (Un-imputed) and Imputed Variables

## Appendix A1 MHAS/ENASEM 2012

## Total Sampled's Income Components

(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk11_1_12 | 10,151 | $1,598.06$ | $51,411.91$ | 0.00 | $5,000,000.00$ |
| imamk11_1_12 | 10,427 | $3,299.86$ | $54,014.37$ | 0.00 | $5,000,000.00$ |
| amk11_2_12 | 10,415 | 58.68 | $1,694.19$ | 0.00 | $100,000.00$ |
| imamk11_2_12 | 10,427 | 74.69 | $1,816.94$ | 0.00 | $100,000.00$ |
| amk13_1_12 | 10,123 | $1,879.22$ | $52,131.04$ | 0.00 | $4,000,000.00$ |
| imamk13_1_12 | 10,427 | $3,534.42$ | $54,313.21$ | 0.00 | $4,000,000.00$ |
| amk13_2_12 | 10,411 | 46.28 | $2,137.78$ | 0.00 | $200,000.00$ |
| imamk13_2_12 | 10,427 | 78.48 | $2,431.31$ | 0.00 | $200,000.00$ |
| amk15_1_12 | 10,134 | 870.79 | $30,685.72$ | 0.00 | $3,000,000.00$ |
| imamk15_1_12 | 10,427 | $1,758.04$ | $31,948.94$ | 0.00 | $3,000,000.00$ |
| amk15_2_12 | 10,410 | 33.27 | $1,084.10$ | 0.00 | $90,000.00$ |
| imamk15_2_12 | 10,427 | 49.56 | $1,205.57$ | 0.00 | $90,000.00$ |
| amk27_1_12 | 10,350 | 283.05 | $9,352.19$ | 0.00 | $700,000.00$ |
| imamk27_1_12 | 10,427 | 505.33 | $13,695.02$ | 0.00 | $700,000.00$ |
| amk27_2_12 | 10,419 | 2.79 | 127.12 | 0.00 | $10,000.00$ |
| imamk27_2_12 | 10,427 | 6.30 | 201.18 | 0.00 | $10,000.00$ |
| amk29_1_12 | 10,306 | 79.60 | $1,542.17$ | 0.00 | $100,000.00$ |
| imamk29_1_12 | 10,427 | 122.17 | $2,141.13$ | 0.00 | $100,000.00$ |
| amk29_2_12 | 10,419 | 2.01 | 61.84 | 0.00 | $3,000.00$ |
| imamk29_2_12 | 10,427 | 2.91 | 73.87 | 0.00 | $3,000.00$ |
| amk36_1_12 | 10,239 | 31.19 | 919.69 | 0.00 | $70,000.00$ |
| imamk36_1_12 | 10,427 | 73.47 | $1,120.51$ | 0.00 | $70,000.00$ |
| amk36_2_12 | 10,362 | 1.66 | 76.23 | 0.00 | $6,000.00$ |
| imamk36_2_12 | 10,427 | 3.39 | 126.99 | 0.00 | $6,000.00$ |
| amk36_3_12 | 10,366 | 20.69 | $1,965.84$ | 0.00 | $200,000.00$ |
| imamk36_3_12 | 10,427 | 22.31 | $1,962.70$ | 0.00 | $200,000.00$ |
| amk47a_12 | 10,330 | 872.01 | $9,518.75$ | 0.00 | $500,000.00$ |
| imamk47a_12 | 10,427 | $1,018.90$ | $9,805.02$ | 0.00 | $500,000.00$ |
| amk48a_12 | 10,301 | $1,552.69$ | $15,731.94$ | 0.00 | $840,000.00$ |
| imamk48a_12 | 10,427 | 218.57 | $2,084.56$ | 0.00 | $83,333.25$ |
| amk50a_12 | 10,423 | 17.72 | 316.34 | 0.00 | $12,000.00$ |
| imamk50a_12 | 10,427 | 19.35 | 331.25 | 0.00 | $12,000.00$ |
| amk51a_12 | 10,421 | 28.51 | $1,293.79$ | 0.00 | $100,000.00$ |
| imamk51a_12 | 10,427 | 3.95 | 136.74 | 0.00 | $8,333.33$ |
| amk61_1_12 | 10,263 | 898.09 | $4,027.34$ | 0.00 | $200,000.00$ |
| imamk61_1_12 | 10,427 | 977.29 | $4,118.34$ | 0.00 | $200,000.00$ |
| amk61_2_12 | 10,363 | 160.33 | 919.77 | 0.00 | $25,000.00$ |
|  |  |  |  |  |  |


| imamk61_2_12 | 10,427 | 172.80 | 999.77 | 0.00 | $25,000.00$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk61_3_12 | 10,385 | 20.13 | 344.23 | 0.00 | $20,000.00$ |
| imamk61_3_12 | 10,427 | 20.65 | 346.21 | 0.00 | $20,000.00$ |
| amk61_4_12 | 10,378 | 41.43 | 408.62 | 0.00 | $15,000.00$ |
| imamk61_4_12 | 10,427 | 43.82 | 418.68 | 0.00 | $15,000.00$ |
| amk80_1_12 | 10,346 | 156.23 | $1,368.23$ | 0.00 | $80,000.00$ |
| imamk80_1_12 | 10,427 | 165.90 | $1,379.66$ | 0.00 | $80,000.00$ |
| amk80_2_12 | 10,378 | 11.90 | 278.64 | 0.00 | $18,000.00$ |
| imamk80_2_12 | 10,427 | 14.13 | 296.09 | 0.00 | $18,000.00$ |
| amk80_3_12 | 10,374 | 993.82 | $24,962.13$ | 0.00 | $1,400,000.00$ |
| imamk80_3_12 | 10,427 | $1,284.01$ | $26,707.14$ | 0.00 | $1,400,000.00$ |
| amg19_1_12 | 9,392 | 360.95 | $1,277.13$ | 0.00 | $70,000.00$ |
| imamg19_1_12 | 9,696 | 378.89 | $1,278.16$ | 0.00 | $70,000.00$ |
| amg19_2_12 | 9,538 | 148.33 | 893.29 | 0.00 | $70,000.00$ |
| imamg19_2_12 | 9,696 | 161.63 | 904.20 | 0.00 | $70,000.00$ |
| amg19_3_12 | 9,616 | 49.89 | 265.05 | 0.00 | $7,200.00$ |
| imamg19_3_12 | 9,696 | 54.59 | 275.63 | 0.00 | $7,200.00$ |
| amg19_4_12 | 9,659 | 20.01 | 203.24 | 0.00 | $10,000.00$ |
| imamg19_4_12 | 9,696 | 22.63 | 215.06 | 0.00 | $10,000.00$ |
| amg19_5_12 | 9,681 | 7.48 | 97.50 | 0.00 | $4,000.00$ |
| imamg19_5_12 | 9,696 | 7.89 | 98.65 | 0.00 | $4,000.00$ |
| amg19_6_12 | 9,685 | 3.00 | 56.98 | 0.00 | $2,600.00$ |
| imamg19_6_12 | 9,696 | 3.40 | 59.91 | 0.00 | $2,600.00$ |
| amg19_7_12 | 9,690 | 2.85 | 166.54 | 0.00 | $16,000.00$ |
| imamg19_7_12 | 9,696 | 3.11 | 167.09 | 0.00 | $16,000.00$ |

## Appendix A2 MHAS/ENASEM 2012

## Total Spouse's Income Components

(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | :---: | ---: | ---: | ---: | ---: |
| amk53a_12 | 5,443 | 838.83 | $4,239.06$ | 0.00 | $200,000.00$ |
| imamk53a_12 | 5,652 | $1,161.66$ | $4,755.58$ | 0.00 | $200,000.00$ |
| amk54a_12 | 5,427 | $1,111.24$ | $9,058.48$ | 0.00 | $350,000.00$ |
| imamk54a_12 | 5,652 | 439.89 | $3,301.75$ | 0.00 | $83,333.25$ |
| amk56a_12 | 5,645 | 25.82 | 871.47 | 0.00 | $60,000.00$ |
| imamk56a_12 | 5,652 | 32.42 | 892.61 | 0.00 | $60,000.00$ |
| amk57a_12 | 5,648 | 22.31 | $1,013.56$ | 0.00 | $70,000.00$ |
| imamk57a_12 | 5,652 | 20.46 | $1,128.61$ | 0.00 | $83,333.25$ |
| amk67_1_12 | 5,469 | 640.96 | $2,493.40$ | 0.00 | $38,000.00$ |
| imamk67_1_12 | 5,652 | 775.78 | $2,661.76$ | 0.00 | $38,000.00$ |
| amk67_2_12 | 5,614 | 4.96 | 180.64 | 0.00 | $12,000.00$ |


| imamk67_2_12 | 5,652 | 15.54 | 399.51 | 0.00 | $12,000.00$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk67_3_12 | 5,608 | 21.09 | 389.18 | 0.00 | $18,000.00$ |
| imamk67_3_12 | 5,652 | 22.65 | 393.05 | 0.00 | $18,000.00$ |
| amk67_4_12 | 5,609 | 41.07 | 732.75 | 0.00 | $38,000.00$ |
| imamk67_4_12 | 5,652 | 42.97 | 733.98 | 0.00 | $38,000.00$ |
| amk83_1_12 | 5,581 | 92.49 | 476.64 | 0.00 | $12,000.00$ |
| imamk83_1_12 | 5,652 | 100.27 | 491.81 | 0.00 | $12,000.00$ |
| amk83_2_12 | 5,614 | 0.36 | 16.34 | 0.00 | $1,000.00$ |
| imamk83_2_12 | 5,652 | 2.19 | 44.78 | 0.00 | $1,000.00$ |
| amk83_3_12 | 5,612 | 252.22 | $8,534.55$ | 0.00 | $500,000.00$ |
| imamk83_3_12 | 5,652 | 515.83 | $14,312.23$ | 0.00 | $500,000.00$ |

## Appendix A3 MHAS/ENASEM 2012

Total Assets and Household Components
(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amj31_12 | 6,118 | $404,847.50$ | $803,620.50$ | 0.00 | $9,000,000.00$ |
| imamj31_12 | 10,427 | $532,514.50$ | $754,093.80$ | 0.00 | $9,000,000.00$ |
| amj28_12 | 10,293 | $4,136.60$ | $68,604.97$ | 0.00 | $4,200,000.00$ |
| imamj28_12 | 10,427 | $9,170.11$ | $113,245.50$ | 0.00 | $4,200,000.00$ |
| amj26_12 | 10,364 | 101.77 | $3,977.59$ | 0.00 | $400,000.00$ |
| imamj26_12 | 10,427 | 117.64 | $3,989.80$ | 0.00 | $400,000.00$ |
| amj34_12 | 9,942 | $33,988.20$ | $247,700.90$ | 0.00 | $7,000,000.00$ |
| imamj34_12 | 10,427 | $60,161.46$ | $309,714.00$ | 0.00 | $7,000,000.00$ |
| amj20_12 | 10,405 | 73.22 | 511.21 | 0.00 | $18,000.00$ |
| imamj20_12 | 10,427 | 80.05 | 540.07 | 0.00 | $18,000.00$ |
| amk8_1_12 | 9,774 | $32,869.82$ | $289,949.60$ | 0.00 | $9,000,000.00$ |
| imamk8_1_12 | 10,427 | $64,434.64$ | $343,426.10$ | 0.00 | $9,000,000.00$ |
| amk8_2_12 | 10,394 | $2,747.59$ | $108,748.70$ | 0.00 | $8,000,000.00$ |
| imamk8_2_12 | 10,427 | $5,125.81$ | $130,756.00$ | 0.00 | $8,000,000.00$ |
| amk4_1_12 | 10,368 | 993.09 | $45,086.27$ | 0.00 | $3,000,000.00$ |
| imamk4_1_12 | 10,427 | $1,237.36$ | $45,785.40$ | 0.00 | $3,000,000.00$ |
| amk4_2_12 | 10,425 | 15.44 | $1,034.63$ | 0.00 | $100,000.00$ |
| imamk4_2_12 | 10,427 | 18.67 | $1,085.77$ | 0.00 | $100,000.00$ |
| amk24_1_12 | 10,139 | $17,737.85$ | $188,896.40$ | 0.00 | $9,000,000.00$ |
| imamk24_1_12 | 10,427 | $32,997.63$ | $259,444.40$ | 0.00 | $9,000,000.00$ |
| amk24_2_12 | 10,404 | $2,440.46$ | $97,779.55$ | 0.00 | $8,000,000.00$ |
| imamk24_2_12 | 10,427 | $3,592.11$ | $102,963.40$ | 0.00 | $8,000,000.00$ |
| amk20_1_12 | 10,382 | 321.13 | $13,285.22$ | 0.00 | $1,000,000.00$ |
| imamk2__1_12 | 10,427 | 334.13 | $13,337.34$ | 0.00 | $1,000,000.00$ |
| amk20_2_12 | 10,426 | 71.94 | $4,480.13$ | 0.00 | $400,000.00$ |


| imamk20_2_12 | 10,427 | 71.93 | $4,479.92$ | 0.00 | $400,000.00$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk33_1_12 | 10,109 | $4,874.13$ | $94,441.37$ | 0.00 | $5,000,000.00$ |
| imamk33_1_12 | 10,427 | $11,317.10$ | $116,072.10$ | 0.00 | $5,000,000.00$ |
| amk33_2_12 | 10,356 | 336.44 | $11,023.99$ | 0.00 | $900,000.00$ |
| imamk33_2_12 | 10,427 | 568.27 | $13,340.06$ | 0.00 | $900,000.00$ |
| amk33_3_12 | 10,363 | 308.02 | $18,673.04$ | 0.00 | $1,500,000.00$ |
| imamk33_3_12 | 10,427 | $1,321.76$ | $43,081.83$ | 0.00 | $1,500,000.00$ |
| amk42_12 | 9,760 | $20,625.27$ | $133,237.30$ | 0.00 | $6,150,000.00$ |
| imamk42_12 | 10,427 | $30,733.83$ | $141,486.60$ | 0.00 | $6,150,000.00$ |
| amk40_12 | 10,340 | 889.44 | $10,819.39$ | 0.00 | $320,000.00$ |
| imamk40_12 | 10,427 | $1,286.76$ | $13,273.55$ | 0.00 | $400,000.00$ |
| amk44_12 | 7,259 | $59,683.90$ | $378,249.60$ | 0.00 | $9,000,000.00$ |
| imamk44_12 | 10,427 | $111,407.90$ | $372,489.70$ | 0.00 | $9,000,000.00$ |
| amk86_12 | 10,297 | $3,634.77$ | $34,979.94$ | 0.00 | $2,000,000.00$ |
| imamk86_12 | 10,427 | $4,077.11$ | $35,485.84$ | 0.00 | $2,000,000.00$ |
| amk88_12 | 9,375 | $3,855.52$ | $11,551.53$ | 1.00 | $999,989.00$ |
| imamk88_12 | 10,427 | $3,605.01$ | $5,066.83$ | 1.00 | $250,000.00$ |

## Appendix A4 MHAS/ENASEM 2012

Hospital and other utilization of services
(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amd6_12 | 15,621 | 550.12 | $6,673.06$ | 0.00 | $300,000.00$ |
| imamd6_12 | 15,723 | 670.77 | $7,042.17$ | 0.00 | $300,000.00$ |
| amd9_1_12 | 15,701 | 53.06 | 471.72 | 0.00 | $24,000.00$ |
| imamd9_1_12 | 15,723 | 53.48 | 472.74 | 0.00 | $24,000.00$ |
| amd9_2_12 | 15,584 | 681.67 | $6,115.88$ | 0.00 | $600,000.00$ |
| imamd9_2_12 | 15,723 | 708.37 | $6,132.31$ | 0.00 | $600,000.00$ |
| amd9_3_12 | 15,702 | 169.71 | $3,978.12$ | 0.00 | $400,000.00$ |
| imamd9_3_12 | 15,723 | 184.83 | $4,120.08$ | 0.00 | $400,000.00$ |
| amd9_4_12 | 15,567 | 515.98 | $3,561.74$ | 0.00 | $260,000.00$ |
| imamd9_4_12 | 15,723 | 535.79 | $3,609.25$ | 0.00 | $260,000.00$ |
| amd12a_12 | 15,346 | 488.92 | $6,555.65$ | 0.00 | $600,000.00$ |
| imamd12a_12 | 15,723 | 582.21 | $6,597.12$ | 0.00 | $600,000.00$ |
| amsd5_12 | 2,510 | $4,777.77$ | $25,926.09$ | 0.00 | $600,000.00$ |
| imamsd5_12 | 2,742 | $5,354.12$ | $26,557.23$ | 0.00 | $600,000.00$ |
| amsd8_12 | 2,483 | $3,678.75$ | $23,003.62$ | 0.00 | $700,000.00$ |
| imamsd8_12 | 2,742 | $4,743.31$ | $23,485.88$ | 0.00 | $700,000.00$ |
| amsd10a_12 | 2,398 | $2,707.99$ | $12,717.53$ | 0.00 | $300,000.00$ |
| imamsd10a_12 | 2,742 | $3,481.82$ | $12,839.53$ | 0.00 | $300,000.00$ |

## Appendix A5 MHAS/ENASEM 2012

## Pension Income and Death Expendtures

(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk101_12 | 1,291 | 70.14 | 601.83 | 0.00 | $10,000.00$ |
| imamk101_12 | 1,306 | 83.56 | 670.17 | 0.00 | $10,000.00$ |
| amk103_12 | 1,276 | 738.89 | $2,729.24$ | 0.00 | $60,000.00$ |
| imamk103_12 | 1,306 | 874.51 | $3,606.05$ | 0.00 | $60,000.00$ |
| amk111_12 | 915 | $17,487.11$ | $19,229.28$ | 0.00 | $300,000.00$ |
| imamk111_12 | 1,306 | $18,398.50$ | $18,603.57$ | 0.00 | $300,000.00$ |

## Appendix A6 MHAS/ENASEM 2012

## Help Given

(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | :--- | ---: | ---: | ---: | ---: |
| amg8b1_12 | 9,460 | 288.77 | $1,712.23$ | 0.00 | $105,000.00$ |
| imamg8b1_12 | 9,696 | 328.29 | $1,751.78$ | 0.00 | $105,000.00$ |
| amg8b2_12 | 9,586 | 108.72 | 774.43 | 0.00 | $33,333.33$ |
| imamg8b2_12 | 9,696 | 121.05 | 795.17 | 0.00 | $33,333.33$ |
| amg8b3_12 | 9,650 | 36.93 | 380.82 | 0.00 | $12,500.00$ |
| imamg8b3_12 | 9,696 | 41.63 | 394.98 | 0.00 | $12,500.00$ |
| amg8b4_12 | 9,683 | 9.45 | 187.17 | 0.00 | $10,000.00$ |
| imamg8b4_12 | 9,696 | 10.24 | 193.12 | 0.00 | $10,000.00$ |
| amg8b5_12 | 9,691 | 3.67 | 124.12 | 0.00 | $10,000.00$ |
| imamg8b5_12 | 9,696 | 3.85 | 124.64 | 0.00 | $10,000.00$ |
| amg8b6_12 | 9,693 | 1.36 | 46.23 | 0.00 | $3,000.00$ |
| imamg8b6_12 | 9,696 | 1.48 | 46.94 | 0.00 | $3,000.00$ |
| amg8b7_12 | 9,695 | 0.41 | 17.56 | 0.00 | $1,000.00$ |
| imamg8b7_12 | 9,696 | 0.41 | 17.56 | 0.00 | $1,000.00$ |

## Appendix A7 MHAS/ENASEM 2012

## Economic Help to Parents

(Including zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amf41_12 | 15,316 | 808.56 | $6,801.21$ | 0.00 | $480,000.00$ |
| imamf41_12 | 15,723 | $1,109.35$ | $7,186.60$ | 0.00 | $480,000.00$ |

## Appendix A8 MHAS/ENASEM 2012

## Total Sampled's Income Components

(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk11_1_12 | 696 | 23307.36 | 195179.9 | 16 | 5000000 |
| imamk11_1_12 | 921 | $37,359.04$ | $178,296.60$ | 1.00 | $5,000,000.00$ |
| amk11_2_12 | 48 | $12,732.35$ | $21,706.73$ | 70.00 | $100,000.00$ |
| imamk11_2_12 | 56 | $13,907.06$ | $20,734.86$ | 70.00 | $100,000.00$ |
| amk13_1_12 | 899 | $21,160.55$ | $173,850.70$ | 10.00 | $4,000,000.00$ |
| imamk13_1_12 | 1,117 | $32,993.16$ | $163,052.90$ | 10.00 | $4,000,000.00$ |
| amk13_2_12 | 53 | $9,090.49$ | $28,828.89$ | 60.00 | $200,000.00$ |
| imamk13_2_12 | 65 | $12,589.45$ | $28,337.58$ | 60.00 | $200,000.00$ |
| amk15_1_12 | 750 | $11,766.10$ | $112,296.20$ | 16.00 | $3,000,000.00$ |
| imamk15_1_12 | 958 | $19,134.75$ | $103,862.90$ | 16.00 | $3,000,000.00$ |
| amk15_2_12 | 50 | $6,926.66$ | $14,175.34$ | 200.00 | $90,000.00$ |
| imamk15_2_12 | 65 | $7,949.52$ | $13,152.44$ | 200.00 | $90,000.00$ |
| amk27_1_12 | 146 | $20,065.45$ | $76,438.17$ | 1.00 | $700,000.00$ |
| imamk27_1_12 | 182 | $28,951.22$ | $99,876.94$ | 1.00 | $700,000.00$ |
| amk27_2_12 | 9 | $3,233.33$ | $3,048.36$ | 500.00 | $10,000.00$ |
| imamk27_2_12 | 16 | $4,107.77$ | $3,187.39$ | 500.00 | $10,000.00$ |
| amk29_1_12 | 203 | $4,041.26$ | $10,258.58$ | 10.00 | $100,000.00$ |
| imamk29_1_12 | 261 | $4,880.70$ | $12,669.69$ | 10.00 | $100,000.00$ |
| amk29_2_12 | 17 | $1,234.71$ | 934.33 | 40.00 | $3,000.00$ |
| imamk29_2_12 | 25 | $1,211.82$ | 919.01 | 40.00 | $3,000.00$ |
| amk36_1_12 | 97 | $3,292.29$ | $8,908.16$ | 2.00 | $70,000.00$ |
| imamk36_1_12 | 182 | $4,209.11$ | $7,403.97$ | 2.00 | $70,000.00$ |
| amk36_2_12 | 11 | $1,564.09$ | $1,825.65$ | 5.00 | $6,000.00$ |
| imamk36_2_12 | 15 | $2,357.00$ | $2,463.02$ | 5.00 | $6,000.00$ |
| amk36_3_12 | 5 | $42,900.00$ | $87,832.51$ | $2,500.00$ | $200,000.00$ |
| imamk36_3_12 | 9 | $25,850.00$ | $65,339.76$ | 150.00 | $200,000.00$ |
| amk47a_12 | 1,101 | $8,181.49$ | $28,123.65$ | 15.00 | $500,000.00$ |
| imamk47a_12 | 1,193 | $8,905.32$ | $27,759.65$ | 15.00 | $500,000.00$ |
| amk48a_12 | 885 | $18,072.63$ | $50,840.94$ | 12.00 | $840,000.00$ |
| imamk48a_12 | 1,001 | $2,276.73$ | $6,372.93$ | 1.00 | $83,333.25$ |
| amk50a_12 | 54 | $3,420.37$ | $2,796.37$ | 100.00 | $12,000.00$ |
| imamk50a_12 | 57 | $3,540.35$ | $2,782.25$ | 100.00 | $12,000.00$ |
| amk51a_12 | 20 | $14,855.00$ | $26,194.69$ | 300.00 | $100,000.00$ |
| imamk51a_12 | 25 | $1,648.55$ | $2,301.89$ | 25.00 | $8,333.33$ |
| amk61_1_12 | 1,613 | $5,714.25$ | $8,701.45$ | 120.00 | $200,000.00$ |
| imamk61_1_12 | 1,749 | $5,826.33$ | $8,537.83$ | 49.83 | $200,000.00$ |
| amk61_2_12 | 616 | $2,697.20$ | $2,720.29$ | 10.00 | $25,000.00$ |
|  |  |  |  |  |  |


| imamk61_2_12 | 646 | $2,789.07$ | $2,974.64$ | 10.00 | $25,000.00$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk61_3_12 | 80 | $2,613.69$ | $2,951.43$ | 300.00 | $20,000.00$ |
| imamk61_3_12 | 82 | $2,625.89$ | $2,915.84$ | 300.00 | $20,000.00$ |
| amk61_4_12 | 325 | $1,322.80$ | $1,909.82$ | 80.00 | $15,000.00$ |
| imamk61_4_12 | 337 | $1,355.75$ | $1,911.91$ | 80.00 | $15,000.00$ |
| amk80_1_12 | 1,724 | 937.53 | $3,241.46$ | 41.00 | $80,000.00$ |
| imamk80_1_12 | 1,769 | 977.84 | $3,229.61$ | 30.03 | $80,000.00$ |
| amk80_2_12 | 38 | $3,250.82$ | $3,310.72$ | 400.00 | $18,000.00$ |
| imamk80_2_12 | 45 | $3,272.99$ | $3,140.83$ | 363.48 | $18,000.00$ |
| amk80_3_12 | 68 | $151,615.90$ | $270,726.10$ | 250.00 | $1,400,000.00$ |
| imamk80_3_12 | 83 | $161,305.90$ | $254,091.70$ | 250.00 | $1,400,000.00$ |
| amg19_1_12 | 2,974 | $1,139.89$ | $2,064.92$ | 0.08 | $70,000.00$ |
| imamg19_1_12 | 3,257 | $1,127.95$ | $2,004.82$ | 0.08 | $70,000.00$ |
| amg19_2_12 | 1,650 | 857.43 | $2,001.65$ | 0.25 | $70,000.00$ |
| imamg19_2_12 | 1,806 | 867.74 | $1,943.79$ | 0.25 | $70,000.00$ |
| amg19_3_12 | 760 | 631.20 | 722.88 | 4.17 | $7,200.00$ |
| imamg19_3_12 | 839 | 630.87 | 717.61 | 4.17 | $7,200.00$ |
| amg19_4_12 | 320 | 603.92 | 947.00 | 4.17 | $10,000.00$ |
| imamg19_4_12 | 357 | 614.66 | 945.87 | 4.17 | $10,000.00$ |
| amg19_5_12 | 138 | 524.86 | 630.95 | 8.33 | $4,000.00$ |
| imamg19_5_12 | 153 | 499.77 | 610.99 | 8.33 | $4,000.00$ |
| amg19_6_12 | 63 | 461.08 | 540.86 | 8.33 | $2,600.00$ |
| imamg19_6_12 | 74 | 446.02 | 525.83 | 8.33 | $2,600.00$ |
| amg19_7_12 | 27 | $1,023.95$ | $3,041.38$ | 25.00 | $16,000.00$ |
| imamg19_7_12 | 33 | 913.08 | $2,757.13$ | 25.00 | $16,000.00$ |

## Appendix A9 MHAS/ENASEM 2012

## Total Spouse's Income Components

(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk53a_12 | 738 | $6,186.64$ | $9,977.86$ | 3.00 | $200,000.00$ |
| imamk53a_12 | 929 | $7,067.51$ | $9,794.46$ | 3.00 | $200,000.00$ |
| amk54a_12 | 435 | $13,863.63$ | $29,132.25$ | 100.00 | $350,000.00$ |
| imamk54a_12 | 633 | $3,927.74$ | $9,151.74$ | 0.75 | $83,333.25$ |
| amk56a_12 | 24 | $6,072.08$ | $12,167.80$ | 50.00 | $60,000.00$ |
| imamk56a_12 | 31 | $5,910.65$ | $10,685.50$ | 50.00 | $60,000.00$ |
| amk57a_12 | 6 | $21,000.00$ | $25,131.65$ | $4,000.00$ | $70,000.00$ |
| imamk57a_12 | 10 | $11,566.65$ | $25,522.44$ | 333.33 | $83,333.25$ |
| amk67_1_12 | 714 | $4,909.52$ | $5,166.47$ | 400.00 | $38,000.00$ |
| imamk67_1_12 | 866 | $5,063.16$ | $4,955.09$ | 1.00 | $38,000.00$ |
| amk67_2_12 | 9 | $3,094.44$ | $3,484.11$ | $1,000.00$ | $12,000.00$ |


| imamk67_2_12 | 14 | $6,275.00$ | $5,203.80$ | $1,000.00$ | $12,000.00$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk67_3_12 | 34 | $3,479.41$ | $3,652.05$ | 400.00 | $18,000.00$ |
| imamk67_3_12 | 41 | $3,121.99$ | $3,450.64$ | 400.00 | $18,000.00$ |
| amk67_4_12 | 105 | $2,194.13$ | $4,917.58$ | 100.00 | $38,000.00$ |
| imamk67_4_12 | 111 | $2,187.92$ | $4,789.63$ | 33.17 | $38,000.00$ |
| amk83_1_12 | 640 | 806.58 | $1,186.19$ | 50.00 | $12,000.00$ |
| imamk83_1_12 | 676 | 838.38 | $1,185.42$ | 22.35 | $12,000.00$ |
| amk83_2_12 | 3 | 666.67 | 288.68 | 500.00 | $1,000.00$ |
| imamk83_2_12 | 14 | 882.28 | 188.76 | 500.00 | $1,000.00$ |
| amk83_3_12 | 16 | $88,466.88$ | $137,557.60$ | 150.00 | $500,000.00$ |
| imamk83_3_12 | 19 | $153,445.80$ | $198,842.10$ | 150.00 | $500,000.00$ |

## Appendix A10 MHAS/ENASEM 2012

Total Assets and Household Components
(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amj31_12 | 3,968 | $624,207.90$ | $926,743.30$ | 13.00 | $9,000,000.00$ |
| imamj31_12 | 8,207 | $676,560.20$ | $790,589.10$ | 13.00 | $9,000,000.00$ |
| amj28_12 | 198 | $215,040.50$ | $447,559.10$ | 100.00 | $4,200,000.00$ |
| imamj28_12 | 332 | $288,002.30$ | $568,688.40$ | 68.31 | $4,200,000.00$ |
| amj26_12 | 269 | $3,920.96$ | $24,428.34$ | 50.00 | $400,000.00$ |
| imamj26_12 | 296 | $4,143.94$ | $23,363.54$ | 50.00 | $400,000.00$ |
| amj34_12 | 576 | $586,650.40$ | $857,890.90$ | 200.00 | $7,000,000.00$ |
| imamj34_12 | 975 | $643,388.30$ | $806,945.30$ | 200.00 | $7,000,000.00$ |
| amj20_12 | 439 | $1,735.32$ | $1,821.20$ | 30.00 | $18,000.00$ |
| imamj20_12 | 461 | $1,810.63$ | $1,862.98$ | 30.00 | $18,000.00$ |
| amk8_1_12 | 802 | $400,585.60$ | $937,156.20$ | 1.00 | $9,000,000.00$ |
| imamk8_1_12 | 1,421 | $472,807.90$ | $820,206.30$ | 1.00 | $9,000,000.00$ |
| amk8_2_12 | 50 | $571,169.40$ | $1,475,496.00$ | 120.00 | $8,000,000.00$ |
| imamk8_2_12 | 83 | $643,937.10$ | $1,325,695.00$ | 120.00 | $8,000,000.00$ |
| amk4_1_12 | 59 | $174,514.60$ | $576,659.60$ | 200.00 | $3,000,000.00$ |
| imamk4_1_12 | 74 | $174,350.60$ | $518,461.30$ | 200.00 | $3,000,000.00$ |
| amk4_2_12 | 6 | $26,833.33$ | $36,988.74$ | $5,000.00$ | $100,000.00$ |
| imamk4_2_12 | 7 | $27,810.08$ | $33,864.69$ | $5,000.00$ | $100,000.00$ |
| amk24_1_12 | 384 | $468,343.80$ | $856,100.70$ | 30.00 | $9,000,000.00$ |
| imamk24_1_12 | 635 | $541,836.70$ | $911,471.10$ | 1.00 | $9,000,000.00$ |
| amk24_2_12 | 26 | $976,557.70$ | $1,728,908.00$ | $3,500.00$ | $8,000,000.00$ |
| imamk24_2_12 | 49 | $764,386.30$ | $1,307,314.00$ | 1.00 | $8,000,000.00$ |
| amk20_1_12 | 23 | $144,956.50$ | $247,717.10$ | $5,000.00$ | $1,000,000.00$ |
| imamk20_1_12 | 27 | $129,037.10$ | $232,562.80$ | 1.00 | $1,000,000.00$ |
| amk20_2_12 | 5 | $150,000.00$ | $155,563.50$ | $20,000.00$ | $400,000.00$ |


| imamk20_2_12 | 5 | $150,000.00$ | $155,563.50$ | $20,000.00$ | $400,000.00$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk33_1_12 | 355 | $138,795.90$ | $485,834.20$ | 1.00 | $5,000,000.00$ |
| imamk33_1_12 | 607 | $194,404.30$ | $442,878.70$ | 1.00 | $5,000,000.00$ |
| amk33_2_12 | 58 | $60,072.41$ | $135,743.10$ | 500.00 | $900,000.00$ |
| imamk33_2_12 | 74 | $80,072.05$ | $137,706.10$ | 500.00 | $900,000.00$ |
| amk33_3_12 | 8 | $399,001.30$ | $578,225.60$ | 10.00 | $1,500,000.00$ |
| imamk33_3_12 | 17 | $810,706.50$ | $715,723.60$ | 10.00 | $1,500,000.00$ |
| amk42_12 | 2,147 | $93,759.95$ | $271,787.10$ | 10.00 | $6,150,000.00$ |
| imamk42_12 | 2,793 | $114,737.40$ | $255,170.50$ | 10.00 | $6,150,000.00$ |
| amk40_12 | 139 | $66,163.94$ | $66,482.99$ | 2.00 | $320,000.00$ |
| imamk40_12 | 182 | $73,719.98$ | $69,133.84$ | 2.00 | $400,000.00$ |
| amk44_12 | 3,720 | $116,463.80$ | $522,117.00$ | 10.00 | $9,000,000.00$ |
| imamk44_12 | 5,381 | $215,880.00$ | $496,312.10$ | 10.00 | $9,000,000.00$ |
| amk86_12 | 1,017 | $36,801.62$ | $105,725.90$ | 10.00 | $2,000,000.00$ |
| imamk86_12 | 1,103 | $38,542.19$ | $102,879.20$ | 1.00 | $2,000,000.00$ |
| amk88_12 | 9,375 | $3,855.52$ | $11,551.53$ | 1.00 | $999,989.00$ |
| imamk88_12 | 10,427 | $3,605.01$ | $5,066.83$ | 1.00 | $250,000.00$ |

## Appendix A11 MHAS/ENASEM 2012

Hospital and other utilization of services
(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amd6_12 | 399 | $21,537.23$ | $35,978.90$ | 2.00 | $300,000.00$ |
| imamd6_12 | 487 | $21,656.11$ | $33,895.45$ | 2.00 | $300,000.00$ |
| amd9_1_12 | 871 | 956.53 | $1,774.93$ | 10.00 | $24,000.00$ |
| imamd9_1_12 | 875 | 960.93 | $1,774.01$ | 10.00 | $24,000.00$ |
| amd9_2_12 | 3,417 | $3,108.93$ | $12,770.27$ | 1.00 | $600,000.00$ |
| imamd9_2_12 | 3,458 | $3,220.83$ | $12,764.38$ | 1.00 | $600,000.00$ |
| amd9_3_12 | 197 | $13,527.09$ | $32,956.37$ | 12.00 | $400,000.00$ |
| imamd9_3_12 | 218 | $13,330.75$ | $32,462.59$ | 1.00 | $400,000.00$ |
| amd9_4_12 | 3,442 | $2,333.59$ | $7,290.03$ | 1.00 | $260,000.00$ |
| imamd9_4_12 | 3,487 | $2,415.91$ | $7,362.57$ | 1.00 | $260,000.00$ |
| amd12a_12 | 5,958 | $1,259.30$ | $10,475.48$ | 1.00 | $600,000.00$ |
| imamd12a_12 | 6,138 | $1,491.37$ | $10,494.77$ | 1.00 | $600,000.00$ |
| amsd5_12 | 400 | $29,980.49$ | $58,900.10$ | 1.00 | $600,000.00$ |
| imamsd5_12 | 440 | $33,365.87$ | $58,880.01$ | 1.00 | $600,000.00$ |
| amsd8_12 | 770 | $11,862.79$ | $40,133.64$ | 15.00 | $700,000.00$ |
| imamsd8_12 | 883 | $14,729.50$ | $39,584.24$ | 15.00 | $700,000.00$ |
| amsd10a_12 | 1,084 | $5,990.54$ | $18,392.56$ | 15.00 | $300,000.00$ |
| imamsd10a_12 | 1,257 | $7,595.18$ | $18,124.49$ | 15.00 | $300,000.00$ |

## Appendix A12 MHAS/ENASEM 2012

## Pension Income and Death Expendtures

(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amk101_12 | 27 | $3,353.70$ | $2,556.40$ | 50.00 | $10,000.00$ |
| imamk101_12 | 31 | $3,520.44$ | $2,652.27$ | 50.00 | $10,000.00$ |
| amk103_12 | 277 | $3,403.68$ | $5,030.61$ | 500.00 | $60,000.00$ |
| imamk103_12 | 296 | $3,858.47$ | $6,780.25$ | 117.90 | $60,000.00$ |
| amk111_12 | 810 | $19,753.96$ | $19,311.20$ | 20.00 | $300,000.00$ |
| imamk111_12 | 1,136 | $21,151.80$ | $18,429.38$ | 20.00 | $300,000.00$ |

Appendix A13 MHAS/ENASEM 2012
Help Given
(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | ---: | ---: | ---: | ---: | ---: |
| amg8b1_12 | 1,862 | $1,467.11$ | $3,629.26$ | 0.17 | $105,000.00$ |
| imamg8b1_12 | 2,087 | $1,525.20$ | $3,526.46$ | 0.17 | $105,000.00$ |
| amg8b2_12 | 894 | $1,165.71$ | $2,281.19$ | 0.63 | $33,333.33$ |
| imamg8b2_12 | 1,004 | $1,169.04$ | $2,210.29$ | 0.63 | $33,333.33$ |
| amg8b3_12 | 338 | $1,054.41$ | $1,753.92$ | 1.67 | $12,500.00$ |
| imamg8b3_12 | 384 | $1,051.06$ | $1,698.67$ | 1.67 | $12,500.00$ |
| amg8b4_12 | 103 | 888.79 | $1,592.57$ | 8.33 | $10,000.00$ |
| imamg8b4_12 | 116 | 855.70 | $1,553.82$ | 8.33 | $10,000.00$ |
| amg8b5_12 | 49 | 726.48 | $1,604.32$ | 12.50 | $10,000.00$ |
| imamg8b5_12 | 54 | 691.31 | $1,535.36$ | 7.67 | $10,000.00$ |
| amg8b6_12 | 23 | 573.91 | 773.36 | 16.67 | $3,000.00$ |
| imamg8b6_12 | 26 | 550.84 | 734.66 | 16.67 | $3,000.00$ |
| amg8b7_12 | 10 | 394.67 | 399.18 | 16.67 | $1,000.00$ |
| imamg8b7_12 | 11 | 358.88 | 396.86 | 1.00 | $1,000.00$ |

Appendix A14 MHAS/ENASEM 2012 Economic Help to Parents
(Without zeros)

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
| :--- | :--- | :--- | ---: | ---: | ---: |
| amf41_12 | 1,612 | $7,682.36$ | $19,669.71$ | 1.00 | $480,000.00$ |
| imamf41_12 | 2,015 | $8,656.25$ | $18,379.77$ | 1.00 | $480,000.00$ |


[^0]:    Suggested citation for this document:
    MHAS (2016). "Imputation of Non-Response on Economic Variables in the Mexican Health and Aging Study (MHAS/ENASEM) 2012." Retrieved from www.MHASweb.org on (date).

[^1]:    ${ }^{1}$ IVEware (Imputation and Variance Estimation Software) software and documentation is available at http://www.isr.umich.edu/sre/smp/ive/.

[^2]:    ${ }^{2}$ For a more detailed description of the MHAS 2012 Data Files and identification codes please refer to "MHAS 2012 Data Files Description, Version 1, September 2013" available at http://mhasweb.org/Resources/DOCUMENTS/2012/Data_Files_Description_2012.pdf.

[^3]:    ${ }^{3}$ Family help_1 and family help_2 are the economic help received from Child 1 and Child 2 respectively.
    ${ }^{4}$ We find relatively high non-response rates only in cases in which the absolute number of observations is small. For example, Capital-assets-income-1 shows $22.5 \%$ of missing values conditional on receiving income, but this represent a total of 40 cases out of 178 .

[^4]:    ${ }^{5}$ For our purposes, we made no transformations to the variables, and used a linear regression. This is because the procedure imputes first if (yes/no) receives income or owns the item, and then proceeds to impute a value, using as limits the values provided by the brackets. Thus we considered that to impute on the non-zero part of the distribution and within the limits established by the brackets, the linear function would be adequate.

[^5]:    ${ }^{6}$ Own-income questions are for example, K47a, K48a, K50a and K51a. The corresponding spouse's income questions are K53a, K54a, K56a and K57a. See Table 1 for a full list of the variables.

[^6]:    ${ }^{7}$ For more details see "MHAS 2012 Data Files Description, Version 1, September 2013" available at http://mhasweb.org/Resources/DOCUMENTS/2012/Data_Files_Description_2012.pdf.

[^7]:    ${ }^{8}$ The number of cases for total income using imputation is 14,810 . However the income file has 15,723 records. The difference is because "Family help income" for proxy respondents was not asked. But we decided to include records with other sources of income.

