# Survey of Consumer Payment Choice User’s Guide

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<td>45</td>
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<td>45</td>
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1 Introduction

One of the major goals of the Survey of Consumer Payment Choice (SCPC) is to provide a publicly available, consumer-level longitudinal dataset to support research on consumer payments and to provide aggregate data on trends in U.S. consumer payments.

The public datasets for the 2011 and 2012 SCPC are available for download on the Consumer Payments Research Center (CPRC) website at http://www.bostonfed.org/economic/cprc/scpc/index.htm. The data are provided in SAS, Stata, and CSV formats. The CPRC assumes that data users are familiar with a statistical analysis software package such as SAS, Stata, or R. The CPRC does not provide any software assistance.

This document is a data user’s guide for the SCPC, and anyone interested in conducting research based on SCPC data will find it helpful to become familiar with this document. This document is composed of three sections, which:

- provide an overview of data variables and variable name mnemonics.
- describe how to use the SCPC Variable Database file.
- define the evolution of adoption variable definitions in the SCPC across years.

A broad overview of the 2011 – 2012 SCPC, including a summary of the survey and tables of survey results, can be found in the The 2011 and 2012 Surveys of Consumer Payment Choice. Details about data collection and data processing are found in The 2011 – 2012 Survey of Consumer Payment Choice: Technical Appendix.

All questions regarding the use of the data can be directed to:

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Survey Methodologist
Consumer Payment Research Center
Federal Reserve Bank of Boston
(617) 973-3955
kevin.foster@bos.frb.org

2 SCPC variable overview

There are three broad categories of SCPC variables. Below we provide general information about each.
My Household Questionnaire variables represent a small fraction of variables that come from the RAND American Life Panel (ALP) My Household Questionnaire (MHQ). The MHQ is used to gather demographic data about each respondent. ALP members take the MHQ quarterly, and their most recent responses to the MHQ are included in these SCPC datasets.

Survey variables are the actual results from the SCPC survey questions. Survey variables have variable names such as pa001\textsubscript{a} or pu004\textsubscript{b}. To see the exact question text, respondent instructions, response option wording, and structure of the questions on the screen, it is recommended to search the survey questionnaires themselves (available on the SCPC website). Two important considerations of the survey variables are:

- **Randomization of question orders**: To avoid potential biases arising from the order of response options presented to respondents, the survey instrument randomizes response options for some questions. The questionnaire clearly indicates if response options were randomized. The unrandomized variables have the same variable names as the original survey variables. The raw data from the unrandomized variables and the SAS macros that unrandomize the responses will be made available upon request.

- **Responses for different time frequencies**: Respondents are given the option of reporting payment use and cash management in terms of a typical week, month, or year. This dataset includes variables where responses have been standardized to a monthly frequency, in addition to the original responses for the weekly, monthly or yearly rates. The frequency converted variables have the same name as the original responses, but without a numeric suffix. For instance, the variable pu006\textsubscript{a}\textsubscript{a} refers to the number of cash payments for retail goods in a typical month, after frequency conversion. The set of three original variables that produce pu006\textsubscript{a}\textsubscript{a} are pu006\textsubscript{a}\textsubscript{a1} (respondent used the weekly box to report these transactions), pu006\textsubscript{a}\textsubscript{a2} (monthly) and pu006\textsubscript{a}\textsubscript{a3} (yearly). The SAS macros for the frequency conversions can be made available upon request.

Created variables are created by the CPRC to populate the SCPC results tables and to aid in data analysis. Most of these variables have descriptive names based on a combination of mnemonics. For example, the variable cc\_typ consists of two mnemonics: cc stands for “credit card”, and typ stands for “number of transactions in a typical month”. More insight into variable name mnemonics is provided in Section 2.2. Data users can search the Variable Information Database to find a description of any variable in the dataset.
2.1 Survey variables

2.1.1 Respondent identifier

<table>
<thead>
<tr>
<th>prim_key</th>
<th>Unique respondent identifier</th>
</tr>
</thead>
</table>

The variable prim_key is of the form xyyzzzz:n or xxyyzzzz:n (for 2010 onward), where x or xx is year (9 for 2009, 10 for 2010, e.g.), yy is month (08 for August, e.g.), and zzzz is a household identifier within that year/month. xyyzzzz and xxyyzzzz are the unique household identifier. The number to the right of the colon is the member id (1, 2, ..., n) for a panel member inside a household. It is assigned in the order that the respondent entered the survey; panel members with member id equal to 1 are the panelist that was contacted and recruited to join the ALP. Those with member id numbers of 2 or greater are household members of the original recruits. The prim_key for an ALP member is the same across all RAND ALP surveys. This allows data users to merge other RAND ALP survey datasets onto the SCPC dataset.

2.1.2 Survey weight

<table>
<thead>
<tr>
<th>r_weight</th>
<th>Individual-level post-stratification weights - from a raking procedure</th>
</tr>
</thead>
</table>

For information about how the survey weights are calculated, please see the 2011-12 SCPC Technical Appendix.

2.2 Created variables

Most created variable names are a combination of 2 or more mnemonics, combined using underscores. Typically, the first mnemonic refers to payment instrument, type of account, or a method of payment. The second or last mnemonic often indicates the concept being communicated, such as its characteristic, adoption, or typical use. This section describes the most common mnemonics. While this document is useful for learning the meanings of the various mnemonics used by the CPRC when naming created variables, it is recommended that the data user look up variable names directly using the Excel document 2012 SCPC Variable Information Database.xlsx.
2.2.1 Payment instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>csh</td>
<td>Cash</td>
</tr>
<tr>
<td>chk</td>
<td>Check</td>
</tr>
<tr>
<td>dc</td>
<td>Debit card</td>
</tr>
<tr>
<td>cc</td>
<td>Credit card</td>
</tr>
<tr>
<td>svc</td>
<td>Stored-value card/prepaid card</td>
</tr>
<tr>
<td>banp</td>
<td>Bank account number payment</td>
</tr>
<tr>
<td>obbp</td>
<td>Online banking bill payment</td>
</tr>
<tr>
<td>mon</td>
<td>Money order</td>
</tr>
<tr>
<td>tc</td>
<td>Travelers check</td>
</tr>
<tr>
<td>income</td>
<td>Direct deduction from income (used in automatic bill payments only)</td>
</tr>
</tbody>
</table>

Payment instruments are grouped as follows:

<table>
<thead>
<tr>
<th>Paper</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>paper</td>
<td>Cash, check, money order, travelers checks</td>
</tr>
<tr>
<td>card</td>
<td>Credit cards, debit cards, prepaid cards</td>
</tr>
<tr>
<td>elect</td>
<td>Bank account number payments, online banking bill payments</td>
</tr>
<tr>
<td>pi</td>
<td>All payment instruments</td>
</tr>
</tbody>
</table>

2.2.2 Transaction types

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>abp</td>
<td>Automatic bill payment</td>
</tr>
<tr>
<td>obp</td>
<td>Online bill payment</td>
</tr>
<tr>
<td>ipbp</td>
<td>In-person bill payment (or via mail)</td>
</tr>
<tr>
<td>op</td>
<td>Online (non-bill) payments</td>
</tr>
<tr>
<td>rp</td>
<td>Retail payments (made in-person)</td>
</tr>
<tr>
<td>serv</td>
<td>Services and other payments (in-person)</td>
</tr>
<tr>
<td>p2p</td>
<td>Person-to-person payment</td>
</tr>
</tbody>
</table>

Transaction types are grouped as follows:
<table>
<thead>
<tr>
<th>bp</th>
<th>Bill payment i.e. sum of abp, obp, ipbp</th>
</tr>
</thead>
<tbody>
<tr>
<td>op</td>
<td>Online (non-bill) payments</td>
</tr>
<tr>
<td>posp2p</td>
<td>All in-person (non-bill) payments, i.e. sum of rp, serv and p2p</td>
</tr>
</tbody>
</table>

### 2.2.3 Assessment of payment characteristics

<table>
<thead>
<tr>
<th>security</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>setup</td>
<td>Getting and setting up</td>
</tr>
<tr>
<td>acceptance</td>
<td>Acceptance for payment</td>
</tr>
<tr>
<td>cost</td>
<td>Cost</td>
</tr>
<tr>
<td>records</td>
<td>Payment records</td>
</tr>
<tr>
<td>convenience</td>
<td>Convenience</td>
</tr>
</tbody>
</table>

### 2.2.4 Payment adoption

<table>
<thead>
<tr>
<th>adopt</th>
<th>Respondent is currently an adopter (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ever</td>
<td>Respondent was an adopter in the past but does not currently have or own the item in question (Y/N)</td>
</tr>
<tr>
<td>discard</td>
<td>Respondent was an adopter, not anymore (Y/N)</td>
</tr>
<tr>
<td>num</td>
<td>Number of payment instruments (equals 0 for non-adopters)</td>
</tr>
</tbody>
</table>

### 2.2.5 Payment use

For each payment instrument and seven transaction types, respondents are asked to report their payment use behavior - how frequently they use a payment instrument for a specific transaction type. Therefore, at the most disaggregated level, a payment use variable name consists of three mnemonic components: the payment instrument (Section 2.2.1), followed by the transaction type (Section 2.2.2), and ending with a suffix that indicates the type of payment use information (incidence of use, frequency of use, and share of all transactions made):
<table>
<thead>
<tr>
<th>typ</th>
<th>Number of transactions in a typical month</th>
</tr>
</thead>
<tbody>
<tr>
<td>t_m</td>
<td>Respondent makes the corresponding type of payment at least once in a typical month (Y/N)</td>
</tr>
<tr>
<td>t_y</td>
<td>Respondent makes the corresponding type of payment at least once in a typical year (Y/N)</td>
</tr>
<tr>
<td>sh</td>
<td>Number of transactions in a typical month, as proportion of all payments</td>
</tr>
</tbody>
</table>

It is important to note that not all combinations of payment instruments and transaction types exist. This is because they were assumed not to be possible at the time of the survey. The following table illustrates combinations that do exist in the data and the corresponding combinations of mnemonic prefixes:

<table>
<thead>
<tr>
<th></th>
<th>bp</th>
<th>op</th>
<th>posp2p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>abp</td>
<td>op</td>
<td>serv</td>
</tr>
<tr>
<td>csh</td>
<td>csh_ipbp</td>
<td>csh_rp</td>
<td>csh_serv</td>
</tr>
<tr>
<td>chk</td>
<td>chk_ipbp</td>
<td>chk_op</td>
<td>chk_serv</td>
</tr>
<tr>
<td>mon</td>
<td>mon_ipbp</td>
<td>mon_op</td>
<td>mon_serv</td>
</tr>
<tr>
<td>tc</td>
<td>tc (not asked by transaction type)</td>
<td>tc_op</td>
<td></td>
</tr>
<tr>
<td>dc</td>
<td>dc_abp</td>
<td>dc_op</td>
<td>dc_serv</td>
</tr>
<tr>
<td>cc</td>
<td>cc_abp</td>
<td>cc_op</td>
<td>cc_serv</td>
</tr>
<tr>
<td>svc</td>
<td>svc_ipbp</td>
<td>svc_op</td>
<td>svc_serv</td>
</tr>
<tr>
<td>obbp</td>
<td>obbp_abp</td>
<td>obbp_op</td>
<td>obbp_p2p</td>
</tr>
<tr>
<td>banp</td>
<td>banp_abp</td>
<td>banp_op</td>
<td>banp_p2p</td>
</tr>
<tr>
<td>income</td>
<td>income_abp</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The variable tot_pay_typ is defined for each respondent as the sum of all payments made in a typical month. The share variables “_sh” express the original “typ” variable as a proportion of tot_pay_typ for that respondent. The tables in the 2011 – 2012 SCPC results paper describing payment shares are not computed using these individually defined variables. Instead, each share denotes the total number of transactions falling under that category as a proportion of all reported transactions, aggregated over all respondents. This differs slightly from taking means of the _sh variables defined in this document: it weights respondents who have a large number of transactions more heavily than respondents who have a smaller number of transactions.
2.2.6 Variables defined conditional on adoption

Some tables in the 2011 – 2012 SCPC results paper include statistics that are calculated conditional on the adoption of a bank account, a certain payment instrument, or other payment technology. Separate variables were created to facilitate this calculation for the tables; these variables either end with the suffix “_adoptonly” or contain the term “oadopt”, indicating the conditional coding of the underlying variable. Such variables contain missing values (rather than zeros) for non-adopters of the respective account/instrument/technology.

2.2.7 Flags for variables that were cleaned for outliers

The SCPC has many continuous variables. These variables come from survey questions where the respondent is allowed to enter a number into a box. For instance, we ask the respondent to tell us how many credit card payments they make for retail goods in a typical week, month, or year. Continuous variables in the SCPC are cleaned for outliers and edited based on algorithms described in the 2011 – 2012 SCPC Technical Appendix. To indicate an edited variable, the prefix “f_” is added to the front of a variable name. A flag value of 0 indicates that the particular observation was not edited. A flag value greater than 0 means the observation was edited.

3 SCPC Variable Database.xlsx

3.1 Searching the database

The SCPC Variable Database contains information on 2371 variables released in the SCPC. The document contains the following information about each variable, each of which represents a column in the SCPC Variable Database document:

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description</th>
<th>(2009 - 2012) (variable history)</th>
<th>Last change (survey variables only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Variable type</td>
<td></td>
<td>Filter conditions</td>
</tr>
</tbody>
</table>
To search a specific variable, click the down arrow on the Variable Name category, and enter the variable name in the Search box. The recommended method of searching a specific keyword is to filter the description category, entering the string: `<keyword> + <space> + <hyphen>` in the search box. This stops the filter from including unrelated variables with the same string within. For example, filtering by “cc” in the Variable Name category will include any variable with the word “acceptance”, which will not happen when filtering by “cc -” in the description category.

### 3.2 Variable name

The name of each variable as it appears in released datasets. Created variable names are based on the set of keywords described in the Section 2.1

### 3.3 Description

**My Household Questionnaire variables** are described by the question text used to prompt the respondent to input a value for the variable. Descriptions written in this way are surrounded by quotation marks.

Example:

```
borninus 'Were you born in the United States?'
```

**Survey variables** are described by the question text used to prompt the respondent to input a value for the variable. Descriptions written in this way are surrounded by quotation marks.

Example:

```
as004_a "How do you rate the security of the following means of making a payment?
In person"
```

Note that the description does not indicate the format of the question. In this example, the respondent was prompted with the question: “How do you rate the security of the following means of making a payment?” A table displayed several means of making a payment, including “In person.” The format of the question can be found in The 2012 Survey of Consumer Payment Choices.
**Created variables** are described by combining the descriptions of the keywords used in the variables name. Descriptions written in this way are indicated by semi-colons following each keyword description.

Example:

```
mon_ipbp_typ  mon - Money order; ipbp - In-person bill payment (or via mail); typ - Number of transactions in a typical month;
```

Here, the three separate descriptions indicate that the variable measures the number of bills paid in person or via mail using a money order in a typical month.

### 3.4 2009 – 2012 (variable history)

A value of 1 in a given year indicates that the variable was measured in the SCPC of that year, while a value of 0 indicates that the variable was not measured in that year.

Note that filtering by 1 in one these categories does not return all variables used in that year of the SCPC but rather returns all variables from the 2012 survey that were also used in that years survey. Note also that existence of a variable over multiple years does not necessarily indicate that a variable can be accurately compared over time. Section ?? provides the yearly definitions of some created variables from 2009 – 2012, indicating changes in the definitions of these variables.

### 3.5 Last change (survey variables only)

This applies only to survey variables and indicates the most recent year in which the question text or format, including any instructions or examples, was changed in the survey.

### 3.6 Variable type

“Created” indicates that the variable is dependent on the value of one or more raw variables. Such variables are not reported directly by respondents, but are generated by the CPRC. “Survey Continuous” indicates that the variable holds value directly input by the respondent, and that the input was a value typed in by the respondent. This includes, for example, variables related to frequencies or percentage shares. “Survey Categorical” indicates that
the variable holds value directly input by the survey taker, and that the respondent was presented with a series of options as potential answers.

3.7 Variable filter conditions

The conditions required during the survey for a survey taker to be prompted to input a value for each raw variable. “None” indicates that every survey taker was prompted to input a value for the variable.

Example:
pu002_a  1. abp_adopter = 1; 2. dc_adopter = 1;

Here, in order for a survey taker to be prompted to enter a value for pu002_a, their previous responses in the survey must have set the value of abp_adopter to 1 and dc_adopter to 1. Note that filter conditions apply only to filter conditions used during the survey. Created variables are given a value of “N/A”.

4 Adoption variable definitions

Adoption is defined differently for different concepts in the SCPC, depending on different combinations of ownership and frequency of use of various payment instruments or appliances. As the SCPC has evolved so have the definitions of adoptions. This section details the exact definitions used for all variables measuring adoption. This list is such that each variable is either defined in terms of other variables in the list or in terms of the original survey variables. All variable names used in these definitions are italicized in blue text, and all variable values are written in red text.

It should be noted that for certain variables, the definition with respect to other variables might not change, but the the definition of the underlying variables might change. For example, mb_chkbalance_t_y has the same definition from 2011 - 2013, but it is defined in part by mb_adopt, which changes from 2012 to 2013. In addition, changes to question formats of the survey variables are not considered in the definitions below.

Some variables relating to prepaid card adoption in 2011 depend on the survey question version assigned to each respondent. As such, definitions depend on whether the survey version was the “4-category” version of the “12-category” version (details of each can be
found in the SCPC summary paper or the questionnaires themselves, all available on the SCPC website).

4.1 deposit_acnt_adopt

2011, 2012
if at least one of \{bnk_acnt_adopt, paypal_acnt_adopt, svc_acnt_adopt\} is 1, then deposit_acnt_adopt is 1
else if none of \{bnk_acnt_adopt, paypal_acnt_adopt, svc_acnt_adopt\} is 1, and any of them are missing, then deposit_acnt_adopt is missing

2010
if at least one of \{bnk_acnt_adopt, mm_acnt_adopt, paypal_acnt_adopt, svc_acnt_adopt\} is 1, then deposit_acnt_adopt is 1
else if none of \{bnk_acnt_adopt, mm_acnt_adopt, paypal_acnt_adopt, svc_acnt_adopt\} is 1, and any of them are missing, then deposit_acnt_adopt is missing

2009
if at least one of \{bnk_acnt_adopt, mm_acnt_adopt, paypal_acnt_adopt\} is 1, then deposit_acnt_adopt is 1
else if none of \{bnk_acnt_adopt, mm_acnt_adopt, paypal_acnt_adopt\} is 1, and any of them are missing, then deposit_acnt_adopt is missing

4.2 bnk_acnt_adopt

2011, 2012
if at least one of \{sav_acnt_adopt, chk_acnt_adopt\} is 1, then bnk_acnt_adopt is 1
else if none of \{sav_acnt_adopt, chk_acnt_adopt\} is 1, and any of them are missing, then bnk_acnt_adopt is missing

2009, 2010
if at least one of \{sav_acnt_adopt, chk_acnt_adopt, mm_acnt_adopt\} is 1, then bnk_acnt_adopt is 1
else if none of \{sav_acnt_adopt, chk_acnt_adopt, mm_acnt_adopt\} is 1, and any of them are missing, then bnk_acnt_adopt is missing
4.3 chk_acnt_adopt

2011, 2012

if $\text{pa001}_a$ is greater than 0, then $\text{chk_acnt_adopt}$ is 1
else if $\text{pa001}_a$ is 0, then $\text{chk_acnt_adopt}$ is 0
else if $\text{pa001}_a$ is missing and $\text{pa001}_b$ is greater than or equal to 0, then $\text{chk_acnt_adopt}$ is 0
else if $\text{pa001}_a$ is missing and $\text{pa003}$ is 2, then $\text{chk_acnt_adopt}$ is 0

2009, 2010

if $\text{pa001}_a$ is greater than 0, then $\text{chk_acnt_adopt}$ is 1
else if $\text{pa001}_a$ is 0, then $\text{chk_acnt_adopt}$ is 0
else if $\text{pa001}_a$ is missing and at least one of \{ $\text{pa001}_b$, $\text{pa001}_e$, $\text{pa001}_d$ \} is greater than or equal to 0, then $\text{chk_acnt_adopt}$ is 0
else if $\text{pa001}_a$ is missing and $\text{pa003}$ is 2, then $\text{chk_acnt_adopt}$ is 0

if at least one of \{ $\text{sav_acnt_adopt}$, $\text{mm_acnt_adopt}$, $\text{paypal_acnt_adopt}$ \} is greater than or equal to 0 and $\text{chk_acnt_adopt}$ is missing, then $\text{chk_acnt_adopt}$ is 0

4.4 chk_acnt_interest_adopt

2011, 2012

if $\text{pa004}$ is in the range $[2, 14]$, then $\text{chk_acnt_interest_adopt}$ is 1
else if $\text{pa004}$ is 1, then $\text{chk_acnt_interest_adopt}$ is 0
else if $\text{pa004}$ is 15, then $\text{chk_acnt_interest_adopt}$ is missing

2009, 2010

if $\text{pa004}$ is in the range $[2, 10]$, then $\text{chk_acnt_interest_adopt}$ is 1
else if $\text{pa004}$ is 1, then $\text{chk_acnt_interest_adopt}$ is 0
else if $\text{pa004}$ is 15, then $\text{chk_acnt_interest_adopt}$ is missing

4.5 chk_overdraft_adopt

2011, 2012

if $\text{chk_acnt_adopt}$ is 0, then $\text{chk_overdraft_adopt}$ is 0
else if $\text{pa005}$ is 1, then $\text{chk_overdraft_adopt}$ is 1
else if $pa005$ is 2, then $chk\_overdraft\_adopt$ is 0
else if $pa005$ is 3, then $chk\_overdraft\_adopt$ is missing
else $chk\_overdraft\_adopt$ is missing

2009, 2010
if $pa005$ is 1, then $chk\_overdraft\_adopt$ is 1
else if $pa005$ is 2, then $chk\_overdraft\_adopt$ is 0
else if $pa005$ is 3, then $chk\_overdraft\_adopt$ is missing
else $chk\_overdraft\_adopt$ is missing

4.6 $sav\_or\_mm\_acnt\_adopt$

2009, 2010
if at least one of \{ $sav\_acnt\_adopt$, $mm\_acnt\_adopt$ \} is 1, then $sav\_or\_mm\_acnt\_adopt$ is 1
else $sav\_or\_mm\_acnt\_adopt$ is 0

4.7 $sav\_acnt\_adopt$

2011, 2012
if $pa001\_b$ is greater than 0, then $sav\_acnt\_adopt$ is 1
else if $pa001\_b$ is 0, then $sav\_acnt\_adopt$ is 0
else if $pa001\_b$ is missing and $pa001\_a$ is greater than or equal to 0, then $sav\_acnt\_adopt$ is 0
else if $pa001\_b$ is missing and $newsav$ is 2, then $sav\_acnt\_adopt$ is 0

2009, 2010
if $pa001\_b$ is greater than 0, then $sav\_acnt\_adopt$ is 1
else if $pa001\_b$ is 0, then $sav\_acnt\_adopt$ is 0
else if $pa001\_b$ is missing and at least one of \{ $pa001\_a$, $pa001\_c$, $pa001\_d$ \} is greater than or equal to 0, then $sav\_acnt\_adopt$ is 0
else if $pa001\_b$ is missing and $newsav$ is 2, then $sav\_acnt\_adopt$ is 0
if at least one of \{ $chk\_acnt\_adopt$, $mm\_acnt\_adopt$, $paypal\_acnt\_adopt$ \} is greater than or equal to 0 and $sav\_acnt\_adopt$ is missing, then $sav\_acnt\_adopt$ is 0
4.8 mm_acnt_adopt

2009, 2010

if $pa001.c$ is greater than 0, then $mm\_acnt\_adopt$ is 1
else if $pa001.c$ is 0, then $mm\_acnt\_adopt$ is 0
else if $pa001.c$ is missing and at least one of $\{pa001.a, pa001.b, pa001.d\}$ is greater than or equal to 0, then $mm\_acnt\_adopt$ is 0
else if $pa001.c$ is missing and $pa030$ is 2, then $mm\_acnt\_adopt$ is 0
if at least one of $\{chk\_acnt\_adopt, sav\_acnt\_adopt, paypal\_acnt\_adopt\}$ is greater than or equal to 0 and $mm\_acnt\_adopt$ is missing, then $mm\_acnt\_adopt$ is 0

4.9 mm_acnt_chk_adopt

2009, 2010

if $pa047$ is 1, then $mm\_acnt\_chk\_adopt$ is 1
else if $pa047$ is 2, then $mm\_acnt\_chk\_adopt$ is 0
else if $mm\_acnt\_adopt$ is 0, then $mm\_acnt\_chk\_adopt$ is 0
else then $mm\_acnt\_chk\_adopt$ is missing

4.10 paypal_acnt_adopt

2012

if all of $\{paypal\_adopt, googlewallet\_adopt, amazonpayment\_adopt, otheronlineacnt\_adopt\}$ are missing, then $paypal\_acnt\_adopt$ is missing
else if at least one of $\{paypal\_adopt, googlewallet\_adopt, amazonpayment\_adopt, otheronlineacnt\_adopt\}$ is 1, then $paypal\_acnt\_adopt$ is 1
else if at least one of $\{paypal\_adopt, googlewallet\_adopt, amazonpayment\_adopt, otheronlineacnt\_adopt\}$ is 0, then $paypal\_acnt\_adopt$ is 0

2011

if all of $\{paypal\_adopt, googlecheckout\_adopt, amazonpayment\_adopt, otheronlineacnt\_adopt\}$ are missing, then $paypal\_acnt\_adopt$ is missing
else if at least one of $\{paypal\_adopt, googlecheckout\_adopt, amazonpayment\_adopt, otheronlineacnt\_adopt\}$ is 1, then $paypal\_acnt\_adopt$ is 1
else if at least one of \{paypal\_adopt, googlecheckout\_adopt, amazonpayment\_adopt, otheronline\_acct\_adopt\} is 0, then paypal\_acnt\_adopt is 0

2009, 2010

if \(pa001\_d\) is greater than 0, then paypal\_acnt\_adopt is 1
else if \(pa001\_d\) is 0, then paypal\_acnt\_adopt is 0
else if \(pa001\_d\) is missing and at least one of \{\(pa001\_a, pa001\_b, pa001\_c\)\} is greater than or equal to 0, then paypal\_acnt\_adopt is 0

if at least one of \{chk\_acct\_adopt, mm\_acct\_adopt, sav\_acct\_adopt\} is greater than or equal to 0 and paypal\_acnt\_adopt is missing, then paypal\_acnt\_adopt is 0

4.11 amazonpayment\_adopt

2011, 2012

if \(pa001\_d3\) is 1, then amazonpayment\_adopt is 1
else if \(pa001\_d3\) is 2, then amazonpayment\_adopt is 0
else amazonpayment\_adopt is missing

4.12 googlecheckout\_adopt

2011

if \(pa001\_d2\) is 1, then googlecheckout\_adopt is 1
else if \(pa001\_d2\) is 2, then googlecheckout\_adopt is 0
else googlecheckout\_adopt is missing

4.13 googlewallet\_adopt

2012

if \(pa001\_d2\) is 1, then googlewallet\_adopt is 1
else if \(pa001\_d2\) is 2, then googlewallet\_adopt is 0
else googlewallet\_adopt is missing
4.14 payment adopt

2011, 2012

if pa001_d1 is 1, then payment adopt is 1
else if pa001_d1 is 2, then payment adopt is 0
else payment adopt is missing

4.15 otheronlineacct adopt

2011, 2012

if pa001_d4 is 1, then payment adopt is 1
else if pa001_d4 is 2, then payment adopt is 0
else payment adopt is missing

4.16 svc_12cat_acnt adopt

2011

if survey version is 12-category
    if all of {pa197a, pa197b, pa197c, pa197d, pa197e, pa197f, pa197g, pa197h, pa197i, pa197j, pa197k, pa197l} are missing, then svc_12cat_acnt adopt is missing
else if at least one of {pa197a, pa197b, pa197c, pa197d, pa197e, pa197f, pa197g, pa197h, pa197i, pa197j, pa197k, pa197l} is 1, then svc_12cat_acnt adopt is 1
else svc_12cat_acnt adopt is 0
if svc_12cat_acnt adopt is 0 or missing and pa027_c is 1, then svc_12cat_acnt adopt is 1

4.17 svc_acnt adopt

2012

if all of {pa197a, pa197b, pa197c, pa197d, pa197e, pa197f, pa197g, pa197h, pa197i, pa197j, pa197k, pa197l, pa197m} are missing, then svc_acnt adopt is missing
else if at least one of {pa197a, pa197b, pa197c, pa197d, pa197e, pa197f, pa197g, pa197h, pa197i, pa197j, pa197k, pa197l, pa197m} is equal to 1, then svc_acnt adopt is 1
else svc_acnt adopt is 0
if `svc_acnt_adopt` is missing or 0 and `pa027_c` is 1, then `svc_acnt_adopt` is 1

2011

if `survey version` is 4-category

if all of `{pa099a, pa099b, pa099c, pa099d}` are missing, then `svc_acnt_adopt` are missing
else if at least one of `{pa099a, pa099b, pa099c, pa099d}` is 1, then `svc_acnt_adopt` is 1
else `svc_acnt_adopt` is 0

if `svc_acnt_adopt` is 0 or missing and `pa027_c` is 1, then `svc_acnt_adopt` is 1

if `survey version` is 12-category

if all of `{pa197a, pa197b, pa197c, pa197d, pa197e, pa197f, pa197g, pa197h, pa197i, pa197j, pa197k, pa19l}` are missing, then `svc_acnt_adopt` is missing
else if at least one of `{pa197a, pa197b, pa197c, pa197d, pa197e, pa197f, pa197g, pa197h, pa197i, pa197j, pa197k, pa19l}` is 1, then `svc_acnt_adopt` is 1
else `svc_acnt_adopt` is 0

if `svc_acnt_adopt` is 0 or missing and `pa027_c` is 1, then `svc_acnt_adopt` is 1

2010

if all of `{pa099a, pa099b, pa099c, pa099d}` is missing, then `svc_acnt_adopt` are missing
else if at least one of `{pa099a, pa099b, pa099c, pa099d}` is 1, then `svc_acnt_adopt` is 1
else `svc_acnt_adopt` is 0

if `svc_acnt_adopt` is 0 or missing and `pa027_c` is 1, then `svc_acnt_adopt` is 1

4.18  `svc_4cat_acnt_adopt`

2011

if `survey version` is 4-category

if all of `{pa099a, pa099b, pa099c, pa099d}` is missing, then `svc_4cat_acnt_adopt` are missing
else if at least one of `{pa099a, pa099b, pa099c, pa099d}` is 1, then `svc_4cat_acnt_adopt` is 1
else `svc_4cat_acnt_adopt` is 0

if `svc_acnt_adopt` is 0 or missing and `pa027_c` is 1, then `svc_4cat_acnt_adopt` is 1
4.19 atmordc_adopt

2009-2012
if at least one of \{atm_adopt, dc_adopt\} is 1, then atmordc_adopt is 1
else if all of \{atm_adopt, dc_adopt\} are 0, then atmordc_adopt is 0
else if at least one of \{atm_adopt, dc_adopt\} is missing, then atmordc_adopt is missing

4.20 atm_adopt

2009-2012
if \(pa008_b\) is 0, then atm_adopt is 0
else if \(pa008_b\) is greater than 0, then atm_adopt is 1
else if \(pa008_b\) is less than 0 and \(bnk_acnt_adopt\) is 0, then atm_adopt is 0
else if \(pa008_b\) is less than 0 and \(pa008_a\) is greater than or equal to 0, then atm_adopt is 0
else if \(pa008_b\) is less than 0 and \(pa009\) is 2, then atm_adopt is 0

4.21 dc_adopt

2009-2012
if \(pa008_a\) is greater than 0, then dc_adopt is 1
else if \(pa008_a\) is missing and \(pa027_b\) is 1, then dc_adopt is 1
else if \(pa008_a\) is 0, then dc_adopt is 0
else if \(pa008_a\) is missing and \(bnk_acnt_adopt\) is 0, then dc_adopt is 0
else if \(pa008_a\) is missing and \(pa008_b\) is greater than or equal to 0, then dc_adopt is 0
else if \(pa008_a\) is missing and \(pa010\) is 2, then dc_adopt is 0

4.22 tb_adopt

2009-2012
if \(bnk_acnt_adopt\) is 1, then tb_adopt is 1
else if \(pa012\) is 1 then tb_adopt is 1
else if \(pa012\) is 2, then tb_adopt is 0
else \( tb_{adopt} \) is missing

if \( newtb \) is 2 and \( pa012 \) is missing, then \( tb_{adopt} \) is 0

### 4.23 ob\(_{adopt}\)

#### 2009-2012

if \( bnk\_acnt_{adopt} \) is 1, then \( ob_{adopt} \) is 1
else if \( pa013 \) is 1 then \( ob_{adopt} \) is 1
else if \( pa013 \) is 2, then \( ob_{adopt} \) is 0
else \( ob_{adopt} \) is missing

### 4.24 mb\(_{adopt}\)

#### 2011, 2012

if all of \{mb\_chkbalance\_t\_y, mb\_billpay\_t\_y, mb\_text\_t\_y, mb\_p2p\_t\_y, mb\_app\_adopt\} are missing, then \( mb_{adopt} \) is missing
else if at least one \{mb\_chkbalance\_t\_y, mb\_billpay\_t\_y, mb\_text\_t\_y, mb\_p2p\_t\_y, mb\_app\_adopt\} is 1, then \( mb_{adopt} \) is 1
else if at least one \{mb\_chkbalance\_t\_y, mb\_billpay\_t\_y, mb\_text\_t\_y, mb\_p2p\_t\_y, mb\_app\_adopt\} is 0, then \( mb_{adopt} \) is 0
if at least one of \{cell\_adopt, bnk\_acnt\_adopt\} is 0, then \( mb_{adopt} \) is 0

#### 2009, 2010

if \( pa026 \) is 1, then \( mb_{adopt} \) is 1
else if \( pa026 \) is 2, then \( mb_{adopt} \) is 0
else if at least one of \{cell\_adopt, bnk\_acnt\_adopt\} is 0, then \( mb_{adopt} \) is 0
else \( mb_{adopt} \) is missing

### 4.25 mb\(_{app}\_adopt\)

#### 2011, 2012

if \( pa026\_a \) is 1, then \( mb_{app}\_adopt \) is 1
else if \( pa026\_a \) is 2, then \( mb_{app}\_adopt \) is 0
else if at least one of \{cell\_adopt, bnk\_acnt\_adopt\} is 0, then mb\_app\_adopt is 0
else mb\_app\_adopt is missing

if pa028 is 2, then mb\_app\_adopt is 0

4.26 mb\_usedmb\_t\_y

2011, 2012
if at least one of \{mb\_chkbalance\_t\_y, mb\_billpay\_t\_y, mb\_text\_t\_y, mb\_p2p\_t\_y \} is 1, then
mb\_usedmb\_t\_y is 1
else if all of \{mb\_chkbalance\_t\_y, mb\_billpay\_t\_y, mb\_text\_t\_y, mb\_p2p\_t\_y \} are 0, then mb\_usedmb\_t\_y is 0
else mb\_usedmb\_t\_y is missing

4.27 mb\_chkbalance\_t\_y

2011, 2012
if pa026\_b is 1, then mb\_chkbalance\_t\_y is 1
else if pa026\_b is 2, then mb\_chkbalance\_t\_y is 0
else if at least one of \{deposit\_acnt\_adopt, cell\_adopt\} is 0, then mb\_chkbalance\_t\_y is 0
else mb\_chkbalance\_t\_y is missing

if mb\_adopt is 0 and mb\_chkbalance\_t\_y is missing, then mb\_chkbalance\_t\_y is 0

4.28 mb\_billpay\_t\_y

2011, 2012
if pa026\_c is 1, then mb\_billpay\_t\_y is 1
else if pa026\_c is 2, then mb\_billpay\_t\_y is 0
else if at least one of \{deposit\_acnt\_adopt, cell\_adopt\} is 0, then mb\_billpay\_t\_y is 0
else mb\_billpay\_t\_y is missing

if mb\_adopt is 0 and mb\_billpay\_t\_y is missing, then mb\_billpay\_t\_y is 0
4.29 \textit{mb\_text\_t\_y}\textbf{ }

2011, 2012

if \textit{pa026\_d} is 1, then \textit{mb\_text\_t\_y} is 1
else if \textit{pa026\_d} is 2, then \textit{mb\_text\_t\_y} is 0
else if at least one of \{\textit{deposit\_acnt\_adopt, cell\_adopt}\} is 0, then \textit{mb\_text\_t\_y} is 0
else \textit{mb\_text\_t\_y} is missing
if \textit{mb\_adopt} is 0 and \textit{mb\_text\_t\_y} is missing, then \textit{mb\_text\_t\_y} is 0

4.30 \textit{mb\_p2p\_t\_y}\textbf{ }

2011, 2012

if \textit{pa026\_e} is 1, then \textit{mb\_p2p\_t\_y} is 1
else if \textit{pa026\_e} is 2, then \textit{mb\_p2p\_t\_y} is 0
else if at least one of \{\textit{deposit\_acnt\_adopt, cell\_adopt}\} is 0, then \textit{mb\_p2p\_t\_y} is 0
else \textit{mb\_p2p\_t\_y} is missing
if \textit{mb\_adopt} is 0 and \textit{mb\_p2p\_t\_y} is missing, then \textit{mb\_p2p\_t\_y} is 0

4.31 \textit{tablet\_adopt}\textbf{ }

2012

if \textit{tablet} is 1, then \textit{tablet\_adopt} is 1
else if \textit{tablet} is 2, then \textit{tablet\_adopt} is 0
else \textit{tablet\_adopt} is missing

4.32 \textit{cell\_adopt}\textbf{ }

2009-2012

if \textit{cellphone} is 1, then \textit{cell\_adopt} is 1
else if \textit{cellphone} is 2, then \textit{cell\_adopt} is 0
else \textit{cell\_adopt} is missing
4.33 smartphone_adopt

2011, 2012
if smartphone is 1, then smartphone_adopt is 1
else if smartphone is 2, then smartphone_adopt is 0
else if cell_adopt is 0, then smartphone_adopt is 0
else smartphone_adopt is missing

2010
if smartphone_d is 1, then smartphone_adopt is 1
else if smartphone_d is 2, then smartphone_adopt is 0
else if cell_adopt is 0, then smartphone_adopt is 0
else smartphone_adopt is missing

4.34 paper_adopt

2010, 2011
if all of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} are missing, then paper_adopt is missing
else if at least one of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} is 1, then paper_adopt is 1
else if at least one of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} is 0, then paper_adopt is 0
if paper_adopt is 0 and at least one of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} is missing, then paper_adopt is missing

2012
if all of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} are missing, then paper_adopt is missing
else if at least one of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} is 1, then paper_adopt is 1
else if at least one of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt\} is 0, then paper_adopt is 0
if paper_adopt is 0 and at least one of \{csh_adopt, chk_adopt, mon_adopt, tc_adopt, cashier-schk_adopt, certifiedchk_adopt\} is missing, then paper_adopt is missing

2009
if at least one of \{csh\_adopt, \textit{chk\_adopt}, \textit{mon\_adopt}, \textit{tc\_adopt}\} is 1, then \textit{paper\_adopt} is 1
else if all of \{csh\_adopt, \textit{chk\_adopt}, \textit{mon\_adopt}, \textit{tc\_adopt}\} are missing, then \textit{paper\_adopt} is missing
else \textit{paper\_adopt} is 0

4.35 \textbf{csh\_adopt}

2009-2012

if \textit{pa050} is 1 or \textit{pa015\_a} is greater than 0 or \textit{pa015\_b} is greater than 0 or (\textit{pa017\_a} is greater than 0 and \textit{pa018\_1} is greater than 0) or (\textit{pa017\_b} is greater than 0 and \textit{pa018\_2} is greater than 0) or \textit{csh\_typ} is greater than 0, then \textit{csh\_adopt} is 1
else if all of \{\textit{pa015\_a}, \textit{pa015\_b}, \textit{pa017\_a}, \textit{pa018\_1}, \textit{pa017\_b}, \textit{pa018\_2}, \textit{csh\_typ}\} are 0 and \textit{pa050} is 2, then \textit{csh\_adopt} is 0

4.36 \textbf{chk\_adopt}

2010-2012

let \textit{dummychk\_typ} = the sum of \{\textit{pu004\_b}, \textit{pu005\_a}, \textit{pu006\_a\_b}, \textit{pu006\_c\_b}, \textit{pu021\_b}\}
if all of \{\textit{dummychk\_typ}, \textit{chk\_blnk\_adopt}, \textit{pa035}\} are missing, then \textit{chk\_adopt} is missing
else if \textit{dummychk\_typ} is greater than 0 or \textit{chk\_blnk\_adopt} is 1 or \textit{pa035} is 1, then \textit{chk\_adopt} is 1
else if \textit{dummychk\_typ} is less than or equal to 0 and \textit{chk\_blnk\_adopt} is not equal to 1 and \textit{pa035} is not equal to 1, then \textit{chk\_adopt} is 0

2009

let \textit{dummychk\_typ} = the sum of \{\textit{pu004\_b}, \textit{pu005\_a}, \textit{pu006\_a\_b}, \textit{pu006\_c\_b}, \textit{pu021\_b}\}
if \textit{dummychk\_typ} is greater than 0 or \textit{chk\_blnk\_adopt} is 1, then \textit{chk\_adopt} is 1
else if \textit{dummychk\_typ} is 0 or missing and \textit{chk\_blnk\_adopt} is not equal to 1, then \textit{chk\_adopt} is 0
else \textit{chk\_adopt} is missing

if all of \{\textit{csh\_adopt}, \textit{mon\_adopt}, \textit{tc\_adopt}\} are missing and \textit{chk\_adopt} is not equal to 1, then \textit{chk\_adopt} is missing
4.37  chk\_alt\_adopt

2012
if at least one of \{mon\_adopt, tc\_adopt, cashierschk\_adopt, certifiedchk\_adopt\} is 1, then
\textit{chk\_alt\_adopt} is 1
else if all of \{mon\_adopt, tc\_adopt, cashierschk\_adopt, certifiedchk\_adopt\} are 0, then \textit{chk\_alt\_adopt} is 0
else \textit{chk\_alt\_adopt} is missing

2010, 2011
if at least one of \{mon\_adopt, tc\_adopt\} is 1, then \textit{chk\_alt\_adopt} is 1
else if all of \{mon\_adopt, tc\_adopt\} are 0, then \textit{chk\_alt\_adopt} is 0
else \textit{chk\_alt\_adopt} is missing

4.38  mon\_adopt

2009-2012
if \textit{pa040} is 1 or \textit{mon\_t\_y} is greater than 0, then \textit{mon\_adopt} is 1
else if \textit{pa040} is 2 and \textit{mon\_t\_y} is 0, then \textit{mon\_adopt} is 0
else if \textit{pa040} is missing and \textit{mon\_t\_y} is missing, then \textit{mon\_adopt} is missing
else if \textit{pa040} is missing and \textit{mon\_t\_y} is 0, then \textit{mon\_adopt} is missing
else if \textit{pa040} is 2 and \textit{mon\_t\_y} is missing, then \textit{mon\_adopt} is missing

4.39  tc\_adopt

2012
if \textit{pa040\_b} is 1, then \textit{tc\_adopt} is 1
else if \textit{pa040\_b} is 2, then \textit{tc\_adopt} is 0
else \textit{tc\_adopt} is missing

2011
if \textit{pa042} is 1, then \textit{tc\_adopt} is 1
else if \textit{pa042} is 2, then \textit{tc\_adopt} is 0
else \textit{tc\_adopt} is missing
2009, 2010
if \( pa042 \) is 1 or \( tc_ty \) is greater than 0, then \( tc_adopt \) is 1
else if \( p042 \) is 2 and \( tc_ty \) is not equal to 1, then \( tc_adopt \) is 0
else \( tc_adopt \) is missing

4.40 cashierschk_adopt

2012
if \( pa040_c \) is 1, then \( cashierschk_adopt \) is 1
else if \( pa040_c \) is 2, then \( cashierschk_adopt \) is 0
else \( cashierschk_adopt \) is missing

4.41 certifiedchk_adopt

2012
if \( pa040_d \) is 1, then \( certifiedchk_adopt \) is 1
else if \( pa040_d \) is 2, then \( certifiedchk_adopt \) is 0
else \( certifiedchk_adopt \) is missing

4.42 card_12cat_adopt

2011
if \( randompa \) is 2
    if all of \{dc_adopt, cc_adopt, svc_adopt\} are missing, then \( card_12cat_adopt \) is missing
    else if at least one of \{dc_adopt, cc_adopt, svc_adopt\} is 1, then \( card_12cat_adopt \) is 1
    else if at least one of \{dc_adopt, cc_adopt, svc_adopt\} is 0, then \( card_12cat_adopt \) is 0

4.43 card_4cat_adopt

2011
if \( survey version \) is 4-category
    if all of \{dc_adopt, cc_adopt, svc_adopt\} are missing, then \( card_4cat_adopt \) is missing
else if at least one of \{dc\_adopt, cc\_adopt, svc\_adopt\} is 1, then card\_4cat\_adopt is 1
else if at least one of \{dc\_adopt, cc\_adopt, svc\_adopt\} is 0, then card\_4cat\_adopt is 0

4.44  card\_adopt

2009-2012
if all of \{dc\_adopt, cc\_adopt, svc\_adopt\} are missing, then card\_adopt is missing
else if at least one of \{dc\_adopt, cc\_adopt, svc\_adopt\} is 1, then card\_adopt is 1
else if at least one of \{dc\_adopt, cc\_adopt, svc\_adopt\} is 0, then card\_adopt is 0

4.45  dc\_adopt

2009-2012
if pa008\_a is greater than 0, then dc\_adopt is 1
else if pa008\_a is missing and pa027\_b is 1, then dc\_adopt is 1
else if pa008\_a is 0 then dc\_adopt is 0
else if pa008\_a is missing and bnk\_acct\_adopt is 0, then dc\_adopt is 0
else if pa008\_a is missing and pa008\_b is greater than or equal to 0, then dc\_adopt is 0
else if pa008\_a is missing and pa010 is 2, then dc\_adopt is 0

4.46  cc\_adopt

2009-2012
if pa053 is 1, then cc\_adopt is 1
else if pa053 is 2, then cc\_adopt is 0
else cc\_adopt is missing
if cc\_adopt is missing and pa027\_a is 1, then cc\_adopt is 1

4.47  cc\_only\_adopt

2011, 2012
if all of \{cc_vmd_adopt, cc_branded_adopt, cc_ae_adopt\} are missing, then cc_only_adopt is missing

else if at least one \{cc_vmd_adopt, cc_branded_adopt, cc_ae_adopt\} is 1, then cc_only_adopt is 1

else if at least one of \{cc_vmd_adopt, cc_branded_adopt, cc_ae_adopt\} is 0, then cc_only_adopt is 0

else if cc_adopt is 0, then cc_only_adopt is 0

2010

if all of \{cc_gp_adopt, cc_branded_adopt\} are missing, then cc_only_adopt is missing

else if at least one \{cc_gp_adopt, cc_branded_adopt\} is 1, then cc_only_adopt is 1

else if at least one of \{cc_gp_adopt, cc_branded_adopt\} is 0, then cc_only_adopt is 0

else if cc_adopt is 0, then cc_only_adopt is 0

4.48 cc_charge_adopt

2011, 2012

if all of \{cc_aecharge_adopt, cc_club_adopt\} are missing, then cc_charge_adopt is missing

else if at least one \{cc_aecharge_adopt, cc_club_adopt\} is 1, then cc_charge_adopt is 1

else if at least one of \{cc_aecharge_adopt, cc_club_adopt\} is 0, then cc_charge_adopt is 0

2009, 2010

if pa019_b is 1, then cc_charge_adopt is 1

else if pa019_b is 2, then cc_charge_adopt 0

else if cc_adopt is 0, then cc_charge_adopt is 0

else cc_charge_adopt is missing

4.49 svc_12cat_adopt

2011

if survey version is 12-category, svc_12cat_adopt = svc_adopt (see svc_adopt)
4.50  \texttt{svc\_4cat\_adopt}  

2011

if \textit{survey version} is 4-category, then \texttt{svc\_4cat\_adopt} = \texttt{svc\_adopt} (see \texttt{svc\_adopt})

4.51  \texttt{svc\_adopt}  

2011, 2012

if all of \{\texttt{svc\_gov\_adopt}, \texttt{svc\_emp\_adopt}, \texttt{svc\_gp\_adopt}, \texttt{svc\_sp\_adopt}\} are missing, then \texttt{svc\_adopt} is missing

else if at least one of \{\texttt{svc\_gov\_adopt}, \texttt{svc\_emp\_adopt}, \texttt{svc\_gp\_adopt}, \texttt{svc\_sp\_adopt}\} is 1, then \texttt{svc\_adopt} is 1

else if at least one of \{\texttt{svc\_gov\_adopt}, \texttt{svc\_emp\_adopt}, \texttt{svc\_gp\_adopt}, \texttt{svc\_sp\_adopt}\} is 0, then \texttt{svc\_adopt} is 0

if \texttt{svc\_adopt} is 0 or missing and \texttt{pa027\_c} is 1, then \texttt{svc\_adopt} is 1

2010

if all of \{\texttt{svc\_gp\_adopt}, \texttt{svc\_specific\_adopt}, \texttt{svc\_payroll\_adopt}, \texttt{svc\_govt\_adopt}\} are missing, then \texttt{svc\_adopt} is missing

else if at least one of \{\texttt{svc\_gp\_adopt}, \texttt{svc\_specific\_adopt}, \texttt{svc\_payroll\_adopt}, \texttt{svc\_govt\_adopt}\} is 1, then \texttt{svc\_adopt} is 1

else if at least one of \{\texttt{svc\_gp\_adopt}, \texttt{svc\_specific\_adopt}, \texttt{svc\_payroll\_adopt}, \texttt{svc\_govt\_adopt}\} is 0, then \texttt{svc\_adopt} is 0

if \texttt{svc\_adopt} is 0 or missing and \texttt{pa027\_c} is 1, then \texttt{svc\_adopt} is 1

2009

if all of \{\texttt{svc\_gp\_adopt}, \texttt{svc\_specific\_adopt}, \texttt{svc\_payroll\_adopt}, \texttt{svc\_ebt\_adopt}\} are missing, then \texttt{svc\_adopt} is missing

else if at least one of \{\texttt{svc\_gp\_adopt}, \texttt{svc\_specific\_adopt}, \texttt{svc\_payroll\_adopt}, \texttt{svc\_ebt\_adopt}\} is 1, then \texttt{svc\_adopt} is 1

else if at least one of \{\texttt{svc\_gp\_adopt}, \texttt{svc\_specific\_adopt}, \texttt{svc\_payroll\_adopt}, \texttt{svc\_ebt\_adopt}\} is 0, then \texttt{svc\_adopt} is 0

if \texttt{svc\_adopt} is 0 or missing and \texttt{pa027\_c} is 1, then \texttt{svc\_adopt} is 1

32
4.52 elect_adopt

2011, 2012
if at least one of \{obbp_adopt, banp_t_y\} is 1, then elect_adopt is 1
else if all of \{obbp_adopt, banp_t_y\} are 0, then elect_adopt is 0
if elect_adopt is 0 and at least one of \{obbp_adopt, banp_adopt\} is missing, then elect_adopt is missing
2009, 2010
if at least one of \{obbp_adopt, banp_t_y\} is 1, then elect_adopt is 1
else if all of \{obbp_adopt, banp_t_y\} are 0, then elect_adopt is 0

4.53 obbp_adopt

2009-2012
if bank_acnt_adopt is 1

\{ 

if pa013 is 1 and pa014 is 1, then obbp_adopt is 1
else if pa013 is 1 and pa014 is 2, then obbp_adopt is 0
else if pa013 is 1 and pa014 is missing, then obbp_adopt is missing

if obbp_adopt is missing and newobbp is 2, then obbp_adopt is 0

\}
else if bnk_acnt_adopt is 0, then obbp_adopt is 0
else if bnk_acnt_adopt is missing, then obbp_adopt is missing

4.54 banp_adopt

2009-2012
if banp_typ is greater than 0, then banp_adopt is 1
else if banp_typ is 0, then banp_adopt is 0
else banp_adopt is missing
4.55 income_adopt

2009-2012

let income_typ = pu002_d

if pu002_d is missing and abp_adopt is 0, then income_typ is 0
else if pu002_d is missing then income_typ is missing
if income_typ is greater than 0, then income_adopt is 1
else if income_typ is 0, then income_adopt is 0
else income_adopt is missing

4.56 csh_typ

2009-2012

let csh_typ = the sum of \{pu004_a, pu006a_a, pu006c_a, pu021_a\}

if all of \{pu004_a, pu006a_a, pu006c_a, pu021_a\} are missing, then csh_typ is missing

4.57 mon_t_y

2009-2012 For use in definition of mon_adopt:

if mon_typ is greater than 0, then mon_t_y is 1
else if mon_typ is 0, then mon_t_y is 0
else mon_t_y is missing

For use outside of definition of mon_adopt:

if pa040_a is 1, then mon_t_y is 1
else if pa040_a is 2, then mon_t_y is 0
else mon_t_y is missing

4.58 tc_t_y

2012

if pa040_b is 1, then tc_t_y is 1
else if pa040_b is 2, then tc_t_y is 0
else \( tc_{t.y} \) is missing

2011
if \( pa042 \) is 1, then \( tc_{t.y} \) is 1
else if \( pa042 \) is 2, then \( tc_{t.y} \) is 0
else \( tc_{t.y} \) is missing

2009, 2010
if \( tc_{typ} \) is greater than 0, then \( tc_{t.y} \) is 1
else if \( tc_{typ} \) is 0, then \( tc_{t.y} \) is 0
else \( tc_{t.y} \) is missing

4.59 \( svc_{ebt\_adopt} \)

2012
if \( pa197f \) is 1, then \( svc_{ebt\_adopt} \) is 1
else if \( pa197f \) is 2, then \( svc_{ebt\_adopt} \) is 0
else \( svc_{ebt\_adopt} \) is missing

2011
if \textit{survey version} is 12-category
  if \( pa197f \) is 1, then \( svc_{ebt\_adopt} \) is 1
  else if \( pa197f \) is 2, then \( svc_{ebt\_adopt} \) is 0
  else \( svc_{ebt\_adopt} \) is missing

2009
if \( pa099d \) is 1, then \( svc_{ebt\_adopt} \) is 1
else if \( pa099d \) is 2, then \( svc_{ebt\_adopt} \) is 0
else \( svc_{ebt\_adopt} \) is missing

4.60 \( svc_{direxp\_adopt} \)

2012
if \( pa197e \) is 1, then \( svc_{direxp\_adopt} \) is 1
else if \( pa197e \) is 2, then \( svc_{direxp\_adopt} \) is 0

35
else \textit{suc\_direxp\_adopt} is missing 

2011
if survey version is 12-category
    if \textit{pa197e} is 1, then \textit{suc\_direxp\_adopt} is 1 
    else if \textit{pa197e} is 2, then \textit{suc\_direxp\_adopt} is 0
    else \textit{suc\_direxp\_adopt} is missing 

4.61  \textit{suc\_other\_gov\_adopt} 

2012
if \textit{pa197m} is 1, then \textit{suc\_other\_gov\_adopt} is 1 
else if \textit{pa197m} is 2, then \textit{suc\_other\_gov\_adopt} is 0 
else \textit{suc\_other\_gov\_adopt} is missing 

4.62  \textit{suc\_payroll\_adopt} 

2012
if \textit{pa197g} is 1, then \textit{suc\_payroll\_adopt} is 1 
else if \textit{pa197g} is 2, then \textit{suc\_payroll\_adopt} is 0 
else \textit{suc\_payroll\_adopt} is missing 

2011
if survey version is 12-category
    if \textit{pa197g} is 1, then \textit{suc\_payroll\_adopt} is 1
    else if \textit{pa197g} is 2, then \textit{suc\_payroll\_adopt} is 0
    else \textit{suc\_payroll\_adopt} is missing

2009, 2010
if \textit{pa099c} is 1, then \textit{suc\_payroll\_adopt} is 1 
else if \textit{pa099c} is 2, then \textit{suc\_payroll\_adopt} is 0 
else \textit{suc\_payroll\_adopt} is missing
4.63  svc_incentive_adopt

2012
if \textit{pa197h} is 1, then \textit{svc\_incentive\_adopt} is 1
else if \textit{pa197h} is 2, then \textit{svc\_incentive\_adopt} is 0
else \textit{svc\_incentive\_adopt} is missing

2011
if \textit{survey version} is 12-category
    if \textit{pa197h} is 1, then \textit{svc\_incentive\_adopt} is 1
    else if \textit{pa197h} is 2, then \textit{svc\_incentive\_adopt} is 0
    else \textit{svc\_incentive\_adopt} is missing

4.64  svc\_benefit\_adopt

2012
if \textit{pa197i} is 1, then \textit{svc\_benefit\_adopt} is 1
else if \textit{pa197i} is 2, then \textit{svc\_benefit\_adopt} is 0
else \textit{svc\_benefit\_adopt} is missing

2011
if \textit{survey version} is 12-category
    if \textit{pa197i} is 1, then \textit{svc\_benefit\_adopt} is 1
    else if \textit{pa197i} is 2, then \textit{svc\_benefit\_adopt} is 0
    else \textit{svc\_benefit\_adopt} is missing

4.65  svc\_gpp\_adopt

2012
if \textit{pa197b} is 1, then \textit{svc\_gpp\_adopt} is 1
else if \textit{pa197b} is 2, then \textit{svc\_gpp\_adopt} is 0
else \textit{svc\_gpp\_adopt} is missing

2011
if survey version is 12-category
    if pa197b is 1, then svc_gpp Adopt is 1
    else if pa197b is 2, then svc_gpp Adopt is 0
    else svc_gpp Adopt is missing

4.66 svc_remittance_adopt

2012
    if pa197j is 1, then svc_remittance_adopt is 1
    else if pa197j is 2, then svc_remittance_adopt is 0
    else svc_remittance_adopt is missing

2011
    if survey version is 12-category
        if pa197j is 1, then svc_remittance_adopt is 1
        else if pa197j is 2, then svc_remittance_adopt is 0
        else svc_remittance_adopt is missing

4.67 svc_rebate_adopt

2012
    if pa197k is 1, then svc_rebate_adopt is 1
    else if pa197k is 2, then svc_rebate_adopt is 0
    else svc_rebate_adopt is missing

2011
    if survey version is 12-category
        if pa197k is 1, then svc_rebate_adopt is 1
        else if pa197k is 2, then svc_rebate_adopt is 0
        else svc_rebate_adopt is missing
4.68  svc_gift_adopt

2012

if  \textit{pa197a} is 1, then \textit{svc\_gift\_adopt} is 1
else if \textit{pa197a} is 2, then \textit{svc\_gift\_adopt} is 0
else \textit{svc\_gift\_adopt} is missing

2011

if \textit{survey version} is 12-category
    if \textit{pa197a} is 1, then \textit{svc\_gift\_adopt} is 1
    else if \textit{pa197a} is 2, then \textit{svc\_gift\_adopt} is 0
    else \textit{svc\_gift\_adopt} is missing

4.69  svc_transit_adopt

2012

if \textit{pa197c} is 1, then \textit{svc\_transit\_adopt} is 1
else if \textit{pa197c} is 2, then \textit{svc\_transit\_adopt} is 0
else \textit{svc\_transit\_adopt} is missing

2011

if \textit{survey version} is 12-category
    if \textit{pa197c} is 1, then \textit{svc\_transit\_adopt} is 1
    else if \textit{pa197c} is 2, then \textit{svc\_transit\_adopt} is 0
    else \textit{svc\_transit\_adopt} is missing

4.70  svc_phonecard_adopt

2012

if \textit{pa197d} is 1, then \textit{svc\_phonecard\_adopt} is 1
else if \textit{pa197d} is 2, then \textit{svc\_phonecard\_adopt} is 0
else \textit{svc\_phonecard\_adopt} is missing

2011
if survey version is 12-category
    if pa197d is 1, then svc_phonecard_adopt is 1
    else if pa197d is 2, then svc_phonecard_adopt is 0
    else svc_phonecard_adopt is missing

4.71 svc_location_adopt

2012
if pa197l is 1, then svc_location_adopt is 1
else if pa197l is 2, then svc_location_adopt is 0
else svc_location_adopt is missing

2011
if survey version is 12-category
    if pa197l is 1, then svc_location_adopt is 1
    else if pa197l is 2, then svc_location_adopt is 0
    else svc_location_adopt is missing

4.72 svc_gov_adopt

2012
if all of \{svc_ebt_adopt, svc_direxp_adopt, svc_other_gov_adopt\} is missing, then svc_gov_adopt are missing
else if at least one of \{svc_ebt_adopt, svc_direxp_adopt, svc_other_gov_adopt\} is 1, then svc_gov_adopt is 1
else if at least one of \{svc_ebt_adopt, svc_direxp_adopt, svc_other_gov_adopt\} is 0, then svc_gov_adopt is 0

2011
if survey version is 4-category
    if pa099a is 1, then svc_gov_adopt is 1
    else if pa099a is 2, then svc_gov_adopt is 0
    else svc_gov_adopt is missing
if survey version is 12-category
  if all of \{svc_ebt_adopt, svc_direxp_adopt\} are missing, then svc_gov_adopt is missing
  else if at least one of \{svc_ebt_adopt, svc_direxp_adopt\} is 1, then svc_gov_adopt is 1
  else if at least one of \{svc_ebt_adopt, svc_direxp_adopt\} is 0, then svc_gov_adopt is 0

4.73 svc_emp_adopt

2012
if all of \{svc_payroll_adopt, svc_incentive_adopt, svc_benefit_adopt\} are missing, then svc_emp_adopt is missing
else if at least one of \{svc_payroll_adopt, svc_incentive_adopt, svc_benefit_adopt\} is 1, then svc_emp_adopt is 1
else if at least one of \{svc_payroll_adopt, svc_incentive_adopt, svc_benefit_adopt\} is 0, then svc_emp_adopt is 0

2011
if survey version is 4-category
  if \pa099b is 1, then svc_emp_adopt is 1
  else if \pa099b is 2, then svc_emp_adopt is 0
  else svc_emp_adopt is missing
if survey version is 12-category
  if all of \{svc_payroll_adopt, svc_incentive_adopt, svc_benefit_adopt\} are missing, then svc_emp_adopt is missing
  else if at least one of \{svc_payroll_adopt, svc_incentive_adopt, svc_benefit_adopt\} is 1, then svc_emp_adopt is 1
  else if at least one of \{svc_payroll_adopt, svc_incentive_adopt, svc_benefit_adopt\} is 0, then svc_emp_adopt is 0

4.74 svc_gp_adopt

2012
if all of \{svc_gpp_adopt, svc_remittance_adopt, svc_rebate_adopt\} are missing, then svc_gp_adopt is missing
else if at least one of \{svc\_gpp\_adopt, svc\_remittance\_adopt, svc\_rebate\_adopt\} is 1, then \textit{svc\_gp\_adopt} is 1

else if at least one of \{svc\_gpp\_adopt, svc\_remittance\_adopt, svc\_rebate\_adopt\} is 0, then \textit{svc\_gp\_adopt} is 0

\textbf{2011}

if \textit{survey version} is 4-category

\hspace{1cm} if \textit{pa099c} is 1, then \textit{svc\_gp\_adopt} is 1

\hspace{1cm} else if \textit{pa099c} is 2, then \textit{svc\_gp\_adopt} is 0

\hspace{1cm} else \textit{svc\_gp\_adopt} is missing

if \textit{survey version} is 12-category

\hspace{1cm} if all of \{svc\_gpp\_adopt, svc\_remittance\_adopt, svc\_rebate\_adopt\} are missing, then \textit{svc\_gp\_adopt} is missing

\hspace{1cm} else if at least one of \{svc\_gpp\_adopt, svc\_remittance\_adopt, svc\_rebate\_adopt\} is 1, then \textit{svc\_gp\_adopt} is 1

\hspace{1cm} else if at least one of \{svc\_gpp\_adopt, svc\_remittance\_adopt, svc\_rebate\_adopt\} is 0, then \textit{svc\_gp\_adopt} is 0

\textbf{2009, 2010}

if \textit{pa099a} is 1, then \textit{svc\_gp\_adopt} is 1

else if \textit{pa099a} is 2, then \textit{svc\_gp\_adopt} is 0

else \textit{svc\_gp\_adopt} is missing

\textbf{4.75} \textit{svc\_sp\_adopt}

\textbf{2012}

if all of \{svc\_gift\_adopt, svc\_transit\_adopt, svc\_phonecard\_adopt, svc\_location\_adopt\} are missing, then \textit{svc\_sp\_adopt} is missing

else if at least one of \{svc\_gift\_adopt, svc\_transit\_adopt, svc\_phonecard\_adopt, svc\_location\_adopt\} is 1, then \textit{svc\_sp\_adopt} is 1

else if at least one of \{svc\_gift\_adopt, svc\_transit\_adopt, svc\_phonecard\_adopt, svc\_location\_adopt\} is 0, then \textit{svc\_sp\_adopt} is 0

\textbf{2011}

\textbf{42}
if *survey version* is 4-category
  if *pa099d* is 1, then *svc_sp_adopt* is 1
  else if *pa099d* is 2, then *svc_sp_adopt* is 0
  else *svc_sp_adopt* is missing
if *survey version* is 12-category
  if all of \{*svc_gift_adopt*, *svc_transit_adopt*, *svc_phonecard_adopt*, *svc_location_adopt*\} are missing, then *svc_sp_adopt* is missing
  else if at least one of \{*svc_gift_adopt*, *svc_transit_adopt*, *svc_phonecard_adopt*, *svc_location_adopt*\} is 1, then *svc_sp_adopt* is 1
  else if at least one of \{*svc_gift_adopt*, *svc_transit_adopt*, *svc_phonecard_adopt*, *svc_location_adopt*\} is 0, then *svc_sp_adopt* is 0

### 4.76 svc_specific_adopt

#### 2009, 2010

if *pa099b* is 1, then *svc_specific_adopt* is 1
else if *pa099b* is 2, then *svc_specific_adopt* is 0
else *svc_specific_adopt* is missing

### 4.77 svc_govt_adopt

#### 2010

if *pa099d* is 1, then *svc_govt_adopt* is 1
else if *pa099d* is 2, then *svc_govt_adopt* is 0
else *svc_govt_adopt* is missing

### 4.78 banp_t_y

#### 2009-2012

if *banp_typ* is greater than 0, then *banp_t_y* is 1
else if *banp_typ* is 0, then *banp_t_y* is 0
else *banp_t_y* is missing
4.79  abp_adopt

2009-2012
if \textit{pa024} is 1, then \textit{abp_adopt} is 1
else if \textit{pa024} is 2, then \textit{abp_adopt} is 0
else \textit{abp_adopt} is missing

4.80  cc_gp_adopt

2011, 2012
if all of \{cc\_vmd\_adopt, cc\_ae\_adopt\} are missing, then \textit{cc_gp_adopt} is missing
else if at least one of \{cc\_vmd\_adopt, cc\_ae\_adopt\} is 1, then \textit{cc_gp_adopt} is 1
else if at least one of \{cc\_vmd\_adopt, cc\_ae\_adopt\} is 0, then \textit{cc_gp_adopt} is 0
2009, 2010
if \textit{pa019\_a} is 1, then \textit{cc_gp_adopt} is 1
else if \textit{pa019\_a} is 2, then \textit{cc_gp_adopt} 0
else if \textit{cc_adopt} is 0, then \textit{cc_gp_adopt} is 0
else \textit{cc_gp_adopt} is missing

4.81  cc_aecharge_adopt

2011, 2013
if \textit{pa019\_c} is 1, then \textit{cc_aecharge_adopt} is 1
else if \textit{pa019\_c} is 2, then \textit{cc_aecharge_adopt} is 0
else if \textit{cc_adopt} is 0, then \textit{cc_aecharge_adopt} is 0
else \textit{cc_aecharge_adopt} is missing

4.82  cc_club_adopt

2011, 2012
if \textit{pa019\_e} is 1, then \textit{cc_club_adopt} is 1
else if \textit{pa019\_e} is 2, then \textit{cc_club_adopt} is 0
else if `cc_adopt` is 0, then `cc_club_adopt` is 0
else `cc_club_adopt` is missing

4.83  mon_typ

2009-2012
let `mon_typ = the sum of \{pu004_bmo, pu005_amo, pu006a_bmo, pu006c_bmo, pu021_bmo\}`
if all of `\{pu004_bmo, pu005_amo, pu006a_bmo, pu006c_bmo, pu021_bmo\}` are missing and
`moadopter` is 0, then `mon_typ` is 0
else if all of `\{pu004_bmo, pu005_amo, pu006a_bmo, pu006c_bmo, pu021_bmo\}` are missing
and `moadopter` is not equal to 0, then `mon_typ` is missing

4.84  tc_typ

2009-2012
let `tc_typ = pu008_c`
if `pu008_c` is missing and at least one of `\{tcadopter, tcever\}` is 0, then `tc_typ` is 0
else if `pu008_c` is missing and none of `\{tcadopter, tcever\}` is 0, then `tc_typ` is missing

4.85  chk_blnk_adopt

2009-2012
if `pa031` is 1, then `chk_blnk_adopt` is 1
else if `pa031` is 2, then `chk_blnk_adopt` is 0
else if `chk_acnt_adopt` is 0, then `chk_blnk_adopt` is 0
else `chk_blnk_adopt` is missing

4.86  banp_typ

2009-2012
let `banp_typ = the sum of \{pu002_c, pu003_c, pu005_c, pu021_e\}`
if all of `\{pu002_c, pu003_c, pu005_c, pu021_e\}` are missing and `bnk_acnt_adopt` is 0, then
`banp_typ` is 0
else if all of \{pu002_c, pu003_c, pu005_c, pu021_e\} are missing and \textit{bnk_acnt_adopt} is not equal to 0, then \textit{banp_typ} is missing