Alternate Blocks in the CPS-ASEC instrument

Roberto Picha U.S. Census Bureau
16th International Blaise conference, Beijing China 2015
Outline

CPS ASC History

Prototyping

Implementing

Issues/Solutions

Final thoughts
CPS History

- Using Blaise since 2007
- Blaise 4.8.1 build 1403
- Different supplement each month
  - ASEC runs for three months
- Measures employment rate
  - ASEC collects income data and benefit programs
CPS ASEC

ASEC supplement Redesign
- Research based on cognitive test
- Paper based approach
- Runs in February, March and April

New requirement
- Order of sections based on
  - Low income, Seniors, for member 15y.o.
  - Person questions
  - Income Source
  - Amount questions for each income source
### Alternate Order of Income Source Questions

<table>
<thead>
<tr>
<th>Default Order</th>
<th>Low Income Order</th>
<th>Seniors Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Unemployment and Workers Compensation</td>
<td>1 Unemployment and Workers Compensation</td>
<td>2 Disability</td>
</tr>
<tr>
<td>2 Disability</td>
<td>7 Public Assistance / TANF</td>
<td>3 Social Security</td>
</tr>
<tr>
<td>3 Social Security/SS for Children</td>
<td>8 Food Stamps (SNAP)</td>
<td>4 Supplemental Security Income (SSI)</td>
</tr>
<tr>
<td>4 Supplemental Security Income (SSI)</td>
<td>9 WIC</td>
<td>5 Veterans</td>
</tr>
<tr>
<td>5 Veterans</td>
<td>10 School Lunches</td>
<td>6 Survivors</td>
</tr>
<tr>
<td>6 Survivor Benefits</td>
<td>11 Public Housing</td>
<td>13 Pensions</td>
</tr>
<tr>
<td>7 Public Assistance / TANF</td>
<td>12 Energy Assistance</td>
<td>14 Annuities</td>
</tr>
<tr>
<td>8 Food Stamps (SNAP)</td>
<td>2 Disability</td>
<td>15 Retirement Accounts – Withdrawals or distributions</td>
</tr>
<tr>
<td>9 WIC- no amount collection</td>
<td>3 Social Security</td>
<td>16 Other Income Earning Assets (outside of retirement)</td>
</tr>
<tr>
<td>10 School Lunches- no amount collection</td>
<td>4 Supplemental Security Income (SSI)</td>
<td>17 Property Income</td>
</tr>
<tr>
<td>11 Public Housing- no amount collection</td>
<td>5 Veterans</td>
<td>18 Pensions</td>
</tr>
<tr>
<td>12 Energy Assistance</td>
<td>6 Survivor Benefits</td>
<td>19 Annuities</td>
</tr>
<tr>
<td>13 Pensions</td>
<td>14 Retirement Accounts – Withdrawals or distributions</td>
<td>20 School Lunches</td>
</tr>
<tr>
<td>14 Annuities</td>
<td>15 Other Income Earning Assets (outside of retirement)</td>
<td>21 Public Housing</td>
</tr>
<tr>
<td>15 Retirement Accounts (within) – Withdrawals or distributions</td>
<td>16 Other Income Earning Assets (outside of retirement)</td>
<td>22 Energy Assistance</td>
</tr>
<tr>
<td>16 Other Income Earning Assets (outside of retirement)</td>
<td>17 Property Income</td>
<td>23 Education Assistance</td>
</tr>
<tr>
<td>17 Property Income</td>
<td>18 Education Assistance</td>
<td>24 Child Support</td>
</tr>
<tr>
<td>18 Education Assistance</td>
<td>19 Child Support</td>
<td>25 Allimony</td>
</tr>
<tr>
<td>19 Child Support</td>
<td>20 Allimony</td>
<td>26 Financial Assistance from friends or relatives</td>
</tr>
<tr>
<td>20 Allimony</td>
<td>21 Financial Assistance from friends or relatives</td>
<td>27 Other Income I (as in ASEC now)</td>
</tr>
<tr>
<td>21 Financial Assistance from friends or relatives</td>
<td>22 Other Income I (as in ASEC now)</td>
<td>28 Other Income II (as in ASEC now)</td>
</tr>
<tr>
<td>22 Other Income I (as in ASEC now)</td>
<td>23 Other Income II (as in ASEC now)</td>
<td>29 Other Income II (as in ASEC now)</td>
</tr>
</tbody>
</table>
Prototyping

Two prototypes were conducted as proof of concept

• Prototype to show the routing of alternate questions.
• Expanding the prototype to a bit larger scale.
Prototyping simple datamodel

```
DATAMODEL Inst "Routing questions"
FIELDS
B, C, D, E. STRING
PATH : ( D "default", L "low Income", S "Seniors")

RULES
PATH
IF PATH = D THEN
   B
   C
   D
ELSEIF PATH = L THEN
   C
   B
   D
ELSE
   B
   D
   C
ENDIF

[Error] INST2.bla(135,6): Field already displayed, or display order conflict
```
Prototyping complex datamodel

**DATAMODEL** Inst

**FIELDS**

Path : (Default "B,C,D,E", LowIncome "C,B,D,E", Seniors "B,D,C,E")

**BLOCK** BlkB ; **BLOCK** BlkC ; **BLOCK** BlkD ; **BLOCK** BlkE

**BLOCK** BOrderOne {default order}

**FIELDS** B : BlkB, C : BlkC, D : BlkD, E : BlkE

**ENDBLOCK**

**BLOCK** BOrderTwo {low Income order}

**FIELDS** C : BlkC, B : BlkB, D : BlkD, E : BlkE

**ENDBLOCK**

**BLOCK** BOrderThree {Senior order}

**FIELDS** B : BlkB, D : BlkD, C : BlkC, E : BlkE

**ENDBLOCK**

**BLOCK** BMaster {master copy of the answers (no matter which order)}

**FIELDS** B : BlkB, C : BlkC, D : BlkD, E : BlkE

**ENDBLOCK**

**AUXFIELDS**

OrderOne : BOrderOne
OrderTwo : BOrderTwo
OrderThree : BOrderThree
DoOnce : 0..1

**FIELDS**

Master : BMaster
Prototyping complex (cont'd)

**RULES**
- Master.KEEP {keep the master set of answers}
- path
- DoOnce.KEEP

```plaintext
IF DoOnce = EMPTY THEN
  IF path.ord = 1 THEN
    OrderOne B := Master.B
    OrderOne C := Master.C
    OrderOne D := Master.D
    OrderOne E := Master.E
  ELSEIF path.ord = 2 THEN
    OrderTwo C := Master.C
    OrderTwo B := Master.B
    OrderTwo D := Master.D
    OrderTwo E := Master.E
  ELSEIF path.ord = 3 THEN
    OrderThree B := Master.B
    OrderThree D := Master.D
    OrderThree C := Master.C
    OrderThree E := Master.E
  ENDIF
ENDIF

IF path.ord=1 THEN
  OrderOne
  Master.B := OrderOne.B A
  Master.C := OrderOne.C
  Master.D := OrderOne.D
  Master.E := OrderOne.E
ELSEIF path.ord=2 THEN
  OrderTwo
  Master.C := OrderTwo.C
  Master.B := OrderTwo.B
  Master.D := OrderTwo.D
  Master.E := OrderTwo.E
ELSEIF path.ord=3 THEN
  OrderThree
  Master.B := OrderThree.B
  Master.D := OrderThree.D
  Master.C := OrderThree.C
  Master.E := OrderThree.E
ENDIF
```
Implementing

Breaking Sections into small blocks to accommodate the order of blocks

Some dependencies were disabled
This led to additional task not anticipated

Modifying parameterization to blocks
Rearranging parameters
Read information across sections, generating GP’s for simplicity
Layouts
Issues during implementation

During system test

- Missing data
  - The execution of rules caused some missing data
  - Flag variables
  - Usually array data
- Data loosing when exiting interview early
Solutions during implementation

System test and how to save data

- Applying KEEP statements
  - Running out of time
- Converting Auxfields blocks to Fields
  - This eventually caused some concerns
  - Incremented size of metafile up to five times
Issues during production

Master Control
- Running Manipula Scripts
  - Recycling cases
  - Re-interview writing SCIF data

Data Output
- Duplicate data
  - House level
  - Person Level
Solutions during production

Master control Access Violation

- Using a greater version of Manipula
  - Blaise 4.8.4 build 1861

Data Output

- Duplicate data existed due to the conversion of auxfields to field blocks
  - Fourth instance block for person level
  - 49th instance block person level
Data dup linking HH

• To determine which line was the correct line of data to be utilized was as follows.
  - Looking in the blkASEC block (file A.81) to determine the pointer value for BINCSOR_AMT. In the following example is at position 36-40.
  - This value matches up to the instance number in block blkincSor_Amt in file B.83
  - In this example, data was entered in the Veteran’s blocks which are located in the Source A block, so the data output team needed to locate the Pointer value for A_Sor.
Data dup linking HH (cont'd)

- Then data was matched to the instance number in block blkInc_Source_A.
- Example below shows two lines per case.
- The correct lines in this case are where the instance number is 4.

From here, the pointer number for BVET_PMT matched the instance number for blkVet_Pmt.
Data dup linking Person.

- The same process was applied to get the pointer values for BVET_PMT_PERSON1
Final thoughts

• Implementing significant changes to Production instruments can be really challenging
• Larger metafile caused some issues
• Returning back to Auxfields
  • Mapping the block with the use of keeps
  • Use of Manipula to synchronize the load or store of data
• Parallel production test
  • CPS ASEC using redesign vs old design
  • Data comparison about approach
Questions Answers

Roberto.v.picha@census.gov