

# Use of Metadata in the Design of a Customizable Event History Calendar

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# Overview

- Intro to SIPP and the EHC
- SIPP EHC design requirements and considerations
- Description of the design
- Benefits and conclusions

# What is SIPP?

- SIPP = Survey of Income and Program Participation
- Large, longitudinal survey that collects
  - Sources and amounts of income
  - Federal and state program participation
  - General demographics
  - ...and other information

# SIPP Re-Engineering Effort

- In order to cut costs and reduce R. burden, interviews will be conducted once a year, instead of 3 times a year.
- Reference period increased to 12 months of the past calendar year – from 4 months previously.
- Event History Calendar (EHC) used to improve recall of events during this longer period

# How data is collected

- SIPP contains some 40 sections
- About half of the questions are collected in Blaise 4.8 DEP
  - Mostly questions not involving specific dates (e.g. value of assets)
- About half are collected in the EHC module
  - Questions involving recall of dates, changes in status (e.g. job changes, changes in residence)
  - Written in C# .NET, invoked from DEP as COM object DLL

# Design Considerations

- Data interchange throughout SIPP and data integrity
  - Parameters passed between EHC and Blaise sections (e.g., section in Blaise about how you commute to work uses employment data collected in the EHC)
  - Michigan's early experiences with data quality when using a separate database for the EHC
  - Therefore, we decided that all data will be stored in a single Blaise DB

# Design Considerations (cont'd)

- Fluid requirements
  - EHC is a new format for the Census Bureau and SIPP, many sections and questions are being written from scratch and re-written
  - Requirements expected to change frequently as sponsors become familiar with the EHC
  - Thus, EHC must be flexible enough to accommodate changes quickly

# Design Considerations (cont'd)

- Large number of questions in EHC
  - 25 sections in EHC, some sections have many questions for each time period entered (e.g., about 40 questions for a reported time at a job)
  - Implementing layout of questions and answer lists, skip patterns, data access, and edit checks is very labor intensive outside of Blaise
  - Needed to minimize hard-coding of individual questions

# Design Considerations (cont'd)

- Maintenance and Re-use of EHC
  - It was important to design EHC so that it can be maintained and modified without substantial C# programming.
  - If EHC works well for SIPP, it may be adopted by other surveys
  - Thus, it's a plus if SIPP EHC can be customized and re-used from survey to survey

# Summary of requirements

- EHC must
  - Be able to handle a large number of sections and questions
  - Be easy to maintain, modify, and re-use
  - Integrate seamlessly with the Blaise portion of the interview

# Design Overview

- All sections and questions in the EHC defined as blocks and fields in Blaise datamodel
- No fields hard-coded in the EHC
- Questions placed on screen dynamically based on metadata parameters, such as question text, field length, flow/skip conditions, etc.

# Design Overview (cont'd)

- 3 Metadata Files serve as links between Blaise datamodel/database and the C# system
  - “Topics/Sections” file
  - “Questions” file
  - “Rules” file

# “Topics/Sections” Metafile

- Contains list and order of sections within EHC
- Section names correspond to Block names in Blaise
- Column for maximum number of spells (time periods) within topic
- Simply deleting a line from this file will remove that section from the EHC

# “Topics” Metafile Screenshot

TopicID	Topic	BlockName	MaxSpells
1	Landmarks	Blandmark	
2	Residences	Bresidency	5
3	Marital History	BMARITAL_HISTORY	6
4	Mom	Bmom	6
5	Dad	Bdad	6
6	Enrollment	BEduc_Enrollment	6
7	Job	BJob1	4
12	Job6	BJob6	4
13	NoJob	BNoJob	4
14	SSI	BSSI	3
15	FS	BFS	3
16	TANF	BTANF	3
17	GenAssis	BGenAssis	3
18	WIC	BWIC	3
19	Private1	BPrivate1	3
21	Medicare	Bmedicare	3
22	Medicaid	Bmedicaid	3
23	Military	Bmilitary	3
24	OtherCoverage	BOtherCoverage	3
25	NoCoverage	BNoCoverage	3

Record: 1 of 20

Datasheet View

# “Questions” metafile

- Data needed to display each field in EHC
- Order of question, page #, other attributes
- Linked to Blaise datamodel via field and block names
- “Function” column for more complex processing associated with the field (e.g. edit checks, complex rules)

# Screenshot of “Questions” metafile

DEWS EHC Data - [frm\_MainTabs : Form]

File Edit View Insert Format Records Tools Window Help

FieldName Arial 10 B I U

Questions Dependencies Topics

TopicID	Questi	Page	FieldName	TypeID	RequiredID	Leng	Last	Function	Help	Column
Job6	0	0	Screeener	Radio Button	Required	1	N			
Job6	45400	0	Header	Title or Header	Optional	12	N			
Job6	45410	0	STARTDAY6	Number	Not Required	50	N	E5.2		
Job6	45420	0	ENDDAY6	Number	Not Required	50	N	E5.3		
Job6	45430	0	NUMBER_OF_JOBS	Number	Not Required	50	N	E15.4=V		
Job6	45440	0	JBORSE6	Radio Button	Required	1	N			
Job6	45450	1	WRKTYPE6	Radio Button	Required	1	N	E15.5=K		
Job6	45460	1	KNDWK6	String	Not Required	150	N			
Job6	45470	1	ACTVT6	String	Not Required	150	N			
Job6	45480	2	EARN6		Not Required	100	N	E3.1=h-1		
Job6	45485	2	TAKEHOME6	Radio Button	Required	1	N			

Filter by: Job6

Remove Filter

Clean Dependencies Table

Create CSV Files

Form View NUM

# “Rules” Metafile

- Describes when fields are on-path or off-path
- Allows If-Then conditionals without writing any C# code
- More complex conditions handled through “Functions”

# “Rules” Metafile screenshot

DEWS EHC Data - [DewSehc\_QuestionDependences : Table]

File Edit View Insert Format Records Tools Window Help

Topic	FieldName	Response	GoToField	Action	Compound
Enrollment	Grade	19	GRADEREP	0	
Enrollment	Grade	19	FTPT	1	
Enrollment	Grade	20	GRADEREP	0	
Enrollment	Grade	20	FTPT	1	
Enrollment	Grade	21	GRADEREP	0	
Enrollment	Grade	21	FTPT	1	
Job	JBORSE	0	STARTYEAR	1	
Job	JBORSE	0	STARTMON1	1	
Job	JBORSE	0	STARTDAY	1	
Job	JBORSE	0	JOBEND	1	
Job	JBORSE	0	ENDDAY	1	
Job	JBORSE	0	RSEND	1	
Job	JBORSE	0	RENDB	0	

Record: 1 of 1515

Datasheet View

# EHC Main Screen – VStudio Design View

File Edit View Project Build Debug Data Format Tools Window Community Help [Full Screen](#)

DewSehc.cs [Design]\* ControlCreator.cs DlgQuestions.cs\* DlgQuestions.cs [Design]\*

Browse Topics Edit Spell Exit EHC

Topic Category Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Description of EH

List of Topics  
lstTopics

Questions

IblTopic

<Insert screener text here>

Yes  No  Refused

Set Period

From: [ ] To: [ ] [OK](#) [Edit](#) [Delete](#)

Not sure  Not sure

InkTitle

Period: 1 [Add](#)

Notes

Ready

toolTip1 menuStrip1 helpProvider1 tooltip2

# SIPP EHC – Run-time view

Event History Calendar ver# 2.0.0

Browse Topics Edit Spell Exit EHC

Topic	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Landmarks	Landmark events	■	■	■	■	■	■	■	■	■	■		
Residences	Residence history				■								
Marital History	Marital history				■								
Mom	Mom												
Dad	Dad												
Enrollment	Education												
Job	Job/business			■	■	■	■	■	■				
Job2	Job/business												
Job3	Job/business												
Job4	Job/business												
Job5	Job/business												
Job6	Job/business												
NoJob	Job/business												
SSI	SSI program												
FS	Food Stamp												
TANF	TANF Program												
GenAssis	General Assistance												
WIC	WIC Program												
Private1	Private Insurance												
Private2	Private Insurance												
Medicare	Medicare Insurance												
Medicaid	Medicaid Insurance												
Military	Military Insurance												
OtherCoverage	Other sources?												
NoCoverage	Anytime no coverage?												

Description of EHC

List of Topics

- Landmarks
- Residences
- Marital History
- Mom
- Dad
- Enrollment
- Job**
- Job2
- Job3
- Job4
- Job5
- Job6
- NoJob
- SSI
- FS
- TANF
- GenAssis
- WIC
- Private1
- Private2
- Medicare

Questions

**Job**

Work Job

Yes  No  Refused

Set Period

From:  To:

Not sure  Not sure

Job/business Period: 1, New

[Hide](#) [Edit Questions](#)

Did you work for an employer, or were you self-employed, or did you have some other work arrangement?

held job

Notes

0000005 EHC\_Intro 9:02:35 AM 6/1/2009 Current Respondent: aaaa awe 52/6231

# Putting it all together in C#

- C# reads in a line from a metafile
- Gets associated field attributes and data through Blaise API
- C# code contains generic implementations for different field types, checks, and skips
- Displays field and data on screen
- Calls associated Functions for extra processing

# Making modifications to the EHC

- To add a question to the EHC
  1. Add new field in Blaise and re-build.
  2. Add new line to Questions metafile
  3. Update Rules file
- To re-order questions in the EHC
  1. Modify QuestionNumber column in “Questions”
  2. Update Rules file
- To change question text or answer list
  1. Make change in Blaise and re-build

# Benefits of this EHC design approach

- Includes all features of the EHC (graphical component, free-flow interview) as well as question flow and error-checking comparable to Blaise
- EHC and Blaise parts of the interview integrate seamlessly
- Changes to EHC done with minimal changes to C# code which makes maintenance easier

# Questions?

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