June 15, 2015

MEMORANDUM FOR THE RECORD

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Subject: Documentation of the Imputation Methodology for the 2013 Census of Juveniles in Residential Placement

This memorandum presents a streamlined version of the imputation methodology for the 2013 Census of Juveniles in Residential Placement (CJRP).

This document uses intentional white space to improve readability. The document is available in PDF format, because the reader's computer might not reproduce the original formatting.

This document also serves as a guide to the programmer who works on the 2015 CJRP. Notes to the programmer are in brackets. The 2013 CJRP system is reusable for the 2015 CJRP. [The programs are in the **\\govs011fs\cjrp\2013** subdirectory.]

The imputation methodology for the 2001 CJRP and earlier censuses used the section and question numbers as variable names. It is very easy to make a typing mistake while using that convention. The naming convention also makes it more difficult to read the program code and debug it. For the 2013 CJRP, we assigned variable names that are more descriptive. Table 1 shows the naming conventions used in the programs in the imputation system. The section and question number for each item are in parentheses. The final record layout for the 2013 CJRP also includes descriptive variable names, but those variable names do not always match the variable names used in the imputation system. The variable names as assigned in the final record layout for 2013 are also included in parentheses.

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Table 1. Naming Conventions in the 2013 CJRP Imputation System

Concept	2013 CJRP	2012 JRFC	2011 CJRP
Persons assigned to beds	total_2013 (Number_Assigned) (S1Q14b)	total_2012_jrfc (S1Q5b)	total_2011 (S1Q10b)
Persons assigned to beds age 21 or older	adults_2013 (Number_21_Older) (S1Q15)	adults_2012_jrfc (S1Q6)	adults_2011 (S1Q11)
Persons under age 21 assigned to beds	kids_2013 (Number_21_Under) (S1Q16b)	kids_2012_jrfc (S1Q7b)	kids_2011 (S1Q12b)
Persons under age 21 assigned to beds due to offenses	kid_offenders_2013 (Number_Offense) (S1Q17b)	kid_offenders_2012_jrfc (S1Q8b)	kid_offenders_2011 (S1Q13b)
Persons assigned to beds for reasons other than offenses	kid_nonoffenders_2013 (Number_Non_Offense) (S1Q18b)	kid_nonoffenders_2012_jrfc (S1Q9b)	kid_nonoffenders_2011 (S1Q14b)
Juvenile offender ID	kid_id (S2Q1)		
Juvenile offender's sex	kid_sex (S2Q2)		
Juvenile offender's birth date	kid_birth_month (S2Q3) kid_birth_day (S2Q3) kid_birth_year (S2Q3)		
Juvenile offender's race	kid_race (S2Q4)		
Agency that placed the juvenile offender in facility	kid_placed_by (S2Q5)		
Juvenile offender's most serious offense	kid_offense (S2Q7)		
Juvenile offender's adjudication status	kid_adjudication_status (S2Q9)		
Juvenile offender's date of admission	kid_admitted_month (S2Q10) kid_admitted_day (S2Q10) kid_admitted_year (S2Q10)		

I. Introduction

First conducted in 1997, the CJRP is a mail canvass census. The 2010 CJRP was the first collection to give facilities the option to respond online. The CJRP asks juvenile residential custody facilities in the U.S. to describe each youth assigned to a bed in the facility on the last Wednesday of October. Adult facilities, or facilities exclusively for drug or mental health treatment, or facilities for abused or neglected children are not included in the census. Normally conducted in odd-numbered years, the CJRP collection scheduled for 2005 occurred in early 2006, and the collection scheduled for 2009 occurred in early 2010. The reference date for the 2013 CJRP was Wednesday, October 23, 2013.

In 1997, CJRP replaced the Census of Public and Private Juvenile Detention, Correctional, and Shelter Facilities, also known as the Children in Custody census, which began in the early 1970s. Previous censuses collected data on the facilities and the juvenile offenders held in the facilities.

CJRP collects an individual record on each offender less than 21 years of age held in the residential facility, with information on the juvenile's sex, date of birth, race, agency or authority placing the offender there, most serious offense, court adjudication status, and date of admission to the facility.

The National Center for Juvenile Justice, the research division of the National Council of Juvenile and Family Court Judges, maintains the CJRP databook online. The databook contains a set of pre-defined tables detailing the characteristics of juvenile offenders in residential placement facilities. Tables are currently available for 1997, 1999, 2001, 2003, 2006, 2007, 2010, and 2011.

The National Archive of Criminal Justice Data holds the previous data files, where they are part of the restricted access collection. For more information, see http://www.icpsr.umich.edu/icpsrweb/NACJD/.

The project sponsor is the Office of Juvenile Justice and Delinquency Prevention (OJJDP). The Public Sector Statistical Methods Branch (PSSMB) of Economic Statistical Methods Division is responsible for imputation in the CJRP, while the Criminal Justice Branch (CJB) of Economic Reimbursable Surveys Division is responsible for data collection and editing.

A facility is temporarily out-of-scope when they do not hold juveniles on the reference date.

A facility is permanently out-of-scope for one of several reasons:

- The facility is no longer a residential facility (might have converted to day treatment only).
- The facility is a duplicate of a record already on the data file.
- The facility has changed from public to private, or private to public. When this happens, the facility ID changes, and the previous facility ID is out-of-scope.
- The facility no longer holds any juveniles (only handles adults).
- The facility no longer holds any offenders (juveniles are all voluntary placements, or in the facility because of neglect, abuse, dependency, or abandonment).

There were 2,293 in-scope facilities on reference day. 2,111 of the 2,293 facilities responded to the 2013 CJRP, for a 92.1 percent unit response rate. 182 refused to participate in the 2013 CJRP, but we imputed records for the nontribal facilities in the 50 states and the District of Columbia.

The 2013 questionnaire has two sections: Section I, which collects general information about the facility, and Section II, which collects individual person data for juvenile offenders held at the facility.

This document includes the response rates and describes the imputation methodology that we used to make complete data sets for analytical purposes. Chapter II gives a brief description of the changes during the 2013 data collection cycle. We summarize the numbers of facilities and records on the 2013 imputed file in Chapter III. Chapter IV describes the records eligible for imputation. In Chapter V, we discuss facilities, referred to as critical item facilities, which were only able to respond to a critical subset of the requested data. Chapter VI lists the item response rates. We did not impute for every item in the questionnaire, and Chapter VII covers the items that were eligible for imputation.

The discussion of imputation rates is in Chapter VII. As described above, the unit response rate is high and leads to low imputation rates for Total Persons, Total Adults, Total Juveniles, Total Juvenile Offenders, and Total Juvenile Nonoffenders, as seen in Chapter VII.

Exercise caution when using State data over time. There was a marked increase in high imputation rates for 2007. The exact imputation rates by State for 2007 are in Attachment G of the 2007 imputation documentation. Attachment B of this document shows the exact imputation rates by State for 2013. Highlighted Items have imputation rates that exceed 30 percent; exercise caution when using these data. Attachment C shows the items within each State with imputation rates of more than 30 percent for the period from 1997 through 2013.

A description of the imputation methodology follows in Chapters IX through XII. Chapter XIII discusses quality checks performed after the imputations. Chapter XIV discusses other programming notes, which will be useful when running the imputations for the next collection. Chapter XV discusses issues about comparing the data over time. Chapter XVI summarizes issues to consider for the next collection. References are included in Chapter XVII.

II. Summary of Changes during 2013 Data Collection

There were quite a few changes for the 2013 CJRP:

- General facility information questions from the Juvenile Residential Facility Census were added to Section I of CJRP.
- Records for facilities that are temporarily closed, permanently closed, or out-of-scope are now included on the final imputed file.
- CJRP variable names are more descriptive.
- The way that facility type is assigned in CJRP imputation processing now more closely matches the way that facility type is assigned for JRFC imputation processing.

- More questions in Section I are imputed.
- A "special handling" critical item status was used for the 2013 CJRP.
- The values of the status flag for the 2013 CJRP are different than they were in the 2011 CJRP.
- The values of the imputation flags have changed, to provide more details on the methods used.

Historically, the general facility information questions in Section I of CJRP have been a smaller set than the general facility information questions on the Juvenile Residential Facility Census (JRFC). The JRFC is a mail canvass census that occurs in alternate years from the CJRP. JRFC collects more information about the facilities that hold juvenile offenders. General facility information questions have been added to Section I of the 2013 CJRP.

OJJDP and juvenile justice researchers want to be able to track juvenile residential facilities over time. Adding more general facility information questions to CJRP will help researchers track changes over time.

To help with longitudinal analysis, the 2013 CJRP final imputed file now includes records for facilities that were temporarily closed, permanently closed, or out-of-scope during the 2013 data collection.

As mentioned on the first page of this memorandum, the 2013 CJRP variable names are more descriptive. See the final record layout for more details.

The way that the facility type question is handled in CJRP has differed from how it was handled in JRFC. For 2013, the way that facility type is assigned in CJRP imputation processing now more closely matches the way that facility type is assigned for JRFC imputation processing. More detail is provided in a later section of this document. Census provides data tables with each year's final file. The CJRP table package has been updated to include tables that refer to the new questions.

Historically, the only questions in Section I of CJRP that were imputed were the check box questions associated with the population counts, the population counts, and the facility type question. The CJRP imputation system has been updated to impute more of the general facility information questions in Section I, in a manner similar to how those questions are imputed in JRFC.

The CJRP has used a hot-deck imputation methodology since 2003. Facilities were classified as non-critical item facilities if they answered most survey items. The hot-deck handled item nonresponse on the juvenile roster in Section II. Facilities were classified as critical item facilities if they only answered critical item questions, which are discussed in a later section of this document. Critical item facilities provided very little information about the offenders held, so a separate set of hot-deck programs was used to impute juvenile offenders, taking care not to impute multiple identical offenders in the same facility. Critical item facilities may have reported that they only held one sex, or all the offenders had the same adjudication status, or all the offenders were status offenders. In 2013, the analysts asked some critical item facilities to report racial distributions for the juvenile offenders, or percentage of juvenile offenders by offense code. Special hot-deck programs were written to deal with these "special handling" critical item facilities.

The status flag on the 2013 CJRP final imputed file uses the same coding scheme as the status flag on the 2012 JRFC final imputed file. Please note that the meaning of the values of the status flag has changed since the 2011 CJRP final imputed file.

The values of the imputation flags have changed, to provide more details on the methods used. The imputation flag values are also similar to those used for the JRFC file.

III. Summary of the file

Table 2. Summary of the facilities on the 2013 final imputed file

101	permanently closed facilities
22	temporarily closed facilities
67	out-of-scope facilities
19	tribal facilities
11	territorial facilities
2,263	nontribal facilities in the 50 states and District of Columbia
2,483	facilities on the 2013 CJRP final imputed file

Table 3. 2013 CJRP counts (nontribal facilities in the 50 states and the District of Columbia)

65,756	people in residential placement
367	adults
65,389	juveniles
54,148	juvenile offenders
11,241	juvenile nonoffenders
2,263	nontribal facilities in the 50 states and District of Columbia

[The program summarize_imputed_file_counts.sas produces the counts in this section.]

IV. Records Eligible for Imputation

In previous versions of CJRP, we imputed missing data for all facilities and all offender records. Starting with the 2010 CJRP, OJJDP requested that we not impute missing data for tribal facilities or for offenders in tribal facilities.

[Tribal facilities face special challenges, which is one reason that we do not impute them. The reader is directed to "*From Broken Homes to a Broken System*", written by Sari Horwitz and published in the Washington Post on November 28, 2014, and accessible online at http://www.washingtonpost.com/sf/national/2014/11/28/from-broken-homes-to-a-broken-system/.]

The 2010 CJRP was the first cycle to attempt to collect data from facilities in American Samoa, Guam, Northern Marianas Islands, Puerto Rico, and the Virgin Islands. OJJDP and Census agreed that we would not impute missing data for territorial facilities or for offenders in territorial facilities.

The 2013 CJRP has a 2013 status flag in column 1205. Table 4 shows the values of the status flag. Records eligible for imputation in the 2013 CJRP have the 2013 status flag set to 1, 2, or 3.

Table 4. Values for the 2013 Status Flag

2013 status flag value	Description
1	State-operated public facility in the 50 states or District of Columbia
2	Locally-operated public facility in the 50 states or District of Columbia
3	Private facility in the 50 states or District of Columbia
4	Tribal facility (missing data are not imputed)
5	Territorial facility (missing data are not imputed)

V. Critical Item Facilities

In follow-up interviewing, CJB attempted to collect as much data as possible to fill in both sections of the questionnaire. The following data items were critical:

Section I:

- Question 9 (type of facility)
- Question 14a and 14b (total persons assigned to beds in the facility)
- Question 15 (number of persons age 21 or older assigned to beds in the facility)
- Question 17a and 17b (number of offenders under age 21 assigned to beds in the facility)
- Question 18a and 18b (number of nonoffenders under age 21 assigned to beds in the facility)

Section II:

- Question 2 (whether facility is all-male, all-female, or holds both sexes)
- Question 5 (placement agency)
- Question 6 (placement agency's government level)
- Question 7 (offense code)
- Question 8 (state or territory where offense committed)
- Question 9 (adjudication status)

Table 5 shows the values for the critical items field.

Table 5. Values for Critical Items Field

Critical items field value	Meaning
blank	Not eligible for imputation.
0	Facility is neither a critical item facility nor a refusal.
1	Facility responded only to the critical items.
2	Facility responded to Section I of the questionnaire, but date of birth, offense, and date of admission are missing for all records in Section II of the questionnaire, while the reported characteristics are the same for every juvenile offender in the facility.
3	Facility is a refusal; we imputed all data on the file for that facility.
4	Special handling is required to impute juvenile offenders in these facilities. CJB collected percentage distributions on selected offender characteristics.

The critical items field is column 1193 on the data file.

Facilities with the critical items field sent to 1 have only one record per facility on the edited file, and the information in Section II for those facilities is used to generate the juvenile offender roster for each facility.

Facilities with the critical items field set to 2 are imputed in the same manner as facilities with the critical items field set to 1. When the date of birth, offense, and date of admission are missing for every juvenile offender in the facility, and the reported characteristics are the same for every juvenile offender in the facility, we have to impute for every juvenile offender in the facility, and we want to avoid using the same donor repeatedly within the facility.

Refusal facilities are also imputed in the same manner as facilities with the critical items field set to 1, to minimize the number of records within a facility imputed using the same donor. The critical items field value of 3 is the way to readily identify refusals on the file that were eligible for imputation.

Facilities with the critical items field set to 4 require special handling. The analysts collected percentage distributions of juvenile offenders by sex, or by race, or by offense, or by adjudication status. The programs developed to perform the hot-deck imputation were designed based on the nonresponse patterns observed in the 2001 CJRP file. The 2001 CJRP file had two types of nonresponse patterns: items missing within a reported juvenile offender record, or the roster in Section II is completely missing (critical items field = 1 or the facility is a refusal). As the options for nonresponse patterns increase, more and more special handling is required for each data collection.

VI. Item response rates

We calculated the item response rates for the 2013 CJRP by looking at the flag values after imputation. 2,263 nontribal facilities in the 50 states and the District of Columbia held juveniles on reference day. The calculations consider skip patterns. If a facility was skipped out of a question on the form, they

were not counted as an item nonrespondent. For example, if the facility answered No to the question asking if they held juveniles on reference day for reasons other than offenses (question 18a in Section I), they were not considered an item nonrespondent for question 18b because they were instructed to skip question 18b.

Table 6. 2013 CJRP Item Response Rates

Variable	Response rate	Variable	Response rate
Larger_Agency	92.4	Non_Offense	92.4
Own	88.4	Number_Non_Offense	92.4
Own_Level	88.4	Kid_Sex	86.8
Operator	92.2	Kid_Birth_Month	83.4
Operator_Level	92.2	Kid_Birth_Day	83.4
Treatment	90.7	Kid_Birth_Year	83.3
Treatment_Type	90.7	Age	83.2
Foster_Care	90.5	Kid_Race	81.5
Independent_Living	90.3	Kid_Placed_By	86.0
Facility	93.5	Kid_Offense	78.7
Overflow	91.2	Kid_Adjudication_Status	79.4
Locked_Room	90.6	Kid_Admitted_Month	82.9
Locked_Reason	90.6	Kid_Admitted_Day	82.9
Security	91.1	Kid_Admitted_Year	82.1
Facility_Locked	90.9	Stay	82.0
Locked	90.9		
Locked_Outside	90.9		
Any_Beds	92.4		
Number_Assigned	92.4		
Number_21_Older	92.4		
Any_21_Under	92.4		
Number_21_Under	92.4		
Under_21_Offense	92.5		
Number_Offense	92.5		

[The program CJRP_response_rates.sas produces the data in this section.]

VII. Questionnaire Items Eligible for Imputation

The following items were eligible for imputation in the 2013 CJRP. See the notes at the end of Table 7 for descriptions of the codes used in the imputation methods column.

Table 7. Items Eligible for Imputation

Question	Concept	Imputation methods
Section I		
Questions 1a, 1b	Facility part of larger agency	E
Questions 2a, 2b, and 3	Who owns this facility	B
Questions 4a, 4b, and 5	Who operates this facility	B
Questions 6a and 6b	Treatment provided at facility	B, E
Question 7	Foster care	B, E
Question 8	Independent living arrangements	B, E
Question 9	Type of facility	B, E
Question 10	Overflow detention population	A, B, E
Questions 11a and 11b	Locked sleeping rooms	B, E
Question 12	Security features	B, E
Questions 13a, 13b, and 13c	Locked outside doors	B, E
Questions 14a and 14b	Total persons assigned to beds in the facility	A
Question 15	Number of persons age 21 or older assigned to beds	C, D, H
Questions 16a and 16b	Number of persons under age 21 assigned to beds	A
Questions 17a and 17b	Number of offenders under age 21 assigned to beds	C, D, H
Questions 18a and 18b	Number of nonoffenders under age 21 assigned to beds	C, D, H
Section II		
Question 2	Juvenile offender's sex	F
Question 3	Juvenile offender's birth date	F, G
Question 4	Juvenile offender's race	F
Question 5	Placement agency	F
Question 7	Juvenile offender's most serious offense code	F
Question 9	Juvenile offender's adjudication status	F
Question 10	Juvenile offender's date of admission to the facility	F, G

NOTES:

A: Data derived from response to other variables (flag=2).

B: Data pulled forward from prior year JRFC (flag=20).

C: Data imputed using growth rate applied to prior year CJRP data (flag=21).

D: Data imputed using growth rate applied to prior year JRFC data (flag=22).

E: Data pulled forward from prior year CJRP (flag=25).

F: Data imputed using hot-deck (flag=26).

G: Month or day was randomly assigned (flag=27).

H: Data imputed using mean value (flag=28).

VIII. Imputation Rates

Table 8 and Table 9 show the facility imputation rates for Section I. The facility imputation rate is

$$\frac{Number\ of\ facilities\ with\ imputed\ data\ for\ Section\ I\ item}{Number\ of\ facilities\ eligible\ for\ imputation\ in\ CJRP\ data\ file} \times 100.$$

The facility imputation rate is not necessarily the same as the facility nonresponse rate.

Table 8. CJRP Section I Item Imputation Rates by Year

Item	Percent Imputed By Year					
	2003	2006	2007	2010	2011	2013
Total persons	0	0	0.3	7.1	4.6	7.6
Adults	0	0	0.3	7.1	4.6	7.6
Juveniles	0	0	0.3	7.1	4.6	7.6
Juvenile offenders	0	0	0.3	7.1	4.6	7.5
Juvenile nonoffenders	0	0	0.3	7.1	4.6	7.6

Table 9. 2013 CJRP Imputation Rates for Items in Section I Not Previously Imputed

Item	Percent imputed 2013
Larger agency	5.0
Own	8.0
Own level	8.0
Operator	5.9
Operator level	5.9
Treatment	9.1
Treatment type	9.1
Foster care	9.2
Independent living	9.5
Facility type	6.5
Overflow	8.6
Locked room	9.1
Locked reason	9.1
Security	5.6
Facility locked	8.9
Locked	8.9
Locked outside	8.9

Table 10 shows the item imputation rates for Section II. The item imputation rate is:

$$\frac{Number\ of\ juvenile\ offender\ records\ with\ imputed\ data\ for\ item}{Number\ of\ juvenile\ offender\ records\ eligible\ for\ imputation\ in\ CJRP\ data\ file} \times 100.$$

The item imputation rates for Section II are the same as the item nonresponse rates.

Table 10. CJRP Section II Item Imputation Rates by Year

Item	Percent Imputed By Year					
	2003	**2006**	**2007**	**2010**	**2011**	**2013**
Sex	2.9	3.5	7.5	7.1	6.1	13.2
Birth month	10.2	10.8	20.3	11.5	11.6	16.6
Birth day	10.2	10.8	20.3	11.8	11.7	16.6
Birth year	10.1	10.8	20.3	11.4	11.6	16.7
Race	11.0	11.1	20.6	11.3	11.6	18.5
Placed by	2.4	2.5	2.8	8.0	7.0	14.0
Offense	12.5	13.1	23.2	14.0	15.0	21.3
Adjudication status	4.9	5.7	8.5	9.1	8.9	20.6
Admitted month	9.8	10.8	20.3	11.3	12.4	17.1
Admitted day	9.8	10.9	20.3	11.6	12.5	17.1
Admitted year	9.6	10.8	20.3	11.3	12.4	17.9

There are 54,148 juvenile offender records eligible for imputation (offenders held in nontribal facilities in the 50 states and District of Columbia) on the imputed file. 14,574 (26.9 percent) of those offender records have at least one Section II item imputed.

Each item has an imputation flag on the imputed file. See the record layout for the explanation of the imputation flag values.

PSSMB calculates the age of the juvenile offender. The age imputation flag is set to 26 or 27 when any part of the birth date (month, day, or year) has been imputed.

PSSMB calculates the length of stay of the juvenile offender. The length of stay imputation flag is set to 26 or 27 when any part of the admission date (month, day, or year) has been imputed.

[The program tabulate_nonresponse_over_time.sas produces the tables for Section I and Section II item imputation rates.]

IX. Collapsed Facility Type Codes

For imputation purposes, we need to assign a collapsed facility type code (Cat) to every facility. Cat is the variable on the 2013 CJRP file that contains the collapsed facility type code (column 1207). We only assigned Cat codes to nontribal facilities in the 50 states and District of Columbia in the 2013 CJRP file, because we did not impute the tribal facilities or the territorial facilities.

Please note that the method of assigning collapsed facility types for 2013 is different than it was in previous years. The author has been the mathematical statistician responsible for imputing missing data in CJRP beginning with the 2003 collection. The author had the same role for the 2012 JRFC. While working with the 2013 file, the author asked why CJRP and JRFC handle the facility type question differently. Unfortunately, there does not seem to be any surviving documentation explaining the reason for the differences.

The following procedure assigned the 2013 Cat code:

Check to see if the facility checked at least one facility type box for the 2013 CJRP. If so, the 2013 answers were used to assign the Cat code.

If none of the 2013 facility type answers were checked, pull forward the 2012 JRFC answers, if at least one box was checked.

If none of the 2013 facility type answers were checked, and none of the 2012 JRFC answers were checked, pull forward the 2011 CJRP answers, if at least one box was checked.

We assigned the collapsed facility type based on the hierarchy shown in Table 11. If the facility checked more than one box, the box listed highest in the table determines the collapsed facility type code. If an agency checks boxes that indicate it is both a reception center and a training school, the assigned code is training school, since training school is higher up in the hierarchy than reception center is.

The CJB analysts provided guidance in assigning the collapsed facility type if only the 10th box, Facility_Other, was checked.

Table 11. Hierarchy Used to Assign Collapsed Facility Type Code

Cat	Collapsed Facility Type	Check box on 2013 form [Section 1 Question 9]
3	Training School	02 (Facility_Training_Long)
0	Detention Center	01 (Facility_Detention)
2	Reception / Diagnostic Center	03 (Facility_Reception_Diagnostic)
5	Ranch, Camp, or Farm	06 (Facility_Boot_Camp), 07 (Facility_Ranch_Camp_Wilderness)
1	Shelter	08 (Facility_Runaway_Homeless), 09 (Facility_Other_Shelter)
6	Halfway House / Group Home	04 (Facility_Group_Halfway), 05 (Facility_Residential)

[The program assign_collapsed_facility_type.sas creates the Cat code.]

X. Imputation Methodology for Section I Data

Section I contains both check box questions and questions about population counts. The methods used to impute Section I data are described in more detail below.

Missing data for check box questions

If the question was not answered for the 2013 CJRP, but was asked on either the 2012 JRFC or the 2011 CJRP, we pulled forward answers if they were provided on the prior year file. If no prior year data existed for the question, we left the answer as refusal or don't know and set the imputation flag to show that the value is refusal or don't know.

We analyzed the patterns of nonresponse for the check box questions before doing the imputations. That helped us to simplify the programming. Note that if the nonresponse patterns change for the 2015 CJRP, the program that imputes the answers for the check box questions will need to be updated appropriately.

Table 12 shows the 2013 check box questions imputed, and whether or not the item was on the prior JRFC or prior CJRP. Note that we imputed some questions as groups, so that the skip patterns would be preserved. Also, note that as the questions asked on JRFC and CJRP change over time, the imputation program that imputes the answers for these questions will need to change.

The 2013 CJRP processing system did not contain flags for the check box questions. Most of the check box questions were set so that the value of 1 indicates that the box was checked. On the "mark all that apply" questions, we assume that if at least one box was checked, the question was answered completely. If none of the boxes are checked, we attempt to impute an answer.

Table 12. Section I Check Box Questions over Time

2013 CJRP Question	On 2012 JRFC?	On 2011 CJRP?
1a – Facility part of larger agency?		YES
2a, 2b, 3 – Who owns this facility?	YES	
4a, 4b, 5 – Who operates this facility?	YES	
6a, 6b – Treatment provided inside facility	YES	YES
7 – Facility provides foster care?	YES	YES
8 – Facility provides independent living arrangements?	YES	YES
10 – Facility house overflow detention population?	YES	YES
11a, 11b – Juveniles locked into sleeping rooms?	YES	YES
12 – Facility have security features to confine juveniles?	YES	YES
13a, 13b, 13c – Outside doors locked?	YES	YES

Missing data for the population counts

We calculated average 1-year growth rates by imputation cell for facilities that reported the population counts (persons age 21 or older assigned to beds, offenders under age 21 assigned to beds, and nonoffenders under age 21 assigned to beds) in both the 2013 CJRP and the 2012 JRFC.

We calculated average 2-year growth rates by imputation cell for facilities that reported the population counts in both the 2013 CJRP and the 2011 CJRP.

The imputation cell is all facilities within a given state and Cat (collapsed facility type) code. If there are fewer than 15 respondents or less than 70 percent response in the imputation cell, we collapse the imputation cell to the national level.

If the population count is missing in the 2013 CJRP, but the facility has a value for the item in the 2012 JRFC, we impute the 2013 value by applying the 1-year growth rate to the 2012 value and then rounding to a whole number.

If the population count is missing in the 2013 CJRP, and the facility does not have a value for the item in the 2012 JRFC, but does have a value for the item in the 2011 CJRP, we impute the 2013 value by applying the 2-year growth rate to the 2011 value and then rounding to a whole number.

If the population count is missing in the 2013 CJRP, and the facility does not have a value for the item in either the 2012 JRFC or the 2011 CJRP, we impute the 2013 value by rounding the mean value reported in the imputation cell in 2013 to a whole number.

If the number of persons under age 21 assigned to beds is missing, we derive the value by summing the values of the number of offenders under age 21 assigned to beds and the number of nonoffenders under age 21 assigned to beds.

If the total persons assigned to beds is missing, we derive the value by summing the values of the number of persons age 21 or older assigned to beds and the number of persons under age 21 assigned to beds.

In all cases, the imputation flags are set to show the method used to impute the value.

[The program impute_counts.sas does the Section I population imputations. The program impute_section_1_check_boxes.sas does the Section I imputations for the check box questions.]

XI. Imputation Methodology for Item Nonresponse in Section II Data

Changes in methodology over time

The basic methodology for dealing with item nonresponse is still the hierarchical hot-deck, used in the 2003, 2006, and 2007 CJRP collections. In 2007, we imputed juvenile offenders in tribal facilities separately from juvenile offenders in all other facilities. Starting In 2010, we do not impute juvenile offenders in tribal facilities or in territorial facilities. Juvenile offenders in tribal facilities or territorial facilities are not eligible to be donors for juvenile offenders in nontribal facilities in the 50 states and District of Columbia.

If the offense code is missing, the imputation system fills in the missing offense based on the code provided in the juvenile offender record. Code 97 indicates an unknown offense for both underage persons and adults, code 98 indicates an unknown offense for underage persons only, and code 99 indicates unknown offense. In previous years of CJRP, we used that missing offense code to guide the acceptable imputed offense code imputations. See Table 13 to understand how we impute missing offense codes.

Table 13. How We Impute Missing Offense Codes

Missing offense code	Acceptable imputed offense code
97	Offenses against property, offenses against persons, drug-related offenses, offenses against the public order, or probation or parole violation (offense codes 10 through 50)
98	Offenses for underage persons only (offense codes 60 through 69)
99	Any valid offense code (offense codes 10 through 69)

Status offenders are juveniles who have committed offenses for underage persons only. The Juvenile Justice and Delinquency Prevention Act prohibits the placement of status offenders in secure facilities in most instances. For the purposes of CJRP, we consider any facility that checks either the detention center or training school facility type box a secure facility. We have imputed some status offenders in secure facilities in previous CJRP collections, but will no longer do so. To prevent this from happening in the 2010 CJRP and future collections, we review the missing offense codes for offenders in facilities that checked either the detention center or training school facility type boxes, and we force the missing offense code to be 97, which means that the imputed offense will not be a status offense.

We note that secure facilities have reported juveniles with status offenses. We do not have an edit that verifies that a secure facility holds status offenders. In discussions with OJJDP and various stakeholders, we decided that we would accept the reported data as is. 175 facilities in the 2013 CJRP final imputed file reported 534 status offenders.

Randomly imputing the day of birth, month of birth, or day of admission
The first missing items that we impute are:

- kid_admitted_day if both kid_admitted_month and kid_admitted_year are reported,
- kid_birth_month if kid_birth_day is missing but kid_birth_year is reported, and
- kid_birth_day if both kid_birth_month and kid_birth_year are not missing.

When a facility reports both kid_admitted_month and kid_admitted_year, but kid_admitted_day is missing, we impute kid_admitted_day by randomly selecting a day based on kid_birth_month. This prevents the imputation of days that do not exist, such as February 30th.

Age and stay calculations
The reference date of the questionnaire is October 23, 2013. Some facilities may report based on an alternative reference date. If an alternative reference date is used, the alternative reference date field contains that date (columns 1194 through 1201).

We calculate an age for all records where it is possible to do so. If the facility is reporting based on an alternative reference date, we calculate the age of the juvenile offender as of the alternative reference date; otherwise, we calculate the age of the juvenile offender as of October 23, 2013.

End users calculate a length of stay variable, based on the date that the juvenile offender enters the facility. If a facility is reporting based on an alternative reference date, we calculate the length of stay as of the alternative reference date; otherwise, we calculate the stay as of October 23, 2013. We calculate length of stay for all records where it is possible to do so.

[The imputation of kid_admitted_day when we have reported kid_admitted_month and kid_admitted_year, the imputation of kid_birth_month and / or kid_birth_day when kid_birth_year is reported, and the calculation of age and stay when possible is performed in the program create_flags.sas]

Hierarchical hot-deck imputation for item nonresponse
The imputation methodology for item nonresponse in Section II data is hierarchical hot-deck. We match the record requiring imputation to a pool of records where none of the information is missing, and then we select a donor record. We replace the missing values in the record requiring imputation with the values from the donor record. We first try the match on all available information. If we do not find a match, we make the match less restrictive until we find a donor record.

The definition of records where none of the information is missing includes those records for which we only imputed kid_birth_month, kid_birth_day, or kid_admitted_day. These records are considered

eligible donors because if kid_birth_year is not imputed, we have a good idea how old the offender is, and if kid_admitted_month and kid_admitted_year are not imputed, we have a good idea how long the offender has been held in the facility.

The available information for matching is the Cat code, the state where the facility is located, and any reported data for kid_sex, age, kid_race, kid_placed_by, kid_offense, kid_adjudication_status, and length of stay.

When imputing kid_adjudication_status, those records with kid_adjudication_status = 08 (convicted in adult criminal court) are **never** part of the pool of potential donors. We confirmed with the sponsor that there should not be imputed values of 08 (convicted in adult criminal court) on the final data file.

The advantage of the hierarchical hot-deck method is that imputed values should be consistent with the rest of the juvenile offender record, because the donor record is a juvenile offender record that has passed the edits.

XII. Imputation Methodology for Section II Data for Critical Item Facilities

Changes in methodology over time

The basic methodology for dealing with nonresponse in critical item facilities is the same as it was in the 2003 and 2006 CJRP collections. For the 2007 CJRP, we imputed juvenile offenders in tribal facilities separately from juvenile offenders in non-tribal facilities. Beginning with the 2010 CJRP, Census was instructed not to impute juvenile offenders in tribal facilities. The 2010 CJRP is also the first time we are collecting data from territorial facilities. It was decided that we would not impute juvenile offenders in territorial facilities.

We introduced a new classification of critical item facility in 2007. We noticed in the 2006 CJRP that some facilities would provide a roster of juvenile offenders, but not much information about the individual offenders. If the date of birth, offense, and date of admission are missing for all the juvenile offenders in a facility, we really do not have much information to work with.

If we try to impute those records as merely having item nonresponse, we run the risk of using the same donor repeatedly within the facility, creating what looks like duplicate records in the facility. To minimize that risk, we now handle such facilities like critical item facilities, and have assigned them a code of 2 (Facility responded to Section I of the questionnaire, but date of birth, offense, and date of admission are missing for all records in Section II of the questionnaire) in the critical item field.

We introduced a new classification of critical item facility in 2013. Some facilities refused to fill out Section II for their juvenile offenders. Instead, the analysts collected percentage distributions for some characteristics (percentage of offenders by sex, percentage of offenders by race, percentage of offenders by offense code, etc.) of the juvenile offenders. Unfortunately, the imputation system was

not designed to impute missing data this way. The analysts had to generate records that matched those percentages, and then we created special programs to impute these records appropriately. These records have the critical item field set to 4. If the current imputation system is used for the 2015 CJRP, we recommend that the number of "special handling" facilities be kept as small as possible, because they are difficult to deal with.

Background

The edited file has one record per critical item facility if the critical item field is set to 1 (Facility responded to only the critical items) or 3 (Facility is a refusal; all data on the file for that facility has been imputed if the facility is a non-tribal facility in the 50 states or District of Columbia).

If the critical item facility holds juvenile offenders, the Section II data on the record refers to all the juveniles held by that facility. The analysts in CJB tried to find out as much as possible about the types of juveniles held in critical item facilities.

If kid_sex = 1 in Section II of the critical item facility record, that means that the facility only holds males, while kid_sex = 2 means that the facility only holds females, and kid_sex = 3 means that the facility holds both males and females.

Some critical item facilities were unable to indicate for which types of offenses they held offenders, so kid_offense = 88 or 99 for those critical item facilities. Some critical item facilities were able to indicate that they held offenders for offense codes applicable to both underage persons and adults, so kid_offense = 97 for those critical item facilities. Some critical item facilities were able to indicate that they held offenders for those offense codes applicable to underage persons only, so kid_offense = 98 for those critical item facilities.

We generate the required number of juvenile offender records for each critical item facility and assign kid_id to each juvenile offender record for the critical item facility. Kid_id is a 15 character juvenile identifier. We number the records sequentially within each critical item facility, starting with 000000000000001. We also replicate the available reported information for each juvenile offender record within the critical item facility.

If we know that the facility only holds males or only holds females, we do not consider kid_sex imputed.

The edited file may have multiple records if the critical item field is set to 2 (Facility responded to Section I of the questionnaire, but date of birth, offense, and date of admission are missing for all records in Section II of the questionnaire). For example, the facility may have two sets of offenders placed in the facility by two different types of authorities. If date of birth, offense, and date of admission are missing for all the offenders in that facility, we do not have much information to work with. We handle these facilities as critical item facilities rather than item nonresponse facilities to minimize the amount of duplication in the imputed data.

The edited file may have multiple records if the critical item field is set to 4 (Special handling is required to impute juvenile offenders in these facilities, CJB collected percentage distributions on selected offender characteristics). The juvenile offender records in these facilities are missing date of birth and date of admission, and thus look similar. Because the reported values are not distinct, these records require special handling, so that we do not impute multiple records that look like duplicates within the facility.

Hierarchical hot-deck for critical item facilities

We modified the hierarchical hot-deck methodology used for item nonresponse for critical item facilities. Instead of finding a matching donor pool for an individual juvenile offender record, we find a donor pool for the critical item facility and then randomly select donors from the pool without replacement. This modified version of the hierarchical hot-deck requires that the donor pool have at least as many juvenile offenders as the critical item facility. This requirement ensures we do not duplicate the imputed juvenile offender records for the critical item facility within the facility.

The available information for matching is the Cat code, the state where the facility is located, and any reported data for kid_sex, age, kid_race, kid_placed_by, kid_offense, kid_adjudication_status, and stay.

When imputing kid_adjudication_status, those records with kid_adjudication_status = 08 (convicted in adult criminal court) are **never** part of the pool of potential donors. OJJDP does not want any imputed values of convicted in adult criminal court on the imputed file.

The advantage of the hierarchical hot-deck method is that imputed values should be consistent with the rest of the juvenile offender record, since the donor record is a juvenile offender record that has passed all the edits.

In the 2003 and 2006 CJRP files, we only used the top two levels of the hierarchical hot-deck for critical item facilities. For the 2007 CJRP, we used as many as four levels of the hierarchical hot-deck for critical item facilities. We had to use four levels in states with large numbers of juvenile offenders held in critical item facilities where the facility reported a relatively uncommon value for who placed the juvenile in the facility. In the 2010, 2011, and 2013 CJRP files, we only used the top two levels of the hierarchical hot-deck for critical item facilities.

XIII.   Quality Checks Performed After Imputation

The program final_qc_check.sas runs after the imputation system, to check that all flags are properly set and that all imputed fields have valid values. Specifically, the program checks the following:

- We assigned collapsed facility type. (We use collapsed facility type as a matching variable in the hierarchical hot deck.)
- No juvenile offender is 21 or older on the final file.
- Every juvenile offender has a nonnegative value for length of stay.
- All character variables have valid values.

- None of the juvenile characteristics eligible for imputation is missing.
- The number of juvenile offender records is the same as the number of juvenile offenders given in Section I of the questionnaire.
- The number of juveniles plus the number of adults is the same as the total given in Section I of the questionnaire.
- The number of juvenile offenders plus the number of juvenile nonoffenders is the same as the number of juveniles given in Section I of the questionnaire.
- The answer to "Any persons assigned to beds?" is consistent with the total assigned to beds.
- The answer to "Any persons under age 21 assigned to beds?" is consistent with juvenile count.
- The answer to "Any persons under age 21 assigned to beds because they were charged with or court-adjudicated for an offense?" is consistent with juvenile offender count.
- The answer to "Any persons under age 21 have assigned beds for reasons other than offenses?" is consistent with juvenile nonoffender count.
- All facility records have values for total, adults, juveniles, juvenile offenders, and juvenile nonoffenders.
- We did not impute an adult adjudication status when the offense is one for underage persons only.

XIV.   Other Programming Notes

The imputation system for the 2003 through 2011 CJRP files resided on a Linux server. There were 167 SAS programs and 1 Perl program for 2011. The 2011 CJRP imputation system was run with a KornShell Script, and took 9 minutes.

The author's account on the Linux server was terminated in September 2013, and all files were moved to a Windows server. The author now uses SAS in the Census Bureau's Virtual Desktop Infrastructure (VDI). The 2011 CJRP system was converted for use on Windows, and the author noticed that it took 30 minutes to run late in the day. If the author needs to rerun the imputations during core business hours, the system takes at least an hour to finish.

The Perl script was used on the Linux server to automatically check all the log files and report any problems. Perl is not available on the SAS servers in VDI, so the author had to quickly find other solutions. The author created a SAS driver program to replace the KornShell script. The driver calls 232 SAS programs in sequence.   65 new programs were written for the 2013 CJRP, to handle new patterns of nonresponse in Section II that had not been observed in previous cycles, or to do the special handling of critical item facilities. Attachment D shows the nonresponse patterns for the juvenile roster data. Note there are some patterns where only part of the birth date or part of the admission date is missing.

The SAS driver program routes all the output to an HTML file, and routes the log to an alternate file. The author uses UltraEdit or Notepad++ to search the log quickly for any occurrences of "ERROR" or "WARNING". The author would like to point out that Notepad++ was extremely useful in editing

multiple SAS programs at once to convert them from the Linux environment to the Windows environment.

Control.sas sets up a SAS data set that stores the values for macro variables used in the find___.sas and match___.sas programs. This arrangement makes the hierarchical hot-deck programs much easier to use over time. Instead of hard coding the survey year or missing values for each item in Section II in the hot-deck programs, the programs get the macro variable values from the SAS data set.

Control.sas also includes the seed for the random number generator. By storing the seed in a SAS data set, we can rerun the imputation system at any time and get the same results. The SAS programs that use the seed for the random number generator also update the seed and store it, so we use a different seed in each program that needs random numbers.

The programs that create the data sets for the current year CJRP, the prior year CJRP, and the prior year JRFC are specific to each year, so we have to edit them for each census. 2013_edited_qa.sas checks the edited file for any unusual values before imputation. The program lists problems that need to be resolved before imputation, such as the number of juvenile offender records for a given facility not matching the reported number of juvenile offenders in Section I for that facility.

Juvenile_offender_item_nonresponse_patterns.sas creates a listing showing the nonresponse patterns for juvenile offender records in facilities that reported more than the critical items.

Juvenile_offender_item_imputation_report.sas opens the file juvenile_offender_item_imputation_report.txt. The text file shows the results of the hierarchical hot-deck from each find___.sas program.

Critical_item_kid_imputation_report.sas opens the file critical_item_kid_imputation_report.txt. The text file shows the results of the hierarchical hot-deck from each match___.sas program.

Impute_critical_item_kids.sas generates the correct number of juvenile offender records for each critical item facility and creates a listing showing the nonresponse patterns for juvenile offender records in critical item facilities.

Three SAS programs run checks on the final imputed file to ensure that the imputation processing system has successfully completed.

XV. Caution When Comparing State Data over Time

In the 2003 CJRP documentation, we noted that critical item facilities held 84.6 percent of all juvenile offenders in DC, which meant that we imputed an unusually large percentage of the data in DC for 2003. In 2007, critical item facilities held 95.7 percent of all juvenile offenders in DC. We do not recommend comparing juvenile offenders held in DC facilities across the 2003, 2006, 2007, and 2010 data collections, due to extreme levels of missing data for the juvenile offenders.

Attachments A and B show some high levels of juvenile roster item imputation for 2013. New Hampshire had 80 percent of their juvenile offenders in facilities that only reported critical items. States with 30 percent or more imputation by item included Arizona, Arkansas (kid_sex, kid_birth_date, kid_race, kid_offense, kid_admitted_date), Colorado, Florida (kid_birth_date, kid_race, kid_offense, kid_adjudication_status, kid_admitted_date), Illinois, Nebraska, New Hampshire, Rhode Island, South Carolina (kid_sex, kid_birth_date, kid_race, kid_offense, kid_adjudication_status, kid_admission_date), Utah, West Virginia, and Wyoming (kid_sex).

Users should be aware the differences in DC data from 2003 to 2006 might be due in part to the high levels of imputation for DC in 2003, and from 2006 to 2007 due to high levels of imputation for DC in 2007, and from 2007 to 2010 due to high levels of imputation for DC in 2007. Similarly, the differences in Colorado, Illinois, Rhode Island, and Wyoming data from 2003 to 2006 may be due in part to high levels of imputation for those states in 2006.

The differences in Arizona, Arkansas, Colorado, Connecticut, Florida, Illinois, Iowa, Maine, Mississippi, Montana, Nevada, New Mexico, New York, South Carolina, Utah, West Virginia, and Wyoming from 2006 to 2007 may be due in part to high levels of imputation for those states in 2007.

The differences in Colorado, Florida, Illinois, Vermont, and West Virginia from 2007 to 2010 may be due in part to high levels of imputation for those states in 2010.

The differences in Colorado, Florida, Illinois, Nevada, and West Virginia from 2010 to 2011 may be due in part to high levels of imputation for those states in 2011.

The differences in Arizona, Arkansas, Colorado, Florida, Illinois, Nebraska, New Hampshire, Rhode Island, South Carolina, Utah, West Virginia, and Wyoming from 2011 to 2013 may be due in part to high levels of imputation for those states in 2013.

Attachment C shows items by state for the 1997 through 2013 CJRP data collections. If the item imputation rate was 30 percent or more for a given year, we show the year in the cell of the table.

[The program nonresponse_by_state.sas produces Attachments A and B, while the program 2013_data_quality_concerns.sas produces Attachment C.]

XVI.   Issues to Consider for the Next CJRP Collection

Previous CJRP data collections included a field called "s2 line number". That field was helpful to refer to individual juvenile offender records within a facility. While the questionnaire does ask the facility to provide an identifier for each juvenile offender record, some facilities do not provide an identifier. We were able to use the s2 line number in previous collections to ensure that the imputation system did not overwrite any reported data. Since the s2 line number field does not exist for 2013, we were unable to perform that check. The analysts and respondents also find s2 line number helpful when an identifier is not provided for the juvenile offender. We recommend including s2 line number for the 2015 CJRP.

Attachment D shows the nonresponse patterns on the juvenile offender roster. We suspect that some facilities may be trying to anonymize their data by withholding a part of the birth date or a part of the admission date. It is tricky to use a hierarchical hot-deck to impute when only part of the date is missing.

There should be some discussion of whether or not to accept percentage distributions for roster data in the future. The CJRP imputation system was originally designed to handle item nonresponse on a reported juvenile roster, or to impute an entire facility's roster when the facility only reported critical items. Special handling is required to deal with other patterns of missing data, and the system already consists of 232 SAS programs. At some point, the imputation system becomes unmanageable.

The increase in missing data, whether due to percentage distributions, critical item facilities, or missing parts of dates, is unsettling. Respondents may not understand the purpose of the data collection, nor how the data are used. There seems to be understandable concern on the part of respondents to protect the data about the juvenile offenders they house. However, respondents may not be aware that quite a bit of policy analysis is done at an aggregate level. For example, see "*Juvenile prison populations fall as states' changes take effect*", by Reid Wilson, published February 1, 2015 in the Washington Post and available online at http://www.washingtonpost.com/blogs/govbeat/wp/2015/01/29/states-see-marked-drop-in-juvenile-prison-populations-as-reforms-take-hold/. We recommend doing more outreach with the 2015 CJRP, letting the facilities know how CJRP data has been used and why it's important every time it's collected.

Future CJRP collections should have a dashboard during data collection, so that the analysts can monitor the amount of critical item facilities and the amount of missing data on the juvenile offender roster. Substantial missing data at the state level is an issue for any sub-national analysis performed on the final imputed file.

XVII.   Kid_offense_location revision after sponsor reviewCJB

OJJDP and the National Center for Juvenile Justice (NCJJ) reviewed the imputed file, and noticed that kid_offense_location was missing more often on the 2013 CJRP file than in previous collections. They directed CJB to call some facilities to see if the data could be reported. 32 facilities with some missing kid_offense_location data reported that they only hold offenders who committed offenses in the state where the facility is located. In addition, facilities in Florida only hold offenders who have committed offenses in Florida. We updated the edited file and reran the imputations and the tables on June 11, 2015. While doing that work, we discovered that two offender records in Florida facilities were coded with kid_offense_location of Hawaii, so we reset kid_offense_location on those records to Florida.

We did not impute kid_offense_location on the 2013 CJRP file, so there is still some missing data.

XVIII.   References

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Attachment A: Percentage of Juvenile Offenders Held in Critical Item Facilities by State of Facility

(Percentages of 30 or more are highlighted)

Facility State	Juvenile Offenders	Percentage in critical item facilities
Alabama	945	15.6
Alaska	192	7.3
Arizona	1,284	**42.8**
Arkansas	752	**36.3**
California	8,011	11.5
Colorado	1,189	**34.7**
Connecticut	281	3.2
Delaware	146	0.0
D.C.	199	25.1
Florida	2,799	**50.8**
Georgia	1,553	4.3
Hawaii	74	0.0
Idaho	498	10.0
Illinois	1,650	**46.4**
Indiana	1,593	0.0
Iowa	970	0.0
Kansas	856	5.3
Kentucky	776	0.0
Louisiana	781	1.7
Maine	151	0.0
Maryland	736	10.9
Massachusetts	509	20.6
Michigan	1,779	5.2
Minnesota	985	13.1
Mississippi	245	16.3
Missouri	1,039	1.9

Facility State	Juvenile Offenders	Percentage in critical item facilities
Montana	173	15.6
Nebraska	597	**38.5**
Nevada	624	11.7
New Hampshire	75	**80.0**
New Jersey	888	1.6
New Mexico	407	17.2
New York	1,770	8.5
North Carolina	545	0.4
North Dakota	171	2.3
Ohio	2,247	1.4
Oklahoma	553	8.9
Oregon	1,104	1.5
Pennsylvania	3,741	25.8
Rhode Island	156	**60.3**
South Carolina	672	**63.4**
South Dakota	336	9.8
Tennessee	749	11.9
Texas	4,355	3.6
Utah	698	**56.7**
Vermont	25	0.0
Virginia	1,568	9.0
Washington	1,015	5.9
West Virginia	654	**41.9**
Wisconsin	843	1.8
Wyoming	189	19.6
TOTAL	54,148	15.9

Attachment B: Section II Item Imputation Rates by State of Facility

(Imputation rates of 30 percent or more have been highlighted)

Note that these item imputation rates are also the item nonresponse rates.

Facility State	Offenders	Kid_sex	Kid_birth_ month	Kid_birth_ day	Kid_birth_ year	Kid_race	Kid_placed_by	Kid_offense	Kid_adjudication_status	Kid_admitted_ month	Kid_admitted_ day	Kid_admitted_ year
Alabama	945	8.6	15.7	15.7	15.7	15.6	10.2	13.0	10.6	16.2	16.2	16.2
Alaska	192	0.0	7.3	7.3	7.3	7.3	0.0	7.3	1.6	7.3	7.3	7.3
Arizona	1,284	42.8	45.7	45.7	45.8	42.8	42.9	43.8	44.4	45.7	45.7	45.7
Arkansas	752	35.2	36.3	36.3	36.3	36.4	8.2	37.8	24.5	37.8	37.8	37.8
California	8,011	12.7	11.6	11.6	11.8	13.8	13.2	20.3	18.5	13.0	13.0	16.5
Colorado	1,189	33.9	35.3	35.3	35.3	87.0	75.6	89.7	89.0	34.7	34.7	34.7
Connecticut	281	0.0	3.2	3.2	3.2	3.2	0.0	3.2	0.0	3.2	3.2	3.2
Delaware	146	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D.C.	199	20.1	25.1	25.1	25.1	25.1	22.1	25.1	22.1	25.1	25.1	25.1
Florida	2,799	9.5	54.0	54.0	54.0	51.7	11.3	58.9	51.1	56.0	56.0	56.0
Georgia	1,553	4.3	4.3	4.3	4.3	4.9	4.3	8.8	4.3	4.3	4.3	4.3
Hawaii	74	0.0	0.0	0.0	0.0	1.4	0.0	0.0	4.1	0.0	0.0	0.0
Idaho	498	8.6	10.0	10.0	10.2	10.2	8.6	10.0	10.4	10.0	10.0	10.0
Illinois	1,650	47.3	46.5	46.5	46.6	46.5	46.4	46.7	47.4	46.4	46.4	46.4
Indiana	1,593	0.0	1.3	1.3	1.3	0.7	0.0	4.1	9.5	1.1	1.1	1.1
Iowa	970	0.0	1.0	1.0	1.0	0.9	0.2	3.1	4.7	0.4	0.5	0.4
Kansas	856	0.8	9.0	9.0	8.9	5.6	0.6	7.5	8.8	5.6	5.4	5.5
Kentucky	776	0.0	0.0	0.0	0.6	1.9	0.0	0.6	0.4	0.1	0.1	0.1
Louisiana	781	1.7	1.9	1.9	2.0	1.8	1.7	2.6	5.2	1.7	1.7	5.2
Maine	151	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Maryland	736	8.7	11.0	11.0	11.0	14.5	8.7	14.5	9.4	11.5	11.5	11.7
Massachusetts	509	13.8	20.6	20.6	20.6	20.6	16.7	21.4	25.0	21.6	21.6	21.6
Michigan	1,779	5.2	5.3	5.3	5.3	8.7	8.5	10.1	15.6	9.5	9.4	8.8
Minnesota	985	13.2	13.7	13.7	13.7	13.6	13.2	14.9	16.0	14.1	14.0	14.5
Mississippi	245	16.7	16.7	16.7	16.3	16.3	16.7	16.3	21.6	16.3	16.3	16.3
Missouri	1,039	1.9	2.0	2.0	2.1	4.0	2.9	5.5	11.5	1.9	1.9	2.1

Attachment B: Section II Item Imputation Rates by State of Facility

(Imputation rates of 30 percent or more have been highlighted)

Note that these item imputation rates are also the item nonresponse rates.

Facility State	Offenders	Kid_ sex	Kid_birth_			Kid_ race	Kid_ placed_ by	Kid_ offense	Kid_ adjudication_ status	Kid_admitted_		
			month	day	year					month	day	year
Montana	173	15.6	15.6	15.6	15.6	17.9	15.6	15.6	15.6	15.6	15.6	15.6
Nebraska	597	**36.5**	**38.5**	**38.5**	**38.5**	**37.2**	**36.5**	**39.0**	**42.7**	**38.5**	**38.5**	**38.5**
Nevada	624	11.7	11.7	11.7	11.7	11.7	11.7	15.2	11.7	11.7	11.7	11.7
New Hampshire	75	**80.0**	**80.0**	**80.0**	**80.0**	**80.0**	**80.0**	**81.3**	**100.0**	**80.0**	**80.0**	**80.0**
New Jersey	888	1.8	1.9	1.9	1.8	2.7	1.7	2.5	2.0	2.3	2.3	17.0
New Mexico	407	17.2	17.2	17.2	17.2	17.2	17.4	17.7	18.7	17.2	17.2	17.2
New York	1,770	6.5	8.6	8.6	8.6	8.2	6.5	19.6	15.3	8.9	8.8	8.9
North Carolina	545	0.4	0.6	0.6	0.6	0.6	0.4	6.6	7.3	0.4	0.4	0.4
North Dakota	171	2.3	2.9	2.9	2.9	2.3	2.3	2.3	6.4	2.9	2.9	2.9
Ohio	2,247	2.1	1.4	1.4	1.7	9.1	1.7	8.4	2.4	1.7	1.7	1.8
Oklahoma	553	9.8	11.8	11.8	8.9	9.2	8.9	14.8	10.8	11.8	11.8	11.8
Oregon	1,104	1.6	2.4	2.4	2.5	2.3	1.6	4.3	4.7	4.1	4.1	4.1
Pennsylvania	3,741	25.8	25.9	25.9	26.1	25.8	25.8	26.8	27.5	26.5	26.5	26.6
Rhode Island	156	**60.3**	**60.9**	**60.9**	**60.9**	**60.3**	**60.3**	**63.5**	**60.3**	**65.4**	**65.4**	**65.4**
South Carolina	672	**37.1**	**67.7**	**67.7**	**67.7**	**63.4**	13.5	**63.4**	**59.5**	**63.4**	**63.4**	**63.4**
South Dakota	336	9.8	9.8	9.8	9.8	9.8	9.8	12.8	12.8	9.8	9.8	10.1
Tennessee	749	11.1	12.0	12.0	11.9	11.3	11.1	13.5	12.1	12.0	12.0	13.2
Texas	4,355	3.6	5.7	5.7	5.7	6.9	5.9	8.5	10.6	4.7	4.7	4.7
Utah	698	**48.9**	**56.7**	**56.7**	**56.7**	**56.7**	**50.7**	**63.0**	**50.7**	**58.9**	**58.9**	**58.9**
Vermont	25	0.0	0.0	0.0	0.0	28.0	0.0	0.0	16.0	0.0	0.0	0.0
Virginia	1,568	9.0	9.0	9.0	9.0	12.3	11.7	15.1	19.0	9.9	9.9	9.9
Washington	1,015	5.9	6.0	6.0	5.9	6.0	6.1	7.5	8.0	6.8	6.8	6.8
West Virginia	654	**41.9**	**43.0**	**43.0**	**43.1**	**44.2**	**42.2**	**43.3**	**45.7**	**42.7**	**42.7**	**42.7**
Wisconsin	843	1.8	1.8	1.8	1.9	1.8	1.8	3.9	7.1	2.6	2.6	2.7
Wyoming	189	**40.2**	16.4	16.4	16.4	15.9	15.9	15.9	16.9	15.9	15.9	15.9
TOTAL	54,148	13.2	16.6	16.6	16.7	18.5	14.0	21.3	20.6	17.1	17.1	17.9

Attachment C: Data Quality Issues in CJRP over Time

1997 through 2013 data collections

(Year is shown in table cell when imputation rate [item nonresponse rate] is 30 percent or more)

State	Sex	Birth			Race	Placed by	Offense	Adjudication status	Admitted		
		month	day	year					month	day	year
Alabama									2001	2001	2001
Alaska											
Arizona							1999				
	2007	2007	2007	2007	2007		2007	2007	2007	2007	2007
	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Arkansas		2007	2007	2007	2007		2007		2007	2007	2007
	2013	2013	2013	2013	2013		2013		2013	2013	2013
California											
Colorado							1999				
							2001				
							2006				
		2007	2007	2007	2007		2007		2007	2007	2007
							2010				
							2011				
	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Connecticut		2001	2001	2001	2001		2001		2001	2001	2001
							2007				
D.C.							1999				
	2003	2003	2003	2003			2003	2003	2003	2003	2003
	2007	2007	2007	2007			2007	2007	2007	2007	2007
Delaware							1999				
Florida					2007						
							2010				
		2011	2011	2011	2011		2011		2011	2011	2011
		2013	2013	2013	2013		2013	2013	2013	2013	2013
Georgia							1999		1999	1999	1999
Hawaii					2011						

Attachment C: Data Quality Issues in CJRP over Time

1997 through 2013 data collections

(Year is shown in table cell when imputation rate [item nonresponse rate] is 30 percent or more)

State	Sex	Birth month	Birth day	Birth year	Race	Placed by	Offense	Adjudication status	Admitted month	Admitted day	Admitted year
Idaho											
Illinois		2006	2006	2006	2006		2006		2006	2006	2006
		2007	2007	2007	2007		2007		2007	2007	2007
	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010
	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011
	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Indiana											
Iowa							2007				
Kansas											
Kentucky											
Louisiana											
Maine	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Maryland					2001						
								2003			
Massachusetts		2001	2001	2001	2001		2001		2001	2001	2001
Michigan											
Minnesota											
Mississippi	1997	1997	1997	1997	1997		1997		1997	1997	1997
	1999	1999	1999	1999	1999		1999		1999	1999	1999
		2007	2007	2007	2007		2007		2007	2007	2007
Missouri											
Montana		2007	2007	2007	2007		2007		2007	2007	2007
Nebraska	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Nevada					1997		1997	1997			
		2007	2007	2007	2007		2007		2007	2007	2007
							2011		2011	2011	2011
New Hampshire	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013

Attachment C: Data Quality Issues in CJRP over Time
1997 through 2013 data collections
(Year is shown in table cell when imputation rate [item nonresponse rate] is 30 percent or more)

State	Sex	Birth month	day	year	Race	Placed by	Offense	Adjudication status	Admitted month	day	year
New Jersey							1997				
							1999				
New Mexico		1999	1999	1999	1999		1999		1999	1999	1999
	2007	2007	2007	2007	2007		2007	2007	2007	2007	2007
New York							1999				
		2007	2007	2007	2007		2007		2007	2007	2007
North Carolina											
North Dakota							1999				
Ohio											
Oklahoma											
Oregon											
Pennsylvania							1999				
Rhode Island	2006	2006	2006	2006	2006		2006	2006	2006	2006	2006
	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
South Carolina		2007	2007	2007	2007		2007		2007	2007	2007
	2013	2013	2013	2013	2013		2013	2013	2013	2013	2013
South Dakota		1997	1997	1997	1997		1997	1997	1997	1997	1997
	1999	1999	1999	1999	1999		1999	1999	1999	1999	1999
Tennessee							1999				
							2001				
Texas											
Utah							1999				
		2007	2007	2007	2007		2007		2007	2007	2007
	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Vermont								2010			
Virginia											
Washington											

Attachment C: Data Quality Issues in CJRP over Time

1997 through 2013 data collections

(Year is shown in table cell when imputation rate [item nonresponse rate] is 30 percent or more)

State	Sex	Birth			Race	Placed by	Offense	Adjudication status	Admitted		
		month	day	year					month	day	year
West Virginia		2007	2007	2007	2007		2007		2007	2007	2007
					2010		2010				
	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011
	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Wisconsin							1999				
Wyoming	2006	2006	2006	2006	2006	2006	2006		2006	2006	2006
	2007	2007	2007	2007	2007		2007		2007	2007	2007
	2013										

Attachment D: 2013 CJRP Section II Nonresponse Patterns

0 indicates a reported value, 1 indicates a missing value.

Kid_ sex	Kid_birth_			Kid_ race	Kid_ placed_ by	Kid_ offense	Kid_ adjudication_ status	Kid_admitted_			Count	Percent
	month	day	year					month	day	year		
0	0	0	0	0	0	0	0	0	0	0	39,586	73.107
0	0	0	0	0	0	0	0	0	0	1	454	0.838
0	0	0	0	0	0	0	0	0	1	0	2	0.004
0	0	0	0	0	0	0	0	1	0	0	5	0.009
0	0	0	0	0	0	0	0	1	0	1	1	0.002
0	0	0	0	0	0	0	0	1	1	0	11	0.020
0	0	0	0	0	0	0	0	1	1	1	79	0.146
0	0	0	0	0	0	0	1	0	0	0	1,367	2.525
0	0	0	0	0	0	0	1	0	0	1	3	0.006
0	0	0	0	0	0	0	1	1	1	1	8	0.015
0	0	0	0	0	0	1	0	0	0	0	1,219	2.251
0	0	0	0	0	0	1	0	0	0	1	3	0.006
0	0	0	0	0	0	1	0	1	1	0	1	0.002
0	0	0	0	0	0	1	0	1	1	1	142	0.262
0	0	0	0	0	0	1	1	0	0	0	280	0.517
0	0	0	0	0	0	1	1	1	1	1	193	0.356
0	0	0	0	0	1	0	0	0	0	0	15	0.028
0	0	0	0	0	1	0	1	0	0	0	115	0.212
0	0	0	0	0	1	1	0	0	0	0	25	0.046
0	0	0	0	0	1	1	1	0	0	0	75	0.139
0	0	0	0	0	1	1	1	1	1	1	10	0.018
0	0	0	0	1	0	0	0	0	0	0	306	0.565
0	0	0	0	1	0	0	0	0	0	1	2	0.004
0	0	0	0	1	0	0	1	0	0	0	53	0.098
0	0	0	0	1	0	1	0	0	0	0	128	0.236
0	0	0	0	1	0	1	0	0	0	1	1	0.002
0	0	0	0	1	0	1	1	0	0	0	178	0.329

Attachment D: 2013 CJRP Section II Nonresponse Patterns

0 indicates a reported value, 1 indicates a missing value.

| Kid_ sex | Kid_birth_ | | | Kid_ race | Kid_ placed_ by | Kid_ offense | Kid_ adjudication_ status | Kid_admitted_ | | | Count | Percent |
	month	day	year					month	day	year		
0	0	0	0	1	1	0	1	0	0	0	33	0.061
0	0	0	0	1	1	1	1	0	0	0	500	0.923
0	0	0	0	1	1	1	1	1	1	1	116	0.214
0	0	0	1	0	0	0	0	0	0	0	45	0.083
0	0	0	1	0	0	0	0	0	0	1	2	0.004
0	0	0	1	0	0	0	0	1	1	1	1	0.002
0	0	0	1	0	0	0	1	0	0	0	3	0.006
0	0	0	1	0	0	1	1	0	0	0	1	0.002
0	0	0	1	0	0	1	1	1	1	1	1	0.002
0	0	0	1	1	0	0	0	0	0	0	1	0.002
0	0	0	1	1	0	1	1	0	0	0	1	0.002
0	1	1	0	0	0	0	0	0	0	0	7	0.013
0	1	1	0	0	0	0	0	0	0	1	1	0.002
0	1	1	0	0	0	0	0	1	1	1	1	0.002
0	1	1	0	0	0	0	1	0	0	0	1	0.002
0	1	1	0	0	0	1	0	0	0	0	2	0.004
0	1	1	0	0	0	1	0	1	0	0	1	0.002
0	1	1	0	0	0	1	0	1	1	1	15	0.028
0	1	1	1	0	0	0	0	0	0	0	142	0.262
0	1	1	1	0	0	0	0	1	1	1	36	0.066
0	1	1	1	0	0	0	1	0	0	0	2	0.004
0	1	1	1	0	0	0	1	1	1	1	10	0.018
0	1	1	1	0	0	1	0	1	1	1	38	0.070
0	1	1	1	0	0	1	1	0	0	0	11	0.020
0	1	1	1	0	0	1	1	1	1	1	12	0.022
0	1	1	1	0	1	0	1	0	0	0	29	0.054
0	1	1	1	1	0	0	0	0	0	0	86	0.159
0	1	1	1	1	0	0	0	1	1	1	31	0.057

Attachment D: 2013 CJRP Section II Nonresponse Patterns

0 indicates a reported value, 1 indicates a missing value.

| Kid_ sex | Kid_birth_ | | | Kid_ race | Kid_ placed_ by | Kid_ offense | Kid_ adjudication_ status | Kid_admitted_ | | | Count | Percent |
	month	day	year					month	day	year		
0	1	1	1	1	0	0	1	0	0	0	6	0.011
0	1	1	1	1	0	1	0	0	0	0	2	0.004
0	1	1	1	1	0	1	0	1	1	1	357	0.659
0	1	1	1	1	0	1	1	1	1	1	1,148	2.120
0	1	1	1	1	1	1	0	1	1	1	13	0.024
0	1	1	1	1	1	1	1	1	1	1	87	0.161
1	0	0	0	0	0	0	0	0	0	0	92	0.170
1	0	0	0	0	0	0	1	0	0	0	80	0.148
1	0	0	0	0	0	1	1	0	0	0	6	0.011
1	0	0	0	0	1	0	0	0	0	0	3	0.006
1	0	0	0	1	0	0	1	0	0	0	1	0.002
1	1	1	0	0	0	0	1	0	0	0	1	0.002
1	1	1	1	1	0	1	0	1	1	1	138	0.255
1	1	1	1	1	0	1	1	1	1	1	288	0.532
1	1	1	1	1	1	1	1	0	0	0	24	0.044
1	1	1	1	1	1	1	1	1	1	1	6,511	12.024
											54,148	100.000