

Attachment 3

SSV 2009 Sampling Design

**Privately-operated State and Federal Prison Sample Design
for the 2009 Survey on Sexual Violence**

417 units on the frame

Revision Date: March 15, 2010

The Bureau of Justice Statistics (BJS) instructed the Census Bureau to use the 2005 Prison Census file as the frame for this sample. The 2005 Prison Census file contained 417 records for privately-operated state and federal prisons. BJS requested a sample of 125 units. This is an increase of 40 units from the 2008 private prison sample. The increase in 2009 is an attempt to produce better standard errors than were achieved in the 2008 Survey on Sexual Violence (SSV).

Some facilities are large compared to the rest, so we had to use a certainty cutoff to select some of the facilities as certainties due to size. A facility was declared a certainty due to size if it had average daily population (ADP) of 488 or more. There are 71 size certainties in the 2009 sample.

The rest of the file was serpentine-sorted by region, two-digit state code, and ADP. Region is the region of the country where the facility is located: Northeast, Midwest, South, or West.

We used PROC SURVEYSELECT in SAS to select a systematic probability proportional to size sample.

Each noncertainty privately-operated state or federal prison in sample has a weight based on its measure of size. The weights are shown in Table 1.

We verify the sample weights by using Horvitz-Thompson estimation. We use the sample to estimate the national ADP. The estimated national ADP is $\hat{Y}_{HT} = \sum_{i=1}^{125} [(y_i)(weight_i)]$ where y_i is the ADP of the i^{th} sample unit. The national sum of the measure of size is 106,014.

Table 2 shows the estimated coefficients of variation (CVs) for this sample design.

Table 1. Sample design table for privately-operated state and federal prisons

| Obs | ID | Measure of size | Weight | Measure of size * weight |
|------------|-----------------------|------------------------|---------------|---------------------------------|
| 1 | 038000000074700000000 | 625 | 1.0000 | 625.0000 |
| 2 | 038000000076000000000 | 984 | 1.0000 | 984.0000 |
| 3 | 038011666072200000000 | 1,321 | 1.0000 | 1,321.0000 |
| 4 | 058000000079992200000 | 555 | 1.0000 | 555.0000 |
| 5 | 058000000079992300000 | 532 | 1.0000 | 532.0000 |
| 6 | 058000000079992400000 | 529 | 1.0000 | 529.0000 |
| 7 | 058015666070200000000 | 2,293 | 1.0000 | 2,293.0000 |
| 8 | 058015666072000000000 | 2,631 | 1.0000 | 2,631.0000 |
| 9 | 068000000072200000000 | 697 | 1.0000 | 697.0000 |
| 10 | 068000000072900000000 | 733 | 1.0000 | 733.0000 |
| 11 | 068000000073100000000 | 1,100 | 1.0000 | 1,100.0000 |
| 12 | 068000000073200000000 | 752 | 1.0000 | 752.0000 |
| 13 | 108000000079881000000 | 689 | 1.0000 | 689.0000 |
| 14 | 108000000079992000000 | 1,037 | 1.0000 | 1,037.0000 |
| 15 | 108000000079996000000 | 745 | 1.0000 | 745.0000 |
| 16 | 108000000079997000000 | 747 | 1.0000 | 747.0000 |
| 17 | 108000000079999100000 | 1,643 | 1.0000 | 1,643.0000 |
| 18 | 118000000075700000000 | 1,495 | 1.0000 | 1,495.0000 |
| 19 | 118000000075800000000 | 1,500 | 1.0000 | 1,500.0000 |
| 20 | 118000000076000000000 | 1,649 | 1.0000 | 1,649.0000 |
| 21 | 118134666079981000000 | 1,568 | 1.0000 | 1,568.0000 |
| 22 | 138000000071700000000 | 1,250 | 1.0000 | 1,250.0000 |
| 23 | 188000000071400000000 | 805 | 1.0000 | 805.0000 |
| 24 | 188000000071900000000 | 770 | 1.0000 | 770.0000 |
| 25 | 198000000071400000000 | 1,570 | 1.0000 | 1,570.0000 |
| 26 | 198000000072300000000 | 1,557 | 1.0000 | 1,557.0000 |
| 27 | 248000000070999100000 | 919 | 1.0000 | 919.0000 |

| Obs | ID | Measure of size | Weight | Measure of size * weight |
|------------|-----------------------|------------------------|---------------|---------------------------------|
| 28 | 258000000073100000000 | 993 | 1.0000 | 993.0000 |
| 29 | 258000000073500000000 | 962 | 1.0000 | 962.0000 |
| 30 | 258000000073600000000 | 976 | 1.0000 | 976.0000 |
| 31 | 258000000073700000000 | 867 | 1.0000 | 867.0000 |
| 32 | 258000000074000000000 | 1,002 | 1.0000 | 1,002.0000 |
| 33 | 258000000074100000000 | 883 | 1.0000 | 883.0000 |
| 34 | 278000000070991000000 | 541 | 1.0000 | 541.0000 |
| 35 | 318000000075100000000 | 539 | 1.0000 | 539.0000 |
| 36 | 318000000075700000000 | 500 | 1.0000 | 500.0000 |
| 37 | 328000000071300000000 | 630 | 1.0000 | 630.0000 |
| 38 | 328000000071400000000 | 1,140 | 1.0000 | 1,140.0000 |
| 39 | 328000000071500000000 | 596 | 1.0000 | 596.0000 |
| 40 | 328000000071600000000 | 1,200 | 1.0000 | 1,200.0000 |
| 41 | 348046666079111100000 | 1,300 | 1.0000 | 1,300.0000 |
| 42 | 368000000073900000000 | 720 | 1.0000 | 720.0000 |
| 43 | 368000000074100000000 | 567 | 1.0000 | 567.0000 |
| 44 | 368000000074200000000 | 1,417 | 1.0000 | 1,417.0000 |
| 45 | 378000000074700000000 | 807 | 1.0000 | 807.0000 |
| 46 | 378000000074800000000 | 974 | 1.0000 | 974.0000 |
| 47 | 378000000074900000000 | 952 | 1.0000 | 952.0000 |
| 48 | 378000000075000000000 | 1,892 | 1.0000 | 1,892.0000 |
| 49 | 378000000076100000000 | 1,893 | 1.0000 | 1,893.0000 |
| 50 | 438000000072300000000 | 1,630 | 1.0000 | 1,630.0000 |
| 51 | 438000000073500000000 | 1,970 | 1.0000 | 1,970.0000 |
| 52 | 438000000073700000000 | 1,487 | 1.0000 | 1,487.0000 |
| 53 | 448000000073700000000 | 519 | 1.0000 | 519.0000 |
| 54 | 448000000073800000000 | 518 | 1.0000 | 518.0000 |
| 55 | 448000000073900000000 | 997 | 1.0000 | 997.0000 |

| Obs | ID | Measure of size | Weight | Measure of size * weight |
|------------|-----------------------|------------------------|---------------|---------------------------------|
| 56 | 448000000074100000000 | 2,040 | 1.0000 | 2,040.0000 |
| 57 | 448000000078020000000 | 832 | 1.0000 | 832.0000 |
| 58 | 448000000079200000000 | 488 | 1.0000 | 488.0000 |
| 59 | 448000000079800500000 | 1,973 | 1.0000 | 1,973.0000 |
| 60 | 448000000079930000000 | 498 | 1.0000 | 498.0000 |
| 61 | 448000000079940000000 | 517 | 1.0000 | 517.0000 |
| 62 | 448000000079996000000 | 1,023 | 1.0000 | 1,023.0000 |
| 63 | 448000000079996700000 | 520 | 1.0000 | 520.0000 |
| 64 | 448000000079997000000 | 999 | 1.0000 | 999.0000 |
| 65 | 448000000079999000000 | 1,047 | 1.0000 | 1,047.0000 |
| 66 | 448000000079999200000 | 2,196 | 1.0000 | 2,196.0000 |
| 67 | 448048666070100000000 | 1,403 | 1.0000 | 1,403.0000 |
| 68 | 448085666075110000000 | 1,105 | 1.0000 | 1,105.0000 |
| 69 | 448114666070200000000 | 2,587 | 1.0000 | 2,587.0000 |
| 70 | 448195666070100000000 | 2,162 | 1.0000 | 2,162.0000 |
| 71 | 478000000078500000000 | 1,820 | 1.0000 | 1,820.0000 |
| 72 | 028000000072300000000 | 102 | 4.6543 | 474.7386 |
| 73 | 038000000072800000000 | 395 | 1.2019 | 474.7505 |
| 74 | 038000000073400000000 | 387 | 1.2267 | 474.7329 |
| 75 | 048060666073200000000 | 70 | 6.7820 | 474.7400 |
| 76 | 058000000079800000000 | 38 | 12.4931 | 474.7378 |
| 77 | 058000000079993800000 | 102 | 4.6543 | 474.7386 |
| 78 | 058037666079995000000 | 226 | 2.1006 | 474.7356 |
| 79 | 068000000076100000000 | 95 | 4.9973 | 474.7435 |
| 80 | 068000000077200000000 | 60 | 7.9123 | 474.7380 |
| 81 | 068000000079000000000 | 184 | 2.5801 | 474.7384 |
| 82 | 068000000079200000000 | 118 | 4.0232 | 474.7376 |
| 83 | 068000000079800000000 | 201 | 2.3619 | 474.7419 |

| Obs | ID | Measure of size | Weight | Measure of size * weight |
|------------|-----------------------|------------------------|---------------|---------------------------------|
| 84 | 068000000079900000000 | 297 | 1.5984 | 474.7248 |
| 85 | 068000000079910000000 | 40 | 11.8685 | 474.7400 |
| 86 | 078000000074700000000 | 18 | 26.3744 | 474.7392 |
| 87 | 078000000076000000000 | 109 | 4.3554 | 474.7386 |
| 88 | 078000000076300000000 | 57 | 8.3288 | 474.7416 |
| 89 | 108000000075850000000 | 104 | 4.5648 | 474.7392 |
| 90 | 108000000079922200000 | 80 | 5.9342 | 474.7360 |
| 91 | 108036666076260000000 | 40 | 11.8685 | 474.7400 |
| 92 | 148000000075500000000 | 293 | 1.6203 | 474.7479 |
| 93 | 148000000076200000000 | 120 | 3.9562 | 474.7440 |
| 94 | 178052666072200000000 | 145 | 3.2741 | 474.7445 |
| 95 | 188000000072450000000 | 56 | 8.4775 | 474.7400 |
| 96 | 188000000072460000000 | 194 | 2.4471 | 474.7374 |
| 97 | 188000000072600000000 | 445 | 1.0668 | 474.7260 |
| 98 | 198000000072010000000 | 49 | 9.6885 | 474.7365 |
| 99 | 238082666079980000000 | 50 | 9.4948 | 474.7400 |
| 100 | 268096666075900000000 | 117 | 4.0576 | 474.7392 |
| 101 | 278000000070600000000 | 166 | 2.8599 | 474.7434 |
| 102 | 298002666073400000000 | 75 | 6.3299 | 474.7425 |
| 103 | 318000000074200000000 | 395 | 1.2019 | 474.7505 |
| 104 | 318000000075000000000 | 153 | 3.1029 | 474.7437 |
| 105 | 318000000076200000000 | 35 | 13.5640 | 474.7400 |
| 106 | 338031666070200000000 | 90 | 5.2749 | 474.7410 |
| 107 | 348000000079700000000 | 20 | 23.7369 | 474.7380 |
| 108 | 368000000075400000000 | 53 | 8.9573 | 474.7369 |
| 109 | 368000000076100000000 | 72 | 6.5936 | 474.7392 |
| 110 | 368000000077500000000 | 134 | 3.5428 | 474.7352 |
| 111 | 368000000077700000000 | 116 | 4.0926 | 474.7416 |

| Obs | ID | Measure of size | Weight | Measure of size * weight |
|--------------|-----------------------|-----------------|---------|--------------------------|
| 112 | 378000000075400000000 | 292 | 1.6258 | 474.7336 |
| 113 | 378000000075500000000 | 280 | 1.6955 | 474.7400 |
| 114 | 378000000078900000000 | 115 | 4.1282 | 474.7430 |
| 115 | 398000000075700000000 | 216 | 2.1979 | 474.7464 |
| 116 | 398022666077500000000 | 96 | 4.9452 | 474.7392 |
| 117 | 428018666071000000000 | 35 | 13.5640 | 474.7400 |
| 118 | 438019666074100000000 | 51 | 9.3086 | 474.7386 |
| 119 | 448000000079997400000 | 460 | 1.0320 | 474.7200 |
| 120 | 448071666079159900000 | 141 | 3.3669 | 474.7329 |
| 121 | 448101666071600000000 | 219 | 2.1678 | 474.7482 |
| 122 | 448227666079988200000 | 75 | 6.3299 | 474.7425 |
| 123 | 448254666079992000000 | 375 | 1.2660 | 474.7500 |
| 124 | 488000000072600000000 | 60 | 7.9123 | 474.7380 |
| 125 | 518000000070500000000 | 171 | 2.7763 | 474.7473 |
| TOTAL | | | | 106,013.9400 |

Table 2. Estimated CVs for this sample design

| Estimate | Estimated variance | 2005 total | CV |
|----------------|--------------------|------------|-------|
| Adult females | 740,046.42 | 6,946 | 12.4% |
| Adult males | 1,101,074.74 | 92,578 | 1.1% |
| Black | 539,793.00 | 32,961 | 2.2% |
| Female ADP | 743,898.51 | 7,656 | 11.3% |
| Hispanic | 463,736.49 | 25,754 | 2.6% |
| Juvenile males | 854.59 | 107 | 27.3% |
| Male ADP | 807,551.42 | 98,238 | 0.9% |
| One day count | 444,826.89 | 108,884 | 0.6% |
| Rated capacity | 1,333,010.47 | 115,152 | 1.0% |
| White | 517,917.45 | 32,115 | 2.2% |

**Public Jails Sample Design for the 2009 Survey on Sexual Violence
2,867 public units on the 2008 Deaths in Custody file**

Revision Date: March 10, 2010

The Bureau of Justice Statistics (BJS) requested a sample size of 700, with the largest public jail in each state¹ selected with certainty to meet the requirements of the Prison Rape Elimination Act of 2003. The measure of size is the average daily population (ADP).

We used the 2008 Deaths in Custody file as the frame.

We chose 128 units as certainty due to size (ADP of 1,000 or more). BJS requested that the remaining 526 units be selected in a stratified systematic random sample. There are three noncertainty strata for those units with less than 1,000 ADP.

We used the cumulative $\sqrt{f(y)}$ method (Cochran, *Sampling Techniques*, 1977 edition, p. 129) to determine the noncertainty stratum boundaries. The strata are shown in Table 1.

We used ADP to stratify the sample, with the allocation to the strata based on the number of confined persons on December 31, 2008. An optimal allocation to the strata was calculated for the number of confined persons.

The noncertainty strata were serpentine-sorted by region, two-digit state code, and ADP. Region is the region of the country where the jurisdiction is located: Northeast, Midwest, South, or West.

Table 1 shows the weights for this sample design.

Table 1. Public jails sample design table

| Stratum number | Stratum description | Units in 2008 Deaths in Custody file | Units in sample | Sample weight |
|-----------------------|---|---|------------------------|----------------------|
| 1 | Largest jail in each state | 46 | 46 | 1.0000 |
| 2 | Certainties due to size ($\geq 1,000$ ADP) | 128 | 128 | 1.0000 |
| 3 | Jails with 0 to 85 ADP | 1,489 | 99 | 15.0404 |
| 4 | Jails with 86 to 268 ADP | 770 | 317 | 2.4290 |
| 5 | Jails with 269 to 999 ADP | 434 | 110 | 3.9455 |
| TOTALS | | 2,867 | 700 | |

¹ There are public jails in 45 states and the District of Columbia. There are five states with no public jails: Connecticut, Delaware, Hawaii, Rhode Island, and Vermont.

This sample design produces the estimated coefficients of variation shown in Table 2 below.

Table 2. Estimated coefficients of variation for the public jails sample design

| Estimate | Coefficient of variation |
|------------------------|---------------------------------|
| Confined males | 1.9% |
| Confined females | 2.8% |
| Newly admitted males | 3.0% |
| Newly admitted females | 3.4% |
| New admissions | 2.9% |
| Male ADP | 1.0% |
| Female ADP | 1.9% |

**Private Jails Sample Design for the 2009 Survey on Sexual Violence
41 private unites on the 2008 Deaths in Custody file**

Revision Date: March 10, 2010

There are 41 private jails on the 2008 Deaths in Custody file. The Bureau of Justice Statistics (BJS) requested a sample of 15 of the private units, with the units being selected with probability proportional to size. The measure of size is the average daily population (ADP).

Two private jails were selected with certainty because they are so much larger than all the other private jails. The remaining 13 units in sample were selected with probability proportional to size after the file was serpentine-sorted by region, two-digit state code and ADP. Region is the region of the country where the jurisdiction is located: Northeast, Midwest, South, or West.

The weights are shown in Table 1.

The 41 private jails on the frame have a total ADP of 20,322. We verify the sample weights by using Horvitz-Thompson estimation. We use the sample to estimate the total ADP. The estimated total is

$$\hat{Y}_{HT} = \sum_{i=1}^{15} [(y_i)(SamplingWeight_i)]$$

where y_i is the ADP of the i^{th} unit in the sample.

Table 2 shows the estimated coefficients of variation for this sample design.

Table 1. Private jails sample design table

| ID | Region | Measure of size | Sampling Weight | Measure of size * Sampling Weight |
|-----------------------|---------------|------------------------|------------------------|--|
| 158049008061000000000 | Midwest | 1,130 | 1.1604 | 1,311.2520 |
| 268041041062000000000 | Midwest | 200 | 6.5565 | 1,311.3000 |
| 108006006065000000000 | South | 573 | 2.2885 | 1,311.3105 |
| 108027027061000000000 | South | 703 | 1.8653 | 1,311.3059 |
| 198013013062000000000 | South | 785 | 1.6705 | 1,311.3425 |
| 438019003068000000000 | South | 1,083 | 1.2108 | 1,311.2964 |
| 438084084062000000000 | South | 599 | 2.1892 | 1,311.3308 |
| 448082082061000000000 | South | 373 | 3.5156 | 1,311.3188 |
| 448104104062000000000 | South | 530 | 2.4742 | 1,311.3260 |
| 448147147062000000000 | South | 1,096 | 1.1964 | 1,311.2544 |
| 448233233061000000000 | South | 1,259 | 1.0415 | 1,311.2485 |
| 328030030061100000000 | West | 733 | 1.7890 | 1,311.3370 |
| 058019001061000000000 | West | 6 | 218.5513 | 1,311.3078 |
| 378072072064000000000 | South | 1,394 | 1.0000 | 1,394.0000 |
| 398023023063000000000 | Northeast | 1,881 | 1.0000 | 1,881.0000 |
| | | | | 20,321.9306 |

Table 2. Estimated coefficients of variation for this sample design

| Estimate | Estimated variance | 2008 total | CV |
|------------------------|---------------------------|-------------------|-----------|
| Confined females | 149,456.51 | 1,317 | 29.4% |
| Confined males | 348,020.82 | 18,018 | 3.3% |
| Confined persons | 402,677.32 | 19,335 | 3.3% |
| Female ADP | 149,386.20 | 1,531 | 25.2% |
| Male ADP | 269,293.17 | 18,791 | 2.8% |
| Newly admitted females | 258,077,093.93 | 24,948 | 64.4% |
| Newly admitted males | 2,740,829,912.76 | 152,809 | 34.3% |
| New admissions | 4,525,904,139.32 | 196,242 | 34.3% |

**Tribal Sample Design for the 2009 Survey on Sexual Violence
63 units on the extract of the 2008 Jails in Indian Country file**

Date: March 11, 2010

The Bureau of Justice Statistics (BJS) requested a sample of 15 units from the 63 units listed in the extract of the 2008 Jails in Indian Country file. To be eligible for this sample, units hold adults only or adults and juveniles. Units that hold only juveniles have been added to the juvenile sample for the 2009 Survey on Sexual Violence (SSV).

The sample was selected through probability proportional to size, with the adjusted average daily population (ADP) as the measure of size. The adjusted ADP was the maximum of (1, ADP).

Two units were relatively large compared to the rest of the units in the frame, so they were selected as certainty units based on size. The size cutoff for certainty units was ADP of 100 or more.

The rest of the file was serpentine-sorted by two-digit state code and ADP.

The 15 tribal facilities selected for the sample have weights based on their measure of size. The weights are shown in Table 1.

The 63 tribal facilities on the frame have a total ADP of 1,714. We verify the sample weights by using Horvitz-Thompson estimation. We use the sample to estimate the total ADP. The estimated total is $\hat{Y}_{HT} = \sum_{i=1}^{15} [(y_i)(SamplingWeight_i)]$ where y_i is the ADP of the i^{th} unit in the sample.

Table 2 shows the estimated coefficients of variation (CVs) for this sample design. We merged the extract with Appendix Table 3 of the publication *Jails in Indian Country, 2008* so that we could calculate estimated CVs.

Table 1. Tribal sample for the 2009 SSV

| ID | Facility | Adjusted measure of size | Sampling Weight | Adjusted measure of size * Sampling Weight |
|-----------------------|--|---|----------------------------|---|
| 37004001070099990000 | San Carlos DOC and Rehabilitation- Adult and Juvenile Detention | 92 | 1.1672 | 107.38 |
| 37007001070099990000 | Salt River Pima-Maricopa Department of Corrections | 52 | 2.0651 | 107.39 |
| 37015001070099990000 | Colorado River Indian Tribes Adult Detention Center | 38 | 2.8259 | 107.38 |
| 37001001071000000000 | Navajo Department of Corrections- Chinle | 19 | 5.6518 | 107.38 |
| 67034001070100000000 | Southern Ute Police Department and Adult Detention Center | 40 | 2.6846 | 107.38 |
| 277043001070100000000 | Fort Peck Police Department and Adult Detention Center | 25 | 4.2954 | 107.39 |
| 297004002070100000000 | Eastern Nevada Law Enforcement Adult Detention Facility | 20 | 5.3692 | 107.38 |
| 327033001070100000000 | Acoma Tribal Police and Holding Facility | 34 | 3.1584 | 107.39 |
| 357003001070100000000 | Fort Totten Law Enforcement and Adult Detention Center | 28 | 3.8352 | 107.39 |
| 427043001070100000000 | Lower Brule Justice Center-Adult Detention | 22 | 4.8811 | 107.38 |
| 427061001070299900000 | Rosebud Sioux Tribal PD and Adult Detention | 42 | 2.5568 | 107.39 |
| 487024001070100000000 | Colville Adult Detention Center | 34 | 3.1584 | 107.39 |
| 507040001070100000000 | Menominee Tribal Detention Facility | 52 | 2.0651 | 107.39 |
| 37011002071599990000 | Gila River Department of Rehabilitation and Supervision-Adult | 176 | 1.0000 | 176.00 |
| 37010001071500000000 | Tohono O'odham Adult Detention Center | 142 | 1.0000 | 142.00 |
| TOTAL | | | | 1,714.00 |

Table 2. Estimated coefficients of variation for this sample design

| Estimate | Estimated variance | 2008 total | CV |
|------------------|---------------------------|-------------------|-----------|
| Female adults | 3,333.99 | 384 | 15.0% |
| Female juveniles | 41.29 | 14 | 45.9% |
| Male adults | 21,797.79 | 1,498 | 9.9% |
| Male juveniles | 330.47 | 25 | 72.7% |
| Rated capacity | 125,043.67 | 2,362 | 15.0% |
| Total adults | 35,672.35 | 1,882 | 10.0% |
| Total juveniles | 420.31 | 39 | 52.6% |

**Juvenile Facility Sample Design for the 2009 Survey on Sexual Violence
2,810 non-tribal units on the 2008 Juvenile Residential Facility Census file¹
plus 19 tribal juvenile facilities from the 2008 Jails in Indian Country file**

Revision Date: March 22, 2010

For the 2009 Survey on Sexual Violence (SSV) juvenile facility sample, the Bureau of Justice Statistics (BJS) requested a sample design similar to that used for the 2008 SSV juvenile facility sample. Note that the tribal juvenile facilities are selected from the 2008 Jails in Indian Country file, not the 2008 Juvenile Residential Facility Census (JRFC) file.

The 2008 SSV juvenile facility sample was a modification of that used in the 2005 SSV. To understand this year's sample design, we need to look at how the facilities are categorized. The 2008 JRFC serves as the frame for the 2009 SSV.

Table 1. 2009 SSV juvenile facility sampling frame

| | |
|-------|--|
| 2,819 | facilities in the 2008 JRFC |
| -9 | tribal facilities in the 2008 JRFC |
| 2,810 | non-tribal facilities in the 2008 JRFC |

BJS requested that all 473 state central reporters and facilities that report separately be included in the sample with certainty. The rest of the sample comes from the remainder of the sampling frame, to produce a sample of 330 non-state units.

This year, two facilities in the District of Columbia will be treated as a state central reporter or facilities that report separately.

Of the 330 non-state units in sample, 36 units² are in with certainty as the largest locally-operated facility in the state (as instructed by BJS), and 51 are in with certainty as the largest privately-operated facility in the state (as instructed by BJS). That leaves 243 noncertainty sample units to be selected.

¹ There is a significant amount of turnover among juvenile facilities from one year to the next, which means that a new juvenile facility sample should be drawn for this project every year. There were 2,911 facilities on the 2007 Census of Juveniles in Residential Placement file. There are 2,696 facilities on both the 2007 and 2008 files, 215 facilities that are on the 2007 file only, and 123 that are on the 2008 file only.

² There were 37 states with locally-operated facilities in the 2008 SSV. Florida does not have locally-operated facilities in the 2008 JRFC. Florida had one locally-operated facility in the 2007 CJRP, which was the frame for the 2008 SSV.

Table 2. Certainty and noncertainty counts on the 2009 frame

| | |
|-------|---|
| 473 | state central reporters and facilities that report separately |
| 36 | local facility certainties (largest in the state) |
| 643 | local noncertainty facilities |
| 51 | private facility certainties (largest in the state) |
| 1,607 | private facilities |
| 2,810 | non-tribal facilities in the 2008 JRFC |

BJS requested an oversample of non-state detention centers. By law, we need a 10-percent sample of the non-state facilities. There are 2,337 such facilities in the 2008 JRFC, so a 10-percent sample is 234 units.

The oversample of non-state detention centers is the extra 96 units available for the sample (330 non-state sample units – 234 non-state units based on a 10-percent sample = 96 “extra” sample units for the oversample.)

Table 3. Counts of the non-state facilities on the 2009 frame

| | |
|-------|--|
| 523 | non-state detention centers |
| 214 | local noncertainty facilities (shelters, reception/diagnostic centers, training schools, halfway houses/group homes, ranches, camps, or farms) |
| 1,513 | private noncertainty facilities (shelters, reception/diagnostic centers, training schools, halfway houses/group homes, ranches, camps, or farms) |
| 36 | local facility certainties (largest in state) |
| 51 | private facility certainties (largest in state) |
| 2,337 | non-state non-tribal facilities in 2008 JRFC |

Table 4. Distribution of non-state, noncertainty, nontribal facilities

| | |
|-------|-----------------------------------|
| 523 | non-state detention centers |
| 37 | local non-commitment facilities |
| 177 | local commitment facilities |
| 202 | private non-commitment facilities |
| 1,311 | private commitment facilities |
| 2,250 | noncertainty facilities |

Table 5. Distribution of non-state units in 2009 sample

| | |
|-----|---|
| 36 | local facility certainties (largest in state) |
| 51 | private facility certainties (largest in state) |
| 148 | non-state detention centers (10-percent sample plus 96 oversampled units) |
| 95 | local or private noncertainty facilities (shelters, reception/diagnostic centers, training schools, halfway houses/group homes, ranches, camps, or farms) |
| 330 | non-state units in 2009 sample |

The non-state detention facilities are stratified by region. BJS requested that the sample be proportionally allocated by number of persons assigned to beds. Normally we would take a 10-percent sample of the non-state detention facilities, or 52 units. The 96 extra units available for the oversample mean we will select 148 non-state detention facilities for the 2009 SSV sample.

Table 6. Proportionally allocating sample to non-state detention facilities

| Stratum number | Description | | Persons assigned to beds | n |
|----------------|----------------------|-----------|--------------------------|-----|
| 40A | Detention facilities | Midwest | 4,562 | 37 |
| 40B | Detention facilities | Northeast | 2,053 | 16 |
| 40C | Detention facilities | South | 4,416 | 36 |
| 40D | Detention facilities | West | 7,236 | 59 |
| Totals | | | 18,267 | 148 |

There are 35 non-state detention facilities that are too large compared to the rest of the facilities in their strata, so they are declared certainties due to size and reassigned to stratum 40E in the sample design table.

Table 7. Proportionally allocating sample to local and private noncertainty facilities

| Stratum number | Description | | Persons assigned to beds | n |
|----------------|-------------|----------------|--------------------------|----|
| 51 | Local | Non-commitment | 358 | 2 |
| 52 | Local | Commitment | 7,464 | 18 |
| 61 | Private | Non-commitment | 2,738 | 7 |
| 62 | Private | Commitment | 28,219 | 68 |
| Totals | | | 38,779 | 95 |

There are one local facility and one private facility that are too large compared to the rest of the facilities in their strata, so they are declared certainties due to size and reassigned to strata 53 and strata 63 in the sample design table.

Once the state central reporters and facilities that report separately (stratum 10), largest locally-operated facility in each stratum (stratum 20), detention facilities that are certainties based on size (stratum 40E), local facilities that are certainties based on size (stratum 53), largest privately-operated facility in each state (stratum 30), and private facilities that are certainties based on size (stratum 63) were determined, those records were removed from the 2008 JRFC file. The remaining 2,213 facilities were serpentine-sorted by region, two-digit state code, collapsed facility type, and persons assigned to beds within each stratum. We used PROC SURVEYSELECT in SAS to select a systematic probability proportional to size sample.

Table 8. Juvenile facilities sample design table

| Stratum Number | Description | | N | n |
|----------------|---|----------------|-------------|------------|
| 10 | State central reporters and facilities that report separately | | 473 | 473 |
| 15 | Tribal juvenile facilities from 2008 Jails in Indian Country file | | 19 | 19 |
| 20 | Largest locally-operated facility in each state | | 36 | 36 |
| 30 | Largest privately-operated facility in each state | | 51 | 51 |
| 40A | Detention facilities | Midwest | 156 | 33 |
| 40B | Detention facilities | Northeast | 87 | 14 |
| 40C | Detention facilities | South | 144 | 33 |
| 40D | Detention facilities | West | 101 | 33 |
| 40E | Detention facility certainties due to size | | 35 | 35 |
| 51 | Local | Non-commitment | 37 | 2 |
| 52 | Local | Commitment | 176 | 17 |
| 53 | Local certainty due to size | | 1 | 1 |
| 61 | Private | Non-commitment | 202 | 7 |
| 62 | Private | Commitment | 1310 | 67 |
| 63 | Private certainty due to size | | 1 | 1 |
| Totals | | | 2829 | 822 |

Calculating coefficients of variation for the sample³

We use the Hartley – Rao formula to estimate the variance of this sample design. The variance is given by

$$V(\hat{Y}) \approx \sum_1^N \pi_i \left[1 - \frac{(n-1)}{n} \pi_i \right] \left(\frac{y_i}{\pi_i} - \frac{Y}{n} \right)^2$$

where π_i is the probability that the i^{th} unit is selected for the sample. For more details, see equation 5.17 in Hartley and Rao (1962).

Table 9. Estimated coefficients of variation for this sample design

| Level of estimate | Estimate | Estimated variance | 2008 total | CV |
|--------------------------------|------------------------|--------------------|------------|-------|
| National | Juvenile offenders | 1,599,524.96 | 78,973 | 1.6% |
| National | Juvenile non-offenders | 1,583,501.41 | 15,575 | 8.1% |
| Non-state detention facilities | Juvenile offenders | 23,679.29 | 22,107 | 0.7% |
| Non-state detention facilities | Juvenile non-offenders | 11,585.81 | 385 | 28.0% |

³ The calculations for the coefficients of variation do not include the 19 tribal facilities from the 2008 Jails in Indian Country (JIC) file because comparable data on juvenile offenders and juvenile non-offenders were not available on the JIC file.

Verification of the sample file produced by the Statistical Methods Branch

The Statistical Methods Branch of Governments Division selected the locally-operated and privately-operated facility records for the sample. The Criminal Justice Branch of Governments Division prepared the mailout records for the state-operated units in stratum 10, and the 20 tribal juvenile facilities from the 2008 Jails in Indian Country (JIC) file in stratum 15.

The file produced by the Statistical Methods Branch has 330 records. We can verify the sample selection by estimating the total number of persons assigned to beds for locally-operated and privately-operated facilities. There are 67,423 persons assigned to beds in locally-operated and privately-operated facilities in the 2008 JRFC file that are in-scope for the 2009 SSV.

We use the Horvitz-Thompson estimator to estimate the total persons assigned to beds.

$$\hat{Y}_{HT} = \sum_{i=1}^{330} y_i (\text{weight}_i)$$

where y_i is the total number of persons assigned to beds for the i^{th} facility, and weight_i is the weight assigned to the i^{th} facility in the file produced by the Statistical Methods Branch. The results are shown in Table 10.

Table 10. Estimated total number of persons assigned to beds in the locally-operated and privately-operated facilities in the juvenile facility sample

| Stratum number | Facilities in sample | Estimated total |
|----------------|----------------------|------------------|
| 20 | 36 | 4,031.00 |
| 30 | 51 | 6,346.00 |
| 40A | 33 | 4,025.00 |
| 40B | 14 | 1,728.00 |
| 40C | 33 | 3,907.99 |
| 40D | 33 | 2,476.00 |
| 40E | 35 | 6,130.00 |
| 51 | 2 | 358.00 |
| 52 | 17 | 7,032.00 |
| 53 | 1 | 432.00 |
| 61 | 7 | 2,738.00 |
| 62 | 67 | 27,755.98 |
| 63 | 1 | 463.00 |
| | 330 | 67,422.97 |

References

“Sampling with Unequal Probabilities and without Replacement”

Hartley, H.O. and Rao, J.N.K.

The Annals of Mathematical Statistics, Vol. 33, No. 2. (Jun., 1962), pp. 350 – 374.