PEARSON NEW INTERNATIONAL EDITION

Research Methods in Criminal Justice and Criminology

Frank E. Hagan

Ninth Edition

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EXHIBIT 2 (continued)

TABLE C NIBRS Data Elements

Administrative segment
1. ORI number
2. Incident number
3. Incident date/hour
4. Exceptional clearance indicator
5. Exceptional clearance date

Offense segment
6. UCR offense code
7. Attempted/completed code
8. Alcohol/drug use by offender
9. Type of location
10. Number of premises entered
11. Method of entry
12. Type of criminal activity
13. Type of weapon/force used
14. Bias crime code

Property segment
15. Type of property loss
16. Property description
17. Property value
18. Recovery date
19. Number of stolen motor vehicles
20. Number of recovered motor vehicles
21. Suspected drug type
22. Estimated drug quantity
23. Drug measurement unit

Victim segment
24. Victim number
25. Victim UCR offense code
26. Type of victim
27. Age of victim
28. Sex of victim
29. Race of victim
30. Ethnicity of victim
31. Resident status of victim
32. Homicide/assault circumstances
33. Justifiable homicide circumstances
34. Type of injury
35. Related offender number
36. Relationship of victim to offender

Offender segment
37. Offender number
38. Age of offender
39. Sex of offender
40. Race of offender

Arrestee segment
41. Arrestee number
42. Transaction number
43. Arrest date
44. Type of arrest
45. Multiple clearance indicator
46. UCR arrest offense code
47. Arrestee armed indicator
48. Age of arrestee
49. Sex of arrestee
50. Race of arrestee
51. Ethnicity of arrestee
52. Resident status of arrestee
53. Disposition of arrestee under eighteen

Victim segment includes a victim identification number, the UCR code for offense(s) committed against the victim, and the victim's sex, age, race, ethnicity, and residential status. In cases where the victim is not an individual, codes are used to distinguish among businesses, financial institutions, governments, religious organizations, and society at large. For incidents of homicide or aggravated assault, codes describing the circumstances of the incident (such as an argument or drug deal) are provided. In incidents where the victim is injured, information describing the injury (such as fractures or lacerations) is included. Each victim is linked by an offender number to the offender(s) who committed an offense against him or her, and the nature of the victim's relationship (such as family member, acquaintance, or stranger) to each offender is reported.

Offender segment includes information on the age, sex, and race of the offender.

Arrestee segment includes information on persons arrested in connection with the incident, including the date of arrest, the age, sex, race, ethnicity, and the residential status of the arrestee.

(*continued*)

EXHIBIT 2 (continued)

An example of how those interested in the study of crime can tap the potentially rich source of new information represented by NIBRS is seen in the Supplementary Homicide Reports data published annually by the FBI in its *Crime in the United States* series. Cross tabulations of various incident-based data elements are presented, including the age, sex, and race of victims and offenders, the types of weapon(s) used, the relationship of the victim to the offender, and the circumstances surrounding the incident (e.g., whether the murder resulted from a robbery, rape, or argument). These data were provided to the FBI for about 87 percent of the 24,703 murders reported nationwide in 1991.

For other violent crimes such as rape and robbery, UCR data beyond the summary counts have generally been limited to a univariate distribution by month. With the advent of NIBRS, the supplemental data elements that were previously available only for murder incidents can now be used in the analysis of other violent crimes.

Of course, NIBRS also provides some data elements that were not previously available for any violent crimes, including murder. These new data elements include whether the offender was suspected of using alcohol or drugs shortly before or during the incident, the type of location of the crime, the residential status of the victim, and the nature of any injuries sustained by the victim.

For robbery incidents, NIBRS also provides previously unavailable data describing the property that was lost and its value. Using NIBRS, a researcher could study carjackings, for example, by selecting robbery incidents that included a vehicle as the property description.

Source: Reaves, Brian A. "Using NIBRS Data to Analyze Violent Crime." *Bureau of Justice Statistics Technical Report*, October 1993.

NIBRS versus UCR

Some key differences between the NIBRS and the UCR program include (Rantala, 2000) the following:

- *Incident-Based versus Summary Reporting.* The UCR reports Part I (index) offenses and Parts I and II arrest data in aggregate (summary) form. NIBRS, which requires detailed data on individual crime incidents and arrests, receives separate reports for each incident/arrest. These reports include fifty-two data elements describing the victims, offenders, arrestees, and circumstances of the crime.
- *Expanded Offense Reporting.* The UCR is a summary-based system and collects totals on criminal incidents in eight offense classifications within the Part I type. NIBRS receives detailed reports on twenty-two categories and forty-six offenses in the Group A list. It adds the following list to the original UCR Part I crimes: bribery, counterfeiting and forgery, vandalism, drug offenses, embezzlement, extortion and blackmail, fraud, gambling offenses, kidnapping, pornography, prostitution, nonforcible sexual offenses, weapons law violations, and stolen property offenses. In addition, many of the Part I offenses have been expanded. For example, the forcible rape category now includes all forcible sexual offenses, such as forcible sodomy, sexual assault with an object, and forcible fondling.
- *New Offense Definitions.* In addition to expanding the original list of UCR offense categories, NIBRS revised the existing definitions of crime. Rape, for example, is defined as "the carnal knowledge of a person, forcibly and/or against that person's will; or, not forcibly or against a person's will where the victim is incapable of giving consent because of his/her temporary or permanent mental or physical incapacity" (Rantala, 2000).

HIERARCHY RULE

If multiple crimes take place in a single incident, only the most serious crime is recorded.

- *Elimination of the Hierarchy Rule.* Under the UCR **hierarchy rule**, if multiple crimes took place within the same event, only the single most serious crime was reported. NIBRS eliminates the hierarchy rule and cites all crimes reported as offenses within the same incident.
- *Greater Specificity of Data.* Because it collects more specific information regarding criminal incidents, NIBRS data will eventually lead to more detailed crime analysis, criminal profiling, and crime reporting. NIBRS will also have the capability of providing breakdowns regarding victims, cost, involvement of weapons, injuries, and the like, innovations that had not been possible in the past.
- *Crimes against Society.* Whereas the UCR distinguishes between "*crimes against person*" and "*crimes against property*," the addition of many new offense categories in NIBRS necessitated the creation of a new category—"crimes against society." This category includes crimes such as drug offenses, gambling violations, pornography, and prostitution.
- *Attempted versus Completed Crimes.* The UCR system reports many attempted crimes as completed ones. The NIBRS system will include a designation of each crime as either attempted or completed.
- *Designation of Computer Crime.* With NIBRS data of the future, it will be possible to determine whether a traditional crime, for example larceny, was committed by computer. But this specificity will not eliminate the traditional classifications that are important for historical trend analysis.
- *Better Statistical Analysis.* NIBRS will permit a greater opportunity for examining interrelationships between many variables such as offenses, property, victims, offenders, and arrestees.

These features represent the first major overhaul of the UCR system in more than fifty years.

On a final note, mention should be made of the growing international effort with respect to crime statistics. Organizations such as Interpol, the United Nations, and the World Health Organization all have programs of collection. Some of the problems in analyzing these data are the same as those affecting the UCR. Difficulties in analyzing crime data across countries include varying definitions of crime; differences in recording practices; differences in the law; the stage of the system when crime is recorded; factual inequalities among countries in age and urban/rural structure; and specific problems associated with recording crime (statistics may be related to politics or measures of system workload) (van Dijk and Kangaspunta, 2000).

SAMPLING

Sampling may be used with any of the data-gathering procedures we discuss. The fact that it is included here with surveys is simply a matter of editorial convenience. Some research involves a complete enumeration of the total population, households, or the target of study. Ever since 1790, the U.S. Census Bureau has attempted to survey every household unit—man, woman, and child—every ten years. Similarly, city directories attempt to count and obtain information on all persons eighteen years of age or older who reside within their urban target areas.

SAMPLING

is a procedure in which a select subunit of the population is studied in order to analyze the entire population.

Rather than attempting to enumerate an entire population, most studies make use of sampling. **Sampling** is a procedure used in research by which a select subunit of a

population is studied in order to analyze the entire population. Sampling enables an inexpensive, relatively quick assessment, by even small groups of researchers, of a population that is often so large that complete enumeration is prohibitively costly. The logic of sampling enables one to make inferences to a larger population (Kish, 1965).

The initial step in selecting a sample is to develop a **sampling frame**, a complete list of the population (or universe) that one is interested in studying. For example, if one is interested in generalizing all judges in California, a complete list of such judges would constitute the sampling frame.

SAMPLING FRAME

Complete list of the universe or population under investigation.

TYPES OF SAMPLING

The major types of sampling procedures follow.

Probability	Nonprobability
Simple Random	Quota
Stratified Random	Accidental
Cluster	Purposive
Systematic (Multistage)	Snowball

Probability Samples

Probability samples refer to samples that permit estimation of the likelihood of each element of the population being selected in the sample.

PROBABILITY SAMPLES

Sample chosen by an equal probability of selection method.

SIMPLE RANDOM SAMPLES. **Simple random samples** (SRSs) are samples in which each element of the population (or universe) has an equal probability of being selected. Sometimes the mnemonic device EPSEM samples are used to denote the key features of an SRS (Babbie, 1992, p. 197).

EPSEM, a means of sample selection, is an acronym that stands for Equal Probability of SElection Method. This method provides a way for selecting a sample in which each and every unit or person in the population has the same or equal chance of appearing in the sample. EPSEM or probability samples are very important in the field of statistics because the various calculations and estimations of statistics assume that the sample was chosen by some probability method. In describing samples that use an EPSEM, we will use the shorthand acronym EPSEM.

If probability methods have been utilized in selection of the sample, the concept of sampling error enables researchers to assess confidence limits so that with a given degree of error, they can assume that what is true of the sample is true of the population and that the sample mean approximates that of the population.

SIMPLE RANDOM SAMPLE

Involves having each element of the population having an equal probability of being selected.

EPSEM

involves a means of selection in which each element has an equal probability of selection method.

PROCEDURE. To select an SRS, it is necessary to acquire a clear and complete list of all elements of the population because all elements must be independently and randomly chosen. Suppose there are thirty people in a room and a simple random sample of five are to be drawn. One could give each person a number, drop these numbers into a hat, scramble them, and then draw five, one at a time. State lottery daily numbers usually make use of an honest gambling device procedure that is essentially an SRS. What if, as in a large survey of the public, one wished to draw a simple random sample of adults from

Angelo, Gerald	Clemons, Randy	Kozak, Dave	Parks, Zeke	Thiel, Myrtle
Bell, Earl	Dammer, Harry	Lewis, Ed	Penn, Wally	Thompson, Mary
Bender, Harry	Dutkowsky, Andrew	Mack, Bob	Quick, Bob	Tierney, Estelle
Benekos, Peter	Edsel, Earl	McGill, Bill	Rapp, Sean	Unterwagner, Jim
Bethune, David	Erisman, Mike	Morris, Tom	Rasp, Doug	Vance, Lance
Bozo, Boris	Frederici, Mike	Mucha, Fred	Ross, Joe	Vega, Terence
Bruno, Albert	Goblick, Al	Norris, Herb	Runt, Juan	Wahlen, John
Burns, Rich	Hairbreath, Harry	Numa, Tod	Saxon, Sid	Wayne, Mike
Buxton, Bob	Harlow, Joe	Obernan, Stan	Simmons, Mary	Weeks, Bary
Buzawa, Eve	Johnson, Leroy	Parker, Omar	Simpson, Ted	Zeno, Mike

TABLE OF RANDOM NUMBERS*

07001	61569	08812	07344	92880	71728
43102	29751	87806	12031	56214	41387
61622	71481	20091	37658	99612	28143
50126	51296	07509	61483	25143	61974

FIGURE 3 Sampling Frame of Inmates at San Rocco Correctional Institution.

*This table of random numbers is provided for illustration purposes only. For actual projects, consult Table of Random Numbers.

a city of a million? Obviously, one would not put numbers in a hat. To sample such large populations, researchers make use of a table of random numbers. Figure 3 illustrates a theoretical population and a hypothetical typical table of random numbers. Table of Random Numbers contains a larger table of random numbers.

To select a sample of ten inmates, one would first number the list of inmates, then choose a random start, for example, the top left of the table of random numbers. As the entire population consists of fifty cases, numbers from 00 to 99, or two-digit numbers, would enable each name to have an equal probability of selection. Numbers from 51 to 99 are, of course, unusable; if these numbers are chosen, they should be skipped and the selection process continued until the next two-digit number between 01 and 50. According to Figure 3, the first number is 07—Albert Bruno, the second is 00—no case, the third is 16—Mike Federici, and so forth, until ten cases are chosen. If the same number is chosen twice, it is skipped because each respondent should appear only once in the sampling frame. For complex sampling, various computer programs are available that provide an SRS of a specified size.

ADVANTAGES/DISADVANTAGES. The chief advantage of the SRS is that it enables the use of statistical probabilities that are necessary in many statistical procedures. The primary disadvantages of the SRS, however, are that it *requires a complete list of the population to be sampled* and, if large numbers are involved, it *can become a rather tedious and cumbersome procedure*, although this can be offset by computer. The SRS *by no means guarantees a representative sample.* On the last point, by chance it is possible in our San Rocco sample (see Table 2) to obtain a sample that is 50 percent female, even though females represent only 10 percent of the population. As we will see in our discussion, the probability of this occurring is small, but it certainly is possible. Such a

nonrepresentative sample certainly raises problems for a researcher attempting to infer to the larger population. Primarily for this reason, much survey research involving sampling utilizes stratified random samples.

Some examples of research employing SRSs include a study of New York City drug laws by Japha (1978), in which he randomly selected cases from the Criminal Court of Manhattan of persons convicted for a nondrug felony who had been given a nonincarceration sentence. In addition, he drew random samples of cases entering court for arraignment, cases reduced or dismissed at first arraignment, clients in drug treatment programs, and males held on felony charges in Manhattan. Sparks (1982), in a study of Massachusetts statewide sentencing guidelines, constructed a random sample of 1,440 convicted criminals who had been sentenced in the Massachusetts Superior Court during a one-year period.

STRATIFIED RANDOM SAMPLES. **Stratified random samples** rely on knowledge of the distribution or proportion of population characteristics to choose a sample that assures representativeness of these characteristics. Such characteristics are generally demographic in nature, such as age, sex, race, social class, or of pertinence to the study, such as area of residence, nature and type of criminal record, region, or some quality of importance in the analysis.

STRATIFIED RANDOM SAMPLE

relies on knowledge of the distribution or proportion of the population characteristics to choose a sample that assures representativeness of these characteristics.

The general procedure involves dividing the population into strata or groups based on the variable(s) of stratification and then selecting the sample either proportionately or disproportionately, depending on the decision made in this regard. For **proportionate stratified samples**, sample subjects are chosen in roughly the same ratio as exists in the population. For instance, suppose that in our San Rocco study of fifty inmates, we wanted to choose a proportionate stratified sample by sex of ten inmates. Because one of ten is a female in the population, we must be certain that only one of the ten subjects in the sample is female. Such a procedure assures representativeness by sex, unlike the SRS in which half of the sample were females.

PROPORTIONATE STRATIFIED SAMPLE

Subjects are chosen in roughly the same ratio as exists in the population.

Disproportionate stratified sampling involves oversampling—taking a larger-than-proportionate number of certain groups to assure the appearance of a sufficient number of cases for comparative purposes of a group that is small in the population. Again, returning to our example in Figure 3, suppose that we wished to investigate differences between male and female inmates at San Rocco. An SRS could result in a sample of all males, which would certainly destroy our ability to even conduct the study. A proportionate stratified sample would yield one female and nine males, a situation that would be quite hazardous because, on every variable of analysis, the 100 percent response of females would be referring to only one respondent. A disproportionate stratified sample might take all five female subjects and compare them with a sample of male respondents, for example, five males. There is generally no problem in comparing males with females using a disproportionate stratified sample; however, if inferences were to be attempted from a sample that is overrepresentative of females to all inmates, the sample is obviously nonrepresentative. *Weighting* of sample responses is a recommended procedure to adjust sample data to enable inference to the general population. Basically, weighting involves the differential assignment of adjustment factors to data to take into account the relative importance of that data.

DISPROPORTIONATE STRATIFIED SAMPLE

involves oversampling —taking a larger than proportionate number of certain groups to assure the appearance of small groups.

Table 2 illustrates this process.