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AN EXPERIMENTAL COMPARISON OF TWO
SELF-REPORT METHODS
FOR MEASURING LAMBDA

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ABSTRACT

Criticisms of the RAND Second Inmate Survey have implied that missing and ambiguous responses and problems related to trying to measure self-reported crime rates over extended periods of time may have led to inflated estimates of λ . In the present study, the authors randomly assigned prison inmates to two groups, one to be interviewed using the RAND method for measuring crime rates, and one to be interviewed using the authors' modified month-by-month method. The authors expected that their month-by-month method would produce lower estimates of λ . They found that the two distributions of λ did not differ significantly from each other, suggesting that the RAND results are very robust.

One focus of criminal careers research has been on the measurement of individual offending frequency, or lambda (λ) (Blumstein, Cohen, Roth and Visher, 1986). Because actual rates of committing crimes are poorly represented by official statistics, the development by RAND Corporation researchers of a self-report methodology for estimating λ in adult offenders (Peterson and Braiker, 1980; Rolph, Chaiken, and Houchens, 1981; Chaiken and Chaiken, 1982; Greenwood, 1982, Peterson, Chaiken, Ebener and Honig, 1982) represents a major criminological contribution. In the study now referred to as the RAND Second Inmate Survey, Chaiken and Chaiken (1982) presented data on nearly 2,200 inmates of prisons and jails in three states which indicated that the distribution of λ is highly skewed. Most of the inmates in that study reported committing only five or fewer crimes per year, but a small number of offenders indicated that they committed crimes at very high rates--hundreds or thousands per year, depending on the crime.

The RAND Corporation self-report research has generated much interest and controversy. Many were surprised by the extremely high rates of offending estimated for some respondents. Interest in the precise estimates has been especially stimulated by the application of RAND λ s to policy questions, as in Zedlewski's (1987) projections of cost savings to be gained through incarceration. Zedlewski used the RAND study's estimate of mean annual crime rate to project that incarcerating 1000 more offenders would prevent 187,000 felonies through incapacitation alone.

In an earlier study (Horney and Marshall, 1991) we reported on our development of a modified version of the RAND self-report instrument which used month-by-month reporting of crimes in order to take into account intra-individual variability in offending rates. Using individual interviews rather than self-administered questionnaires and a more detailed calendar to facilitate recall, we used that instrument to survey incarcerated felons in Nebraska. Our findings in that study suggested that the use of the month-by-month reporting method for determining offending rates might produce lower estimates of λ than the RAND method.

There are, of course, numerous problems in trying to compare our results

to those of Chaiken and Chaiken (1982). The fact that we used individual interviews rather than self-administered questionnaires, or the fact that we used a more detailed calendar as a reference point for reporting of offending may have produced different estimates of λ . Differences might also be related to the nearly ten years that separated the two studies. Overall changes in offending during that time might have produced different distributions of λ . Probably most important, the RAND study was conducted with inmates in California, Texas, and Michigan; our respondents were incarcerated in Nebraska. The considerable variability among estimates of λ for RAND's three groups indicates that we should be very cautious in comparing inmates from different correctional systems. Not only may the characteristics of offender populations differ across geographic locations, but distributions of λ may also reflect differences in correctional policies across states. Thus it has been suggested that the lower estimates of λ Chaiken and Chaiken (1982) obtained in Texas may have resulted because thresholds for incarceration in Texas are lower than in California and Michigan. In other words, a wider net for incarcerating individuals would result in a prison population with a larger percentage of low-rate offenders.

Because of these problems with trying to compare our results to those of Chaiken and Chaiken (1982), this earlier study did not allow us to directly address the question of whether our method would produce lower estimates of λ than the RAND method. In order to answer that question, we conducted a follow-up study, using a randomized experimental design. While most experiments in the field of criminal justice attempt to test the effectiveness of innovative programs (Farrington, 1983), the present paper reports on a somewhat different use of experimentation. In our study, random assignment was used, not to determine whether a new treatment or policy had any effect, but to compare two different survey methods. Although different in focus, our experiment builds on the research conducted by Hindelang, Hirschi, and Weis (1981), who employed a quasi-experiment to assess the impact of method of administration (questionnaire or interview) on the amount of delinquency reported by respondents and on the validity and reliability of such reports. In the

present study, we randomly assigned prison inmates to two groups, one to be interviewed using the RAND method for measuring crime rates, and one to be interviewed using our modified month-by-month reporting method. The dependent variable was the magnitude of self-reported offending frequency. The use of an experimental design let us assume that the underlying distributions of λ for the two groups would be essentially equal, and therefore conclude that any differences in the estimates of λ must be due to the methods employed to measure offending. In this paper we explain the reasons for expecting differences between the experimental group and control group, and then we present the results of our experiment.

WERE RAND LAMBDA'S TOO HIGH?

Most criticisms of the RAND data have implied that methodological problems may have led to estimates of λ that were too high. Critics have focused on specific problems that RAND researchers faced because of missing and ambiguous responses in their data set and on general problems related to trying to measure response rates over extended periods of time.

Missing Data Problems

The RAND self-report instrument is long and complicated with many skip patterns and questions repeated with varying formats. In the Second Inmate Survey, the survey was self-administered, with instructions given to groups of 15 to 32 inmates at a time. As a result, RAND researchers had to deal with the problem of many missing or ambiguous responses to questions critical to the computation of λ . They adopted a set of strategies that led to computing minimum and maximum estimates of λ . Visher (1986) suggested that the RAND strategies may have led to overestimating λ . Using more conservative strategies for handling the missing and ambiguous responses, she reanalyzed the data for inmates who reported committing robbery and burglary and obtained single estimates of λ that were very close to the RAND minimum estimates and quite different from their maximum estimates.

Measurement Over Extended Time Periods

Trying to obtain estimates of rates of activity over extended time periods is difficult, and results can vary greatly depending on how the questions are asked. In fact RAND researchers obtained widely discrepant results with two different versions of the self-report instrument.

Chaiken and Chaiken (1982) obtained estimates of λ by asking respondents who reported committing a particular crime 10 or fewer times in the reference period to give the exact number of offenses committed. Respondents who reported committing more than 10 offenses were asked to give the number of street months in which they were active in committing that crime and the number of offenses per day, week, or month they were usually doing while active. In an earlier RAND study (Peterson and Braiker, 1980), all respondents were simply asked to indicate the total number of times they had committed an offense during the reference period. The estimates of λ obtained with the more detailed questions were much higher.

Although it seems that the more detailed questions should produce more valid estimates of offending rates, there are still potential problems that may have led to inflated estimates of λ . Asking about the "usual" rates of offending implies either an assumption that offenders commit crimes at constant rates or that they are able to mentally compute an average rate from rates that may vary considerably over time. It is likely that neither assumption is justified. Rolph, Chaiken, and Houchens (1981), in fact, found evidence in additional analyses of RAND data that offenders commit crimes in "spurts" rather than at constant rates. As for the mental averaging, Cohen (1986) suggested that rather than averaging across periods of high and low activity to arrive at a typical rate, offenders are more likely to refer to high-rate periods in reporting typical rates because those high rates of offending have greater saliency. Visher (1986) suggested that another salient period to which offenders might refer in reporting "typical" rates is the recent period just before arrest. If that tends to be a period in which offenses are committed at a high rate, referring to those rates in describing "typical" rates would also lead to overestimating λ .

MONTH-BY-MONTH METHOD

Concerns about the accuracy of the estimates of λ obtained in the RAND study led us to develop a refined approach to measuring λ through self-reports (Horney and Marshall, 1991). We used individual interviews to avoid problems of missing and ambiguous responses, we developed a more detailed calendar system to facilitate recall of criminal activity, and we asked respondents to describe their criminal activity month-by-month in terms of four different levels of activity. In our pilot study testing this method, we found evidence of considerable variability of offending rates within individuals and found that patterns of variability differed across crime types. We found, for example, that rates of committing burglary were the most variable during offenders' active periods; drug dealing offenses, in contrast, were much more likely to be committed throughout an offender's entire reference period and were also more likely to be committed at a constant rate during active periods.

Because our method asked offenders to define their "high," "medium," and "low" rates of offending, we were able to simulate the λ s that might have been obtained using the RAND method if respondents had referred to their high rates or recent rates in estimating their typical active rates. We found that if high rates were used, the RAND method could lead to estimates of λ being inflated by from 2% to 120%, depending on the crime category, with the greatest overestimation for crimes with the largest variability in offending frequencies.

We were surprised to find that recent rates (offending rates in the three months preceding arrest) were not necessarily higher than overall rates. If our respondents had referred to these recent rates in describing typical rates, estimates based on the RAND method would be less discrepant than if they referred to their high rates. In some cases the use of recent rates in calculating λ led to lower estimates than use of all the month-by-month data.

Like Chaiken and Chaiken (1982), as well as others who have replicated the RAND study with various modifications (Mande and English, 1987; Miranne and Geerken, 1991), we found highly skewed distributions of offending, with

most people committing one or two offenses, but with a small number of people committing offenses at very high rates. Our simulated results, using high rate estimates to calculate λ , suggested, however, that our method of month-by-month reporting might produce lower overall estimates of λ than the RAND method. Because differences in populations, general survey methods, and time periods precluded meaningful comparisons of our results with those of Chaiken and Chaiken (1982) we designed the present study to directly test the two methods for estimating λ in a controlled experiment.

METHODOLOGY

RESPONDENTS

Our respondents were 700 convicted male offenders sentenced to the Nebraska Department of Corrections. We attempted to interview all men admitted to the Diagnostic and Evaluation Unit for new offenses until we had our required sample size. We chose to use an actual intake cohort for three reasons. First, an intake cohort gives us a representative sample of convicted offenders. A sample of prison residents, in contrast, is biased by length of stay in the institution since more people with long sentences are included.¹ Second, using an intake cohort makes the reference period we ask about (a period just preceding the current conviction) a similarly recent period for all respondents.² Finally, there is evidence that higher response rates may be achieved with an intake cohort.³ Mande and English (1987) attributed their high response rate on a similar survey to the fact that their sample was housed in the Diagnostic Unit of the Department of Corrections and that inmates were not yet involved in work projects or treatment programs that could cause scheduling problems.

Our respondents represent 90% of all males admitted to the Nebraska Department of Corrections during a nine-month period. Some admissions were missed because they were transferred out of the Diagnostic and Evaluation Unit before we could interview them. Six people could not be interviewed because

they did not speak English, and we were not allowed to interview one person because of his mental instability and violence. Our interviewers met with a total of 746 inmates to explain the study and invite participation; 94% of that group completed the interviews.

PROCEDURES

Usually within one week of the time inmates were admitted to the Diagnostic and Evaluation Unit, they were brought to a private visiting room to meet with an interviewer to have the study explained. The interviewer gave a brief explanation of the study and then read aloud an informed consent form, after which the inmate could either sign the form and proceed with the interview or return to his unit or other activity.

The interviewers read all the questions and wrote down the respondents' answers. They answered any questions the respondents asked and attempted to make sure that respondents understood the survey questions adequately. If respondents' answers were ambiguous or inappropriate to the question, interviewers asked the question again and tried to make it clear to the respondent. For critical aspects of the survey such as crime definitions, they did not go beyond the descriptions written in the instrument. Each interview took from 45 to 90 minutes.

Assignment to Conditions

We randomly assigned respondents to the experimental and control conditions. Those in the experimental condition were asked about offending rates with the more detailed calendars and month-by-month recording. Those in the control condition were questioned with the RAND questions about typical rates. Before the interviews began, all survey instruments--350 with RAND questions and 350 with the modified questions--were placed in unmarked envelopes. We then generated by computer a listing of the numbers 1 to 700 in random sequence. Following that list of randomly ordered numbers, we placed a number on each of the 700 envelopes. After numbering the envelopes, we rearranged them in numerical order. Interviews were conducted strictly

following the sequence; i.e., the interviewer had to conduct the interview numbered 001 before 002, and so on. The interviewers thus did not know which interview method would be used for any given interview. They also had no knowledge about an inmate before the interview, except for the person's name. Because the instruments were randomly assigned to interviews, it also meant that the random assignment applied to inmates who actually participated in the study rather than to the list of potential participants.

SURVEY INSTRUMENT

The basic instrument we used is based on that used in the RAND Corporation's Second Inmate Survey (Chaiken and Chaiken, 1982). In addition to the questions that are the focus of this paper, the survey also asks about criminal history, substance abuse, attitudes and beliefs about crime and the criminal justice system, predictions of future criminal behavior, and basic demographic variables.

In the critical section of the interview we asked respondents to consider a reference period⁴ immediately preceding the arrest for the offense from which their current incarceration followed. For that period we asked them about the frequency of criminal activity for nine different crimes (defined according to Chaiken and Chaiken, 1982): burglary, business robbery, personal robbery, assault, theft, auto theft, forgery, fraud, and drug dealing.⁵

CRIME RATE QUESTIONS

The key difference between the experimental and the control group was in the questions used for determining crime rates. The questions used for the control group were the same ones used by Chaiken and Chaiken (1982) in the RAND study. For the experimental group we used our month-by-month method with more detailed calendars for facilitating recall and recording responses.

Control Condition

For the control condition (RAND method), respondents were shown a 24-month calendar to establish the reference period. We asked the respondent to

identify the month in which he had been arrested for his current offense(s); we then crossed out all the months after that one. We then asked if he had been locked up for a month or more during any of the earlier months on the calendar; if so those months were also crossed out. The remaining months were designated as the "street months." We then asked the respondent whether, during any of the street months, he had been: in the service, in the hospital, going to school, working, living with a wife, living with a girlfriend, drinking heavily, or using drugs. If the respondent answered affirmatively, we asked him to specify during how many of the street months that category had been applicable. We also asked how many times during the street months the respondent had moved from one city to another.

Next, the interviewer asked, for each target crime, whether during the street months the respondent had done any _____ (burglaries, for example). If the answer was "no", the interviewer skipped to the next target crime. If "yes," we then asked the respondent to indicate whether he had done 1 to 10 or 11 or more. If he answered "1 to 10," he specified how many. If he answered 11 or more he was then asked to indicate how often he usually did the crime, using the following categories:

1. Every day or almost every day. (If yes, then how many per day and how many days a week usually?)
2. Several times a week. (If yes, then how many per week?)
3. Every week or almost every week. (If yes, then how many per month?)
4. Less than every week. (If yes, then how many per month?)

Experimental Condition

For respondents in the experimental condition we used two different calendars--an "event calendar," and a "crime calendar," to establish the reference period and also to record detailed information. We first determined the "street months" for each respondent with the 36-month event calendar (see Horney and Marshall, 1991, Figure 2), using the same procedures as in the control condition.

We then asked the respondent whether during any of the street months he

had been: in the service, in the hospital, going to school, working, living with a wife, living with a girlfriend, drinking heavily, or using drugs. For each positive answer we asked the respondent to identify the specific months when the activity was occurring. The interviewer then placed a check beside the appropriate items for those months. The respondent also indicated whether he had moved from city to city during the street months; each move was recorded also on the calendar.

Next, we showed the respondent the crime calendar (see Figure 1). The interviewer marked out all but the street months as recorded on the event calendar and then asked, for each target crime, whether during the street months the respondent had done any _____ (burglaries, for example). If the answer was "no", the interviewer skipped to the next target crime. If "yes," then we asked the respondent to indicate whether he had done 1 to 10 or 11 or more. If he answered "1 to 10," he specified how many, and then indicated on the "crime calendar" during which months he did those burglaries. The interviewer placed a check next to "burglary" for those months.

(Figure 1 About Here)

If the respondent reported having committed 11 or more burglaries during the reference period, the interview proceeded in a different manner. The interviewer showed him the crime calendar and first asked him to point to the months during which he did no burglaries. The interviewer then entered a "0" in the space beside "burglary" for those months. Next the interviewer asked the respondent to think about months when he was doing burglaries at low, medium, or high rates, and told him to define those rates with any numbers he wanted. First the respondent was asked to indicate the months when he was doing burglaries at a "low" rate; the interviewer entered a "1" in the space next to "burglary" for those months. At that point the respondent's definition of "low" rate was established by asking him how often he usually did burglaries during those "low" rate months. He was given choices that led to specifying how many burglaries per day, week, or month he committed (the same alternatives described above for the control condition).

The interviewer then proceeded in the same manner to have the respondent

identify months with "medium" and "high" rates of committing burglaries. Respondents were not forced to use all levels of responding, but they were asked to specify either zero or a "low," "medium," or "high" rate for every month. The same procedure was then used for each of the other offense categories.⁶

RESULTS

ESTIMATES OF LAMBDA

For the control (RAND) group, λ was calculated in the manner described by Chaiken and Chaiken (1982: 42). If a respondent with a 22-month measurement period (from beginning of the two-year calendar period until the arrest that led to the present incarceration) spent 6 of those months in jail, he would have a total of 16 street months--the time during which he had opportunities for committing crimes. If he reported committing a total of 6 burglaries during that time, his annualized crime rate would be:

$$\begin{aligned}\lambda &= \text{total burglaries} \times (12 \text{ months/year})/\text{street months} \\ &= 6 \times (12/16) \\ &= 4.5 \text{ burglaries/year}\end{aligned}$$

If that respondent had reported committing 11 or more target crimes, a "typical" monthly rate would be calculated, based on his answers to the questions described earlier. That rate is then multiplied by the number of months he said he was doing burglaries to determine the total committed. If, for example, a respondent indicated that he did 11 or more burglaries, that he usually committed about 2 burglaries a day, and usually did them 4 days a week during the 10 months he was doing burglaries, his "typical" rate would be 34.4 per month ($2/\text{day} \times 4 \text{ days/week} \times 4.3 \text{ weeks}$). His total burglaries during the reference period would be 344 ($34.4 \text{ burglaries/mo.} \times 10 \text{ mos. active in burglary}$) His annualized offending rate would be:

$$\begin{aligned}\lambda &= \text{total burglaries} \times (12 \text{ months/year})/\text{street months} \\ &= 344 \times 12/16 \\ &= 258 \text{ burglaries per year}\end{aligned}$$

For the experimental group we compute λ in the RAND manner for those who reported committing 1 to 10 offenses. For those who reported committing 11 or more crimes, the computation becomes more complex. Let us take an example of a respondent who also has a 22 month measurement period, of which 6 months were spent in jail, giving him 16 street months (refer to the last 2 years of the calendar in Figure 1). Of those 16 months, he identified 6 months during which he did no burglaries, 3 as months during which he did burglaries at a "low" rate, 5 as "medium" rate months, and 2 as months during which he did burglaries at a "high" rate. In the follow-up questions, we determined that, to him, doing burglaries at a "low" rate meant 2 per month, a "medium" rate meant 1 per week, and a "high" rate meant 2 per day and usually 4 days per week. Thus we will calculate his "low" rate as 2 per month, his "medium" rate as 4.3 per month ($1/\text{week} \times 4.3 \text{ weeks}$), and his "high" rate at 34.4 per month ($2/\text{day} \times 4 \text{ days/week} \times 4.3 \text{ weeks}$). We can then calculate his annualized burglary rate as:

$$\begin{aligned}\lambda &= \text{total burglaries} \times (12 \text{ months/year})/\text{street months} \\ &= ((6 \times 0) + (3 \times 2) + (5 \times 4.3) + (2 \times 34.4)) \times 12/16 \\ &= 96.3 \times 12/16 \\ &= 72.23 \text{ burglaries/year}\end{aligned}$$

Table 1 presents the summary data for our comparisons of the experimental and control (RAND) groups (for these analyses, we combined business robbery and personal robbery into a single measure of total robbery). The presentation of λ s for groups of inmates is complicated by the highly skewed nature of the resulting distributions. Figures 2, 3, and 4 which plot distributions for burglary, drug dealing, and total crimes except for drug dealing, illustrate this problem. As Chaiken and Chaiken (1982) and others have noted, the mean is not an adequate measure because it is so sensitive to

the extreme values of the highest-rate offenders. The median is also not completely satisfactory since it conveys so little information about those high-rate individuals. In Table 1 we thus present the mean, median and 90th percentile, as well as percent active in each crime category.

(Figures 2, 3, and 4 About Here)

The percent active in each crime category is the percent of respondents who reported committing at least one of that offense during the reference period we asked them to consider. The mean, median and 90th percentile then refer to the λ s calculated for that active group. Because the distributions clearly do not meet the necessary assumption of normality, a test of difference in means is not appropriate for comparing the two groups. Instead we used the Mann-Whitney U test to see if the methods of asking about offense rates produced any significant differences in the calculated λ s. In addition we used the chi-square test to compare the percent active in each crime category for the two groups. As Table 1 indicates, there were no significant differences between the two groups, either in the percent active, or in the crime commission rates.⁷

The experimental method of asking about crime rates only differed from the control method when a respondent reported committing more than 10 offenses within a crime type during the reference period. Differences produced by the two methods thus may have been obscured by the large number of respondents who reported committing between 1 and 10 offenses during that period. In order to check this possibility, we compared the distributions of those who reported more than 10 offenses, again using the Mann-Whitney test. Table 2 shows the percent who committed more than 10 offenses in each group and the test results. We do not present results for robbery, auto theft, forgery, or fraud because the numbers of respondents who reported committing more than 10 offenses was so small. For the remaining offenses, there were again no significant differences, although differences for those active in burglary approached significance at the .05 level.

DISCUSSION

The measurement of individual offending frequency (λ), or the number of crimes committed per year by an active offender, is a central focus of criminal careers research. Reliance on official statistics severely limits the study of offending at the individual level; thus the self-report methodology pioneered by the RAND Corporation (Peterson and Braiker, 1980; Rolph, Chaiken, and Houchens, 1981; Chaiken and Chaiken, 1982; Greenwood, 1982; Peterson, Chaiken, Ebener, and Honig, 1982) represented a major contribution to this area of criminological research. The importance of the RAND research is highlighted by the fact that it stimulated both secondary analysis of the data (Visher, 1986) and several replications with modifications (Mande and English, 1987; Miranne and Geerken, 1991; Horney and Marshall, 1991). In our earlier study we reported on our attempts to refine that methodology to obtain even more precise estimates of λ . Our month-by-month reporting method took into account intra-individual variability in offending rates and avoided asking respondents to mentally average different rates over extended periods of time. In the present study we experimentally compared the month-by-month method with the original RAND method for obtaining self-reports to see if they produced different estimates of λ . More specifically, because of suggestions that the RAND estimates had been too high, we wanted to find out if the month-by-month method produced lower estimates of λ .

Even though data produced by the month-by-month method indicate that respondents do commit crimes at varying rates during their active periods (Horney and Marshall, 1991), we found that the two methods produced distributions of λ that did not differ significantly from each other. Our experiment, especially in light of other replications of the RAND study (Mande and English, 1987; Miranne and Geerken, 1991), in fact suggests that the RAND results are very robust. These replications have been very consistent in finding heavily skewed distributions, with most respondents committing a relatively small number of offenses a year and a very few respondents

reporting extremely high rates of offending. The finding of different patterns across crime categories has also been replicated, with crimes such as robbery and auto theft committed at relatively low rates and crimes like theft at much higher rates. We also found, as have the other studies, that drug dealing is reported to occur at astoundingly high rates.

We believe that our findings suggest that the self-report methodology is a valid tool for the study of criminal careers. Because the RAND instrument is so long and complicated, and because it was self-administered in the original study, questions have been raised as to whether a population of prison inmates, with limited verbal skills, were capable of producing valid data with this method. The fact that RAND researchers had to develop a set of assumptions and strategies for handling missing and ambiguous responses further clouded interpretation of their results. In the present study we used individual interviews in order to avoid these problems. Our calculations of λ were straightforward; we did not have to interpret responses, substitute mean values, or use minimum and maximum estimates for any of the components. With these advantages, we still obtained results that are overall quite comparable to the original RAND results.⁸

Our month-by-month reporting method has indicated that there is considerable variability in offending rates within individuals over relatively short time periods (Horney and Marshall, 1991). We thus speculated that methods for determining λ that involve assumptions of constant rates would produce invalid estimates. The results of our experiment, however, indicate that the month-by-month method, even though it takes intra-individual variability into account, produces overall estimates of λ that do not differ from those produced by the RAND method. One interpretation of the lack of significant differences is that when respondents are asked about their "typical" rates of responding they do a fairly good job of averaging over their different rates. Since the longest reference period being considered by any respondent was 24 months, and the reference period was much shorter for most respondents, it is possible that people are better at averaging than we expected.

The month-by-month method may fail to produce significantly different results because it focuses on the offenders who committed more than 10 offenses in a category, as does the detailed rate questioning of the RAND method. Thus the differences in the two methods are aimed at fairly small groups of respondents, albeit perhaps the most important respondents--the high-rate offenders. Detection of differences between the methods may be hampered by the problems inherent in the highly skewed distributions with extreme values--which can either be considered "outliers" or the most important values in the samples--producing very unstable means. There is no totally satisfactory way for handling these extreme values. We chose a fairly conservative strategy of using nonparametric tests to compare the distributions, and we believe that is the most reasonable strategy.

Although the month-by-month method does not change overall estimates of λ , we believe it has other important advantages for the study of criminal careers. Using this method, we have already learned a considerable amount about differences in activity patterns. Our data have raised questions of whether the activity patterns associated with different crimes reflect the nature of specific offenses or differences in lifestyles associated with particular offenses. We also believe that the variability in offending rates within individuals may have important implications for understanding criminal behavior and developing intervention strategies. Our method will allow us to identify the situational correlates of these different offending rates within individuals, which may be as important as identifying the correlates of participation in crime.

NOTES

1. The RAND researchers conducted their surveys with a resident population, but because of this bias, they drew a sample designed to simulate a cohort of incoming prisoners. There were several differences, however, between their samples and actual incoming cohorts in the three states; for example, younger offenders were underrepresented.
2. In the Rand study, because they sampled resident populations, respondents were asked to consider a window period separated from the interview by whatever time they had already been incarcerated. Visher (1986: Table 5) indicates that 26% of the respondents had served at least two years at the time of the survey. These respondents were thus being asked to think about events four years and more in the past. Because respondents are being asked to recall detailed information, we believe there is considerable advantage to having a recent recall period.
3. Concern has been expressed about the response rate in the Rand survey (Visher, 1986); response rates in California and Michigan prisons were 49.4 and 49 percent, and a response rate of 82.2 percent was obtained in Texas prisons.
4. The Rand study used a two-year period. In the Rand method, the date of arrest established the second calendar year; inmates were instructed to consider the portion of that year up to and including the month of arrest plus the preceding calendar year. The measurement period thus varied from 13 months (for inmates arrested in January of the second calendar year) to 24 months (for inmates arrested in December of the second calendar year). If an inmate who started with a measurement period of only 13 months had spent any of that time locked up, the possible active period could be very short.

Because we were also interested in studying the variability in individual offending over time, it was important to have relatively long street times for measuring offense rates. We thus used the year of arrest (the months up to and including the month of arrest) and the two calendar years preceding the year of arrest in the experimental condition. The measurement period for each inmate then varied from 25 months to 36 months. The longer window period we used should

not cause greater recall problems than occurred in the Rand study because we used an actual intake cohort and interviewed them immediately after their admission to the Department of Corrections. Respondents were thus considering a three year period very close to the interview time. For our comparisons of the two methods in this paper, we calculate λ s based only on the two-year period before arrest for the experimental condition.

5. We added the crime of rape to our survey. Some respondents reported multiple rapes, but the overall number of respondents who admitted to committing rapes was so small, that the results are not presented here.

6. We also asked the more detailed rate questions for assaults; the original RAND study only asked for total number of assaults.

7. We also used chi-square tests of differences in distributions with cut points used by Chaiken and Chaiken (1982: 49) as well as with cut points creating fewer categories. None reached a .05 significance level.

8. We still cannot say, of course, with any certainty that the original RAND estimates were not inflated because of problems with the self-administered questionnaires. Our results should perhaps be more appropriately compared to estimates provided by the Visher (1986) reanalysis.

TABLE 1. ESTIMATES OF LAMBDA BY CRIME CATEGORY

FOR ACTIVES

	% ACTIVE	X2 SIG. LEVEL	MEDIAN	90TH PERCENTILE	MEAN	MANN- WHITNEY U SIG. LEVEL
<u>BURGLARY</u>						
EXPER.	22%	.7848	1.70	49.35	29.86	.1075
CONTROL	23%		2.18	154.80	67.32	
<u>ROBBERY</u>						
EXPER.	7%	.4825	2.09	20.91	12.18	.7098
CONTROL	9%		1.30	140.52	31.06	
<u>THEFT</u>						
EXPER.	20%	.4590	4.94	770.54	296.02	.5736
CONTROL	22%		4.71	247.21	125.10	
<u>AUTO THEFT</u>						
EXPER.	11%	1.00	1.26	19.20	67.92	.3102
CONTROL	11%		1.50	36.00	9.51	
<u>FORGERY</u>						
EXPER.	13%	.2876	3.53	300.46	85.14	.4028
CONTROL	10%		2.11	268.16	96.97	
<u>FRAUD</u>						
EXPER.	5%	.1984	4.67	553.80	137.17	.2734
CONTROL	3%		1.57	1365.52	180.29	
<u>ASSAULT</u>						
EXPER.	30%	.7394	1.82	50.16	43.83	.1713
CONTROL	29%		2.49	36.00	135.89	
<u>DRUG DEALS</u>						
EXPER.	41%	.8782	361.20	7799.49	2438.05	.7170
CONTROL	42%		166.71	13141.98	3918.56	
<u>TOT. CRIME</u>						
(NO DRUG)						
EXPER.	60%	.2832	4.00	285.56	175.07	.5559
CONTROL	56%		4.42	341.55	180.82	

TABLE 2. ESTIMATES OF LAMBDA BY CRIME CATEGORY FOR
RESPONDENTS REPORTING MORE THAN TEN OFFENSES

FOR ACTIVES OVER 10

	% ACTIVE		90TH		MANN-
	OVER 10		MEDIAN	PERCENTILE	WHITNEY U
				MEAN	SIG. LEVEL
BURGLARY					
EXPER.	4%		48.00	712.08	157.21
CONTROL	5%		154.80	939.12	302.29
THEFT					
EXPER.	8%		142.90	1806.00	710.06
CONTROL	7%		154.80	1517.04	382.47
ASSAULT					
EXPER.	5%		59.81	1553.16	272.92
CONTROL	4%		54.32	6852.48	1014.87
DRUG DEALS					
EXPER.	31%		903.00	9752.40	3242.31
CONTROL	30%		1057.80	21672.00	5432.99

Figure 1. Crime Calendar

Year:

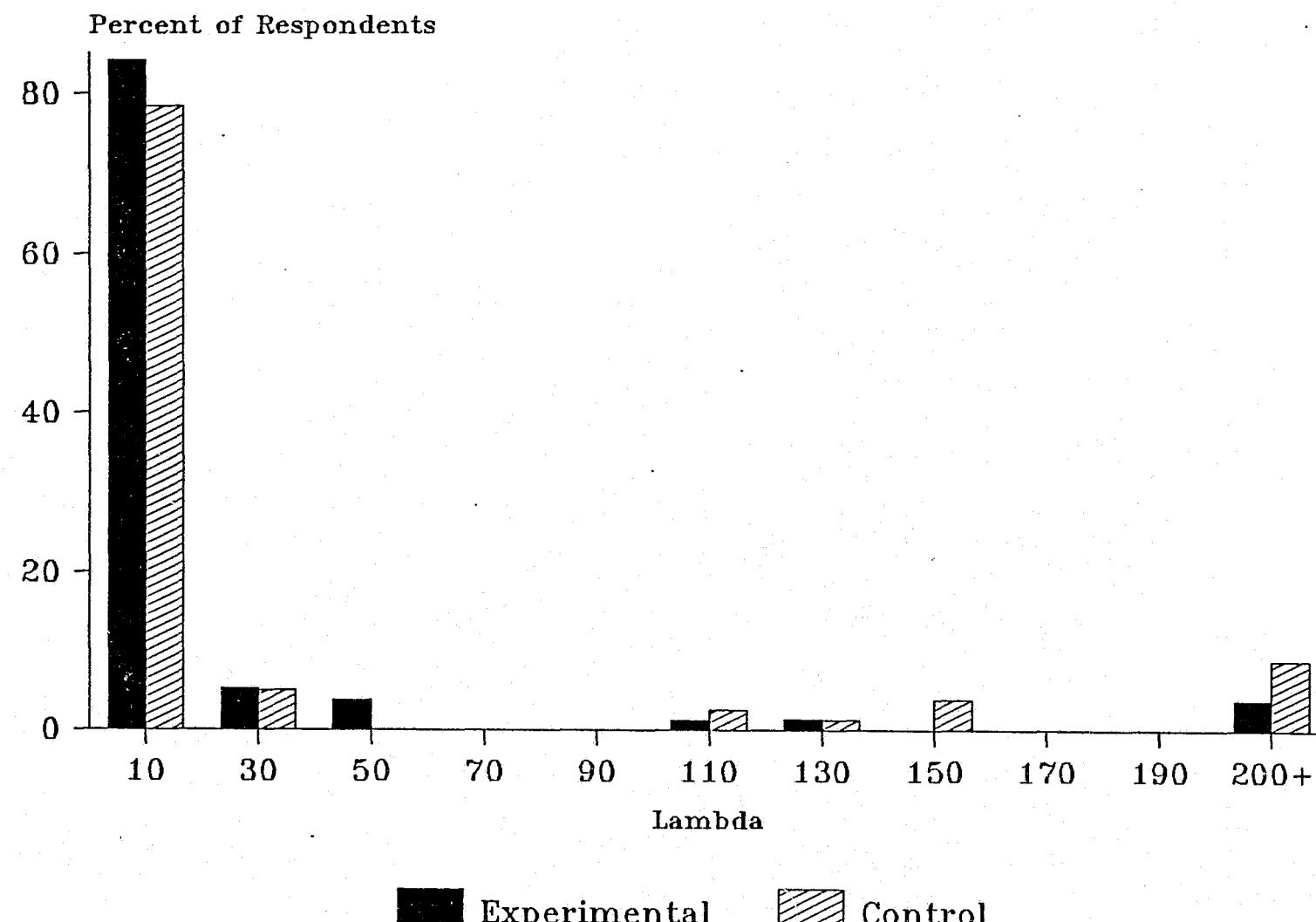
Survey Number:

Year:

Year Arrested:

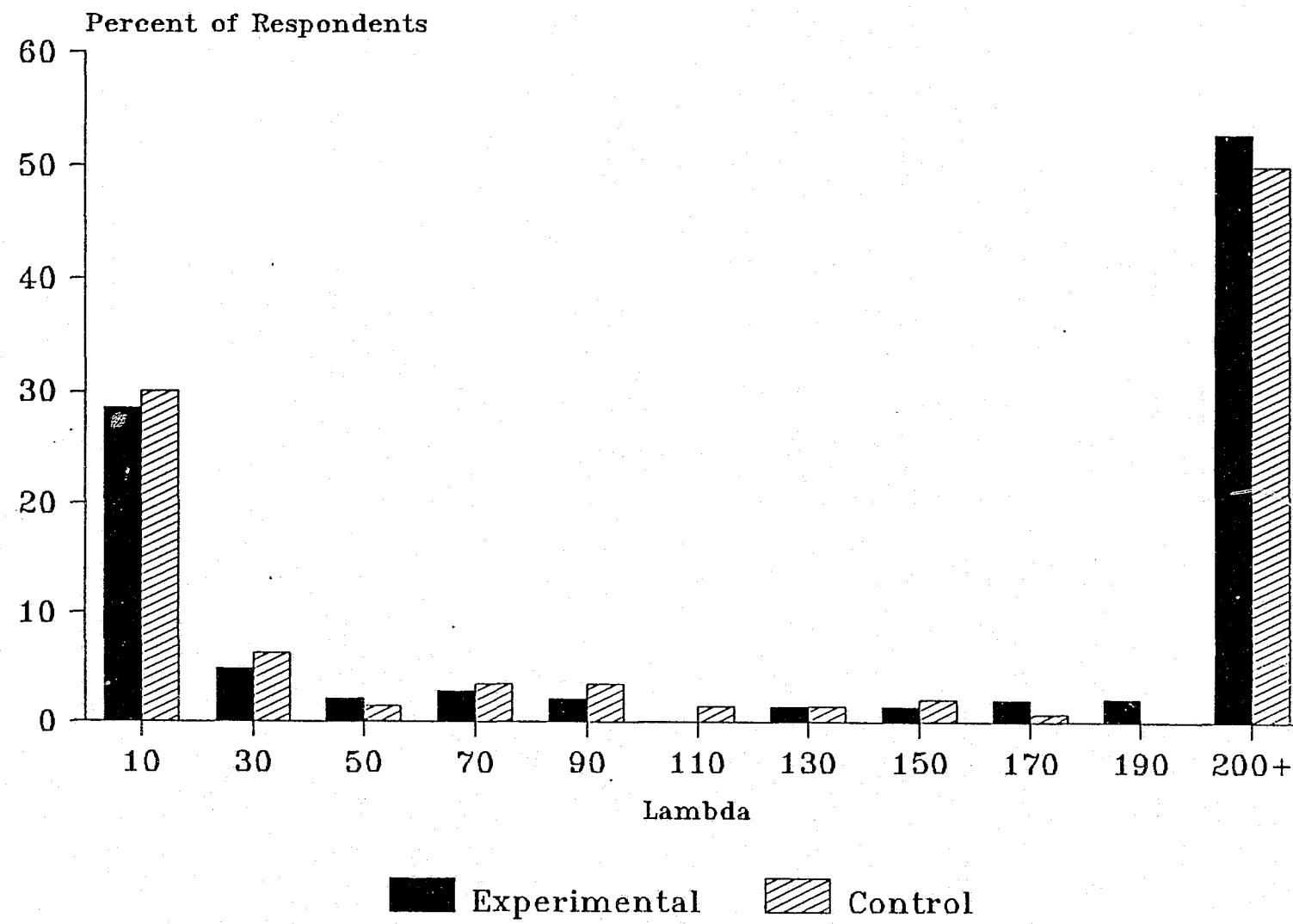
ARRESTED

Figure 2. Distribution of Annualized Burglary Rates



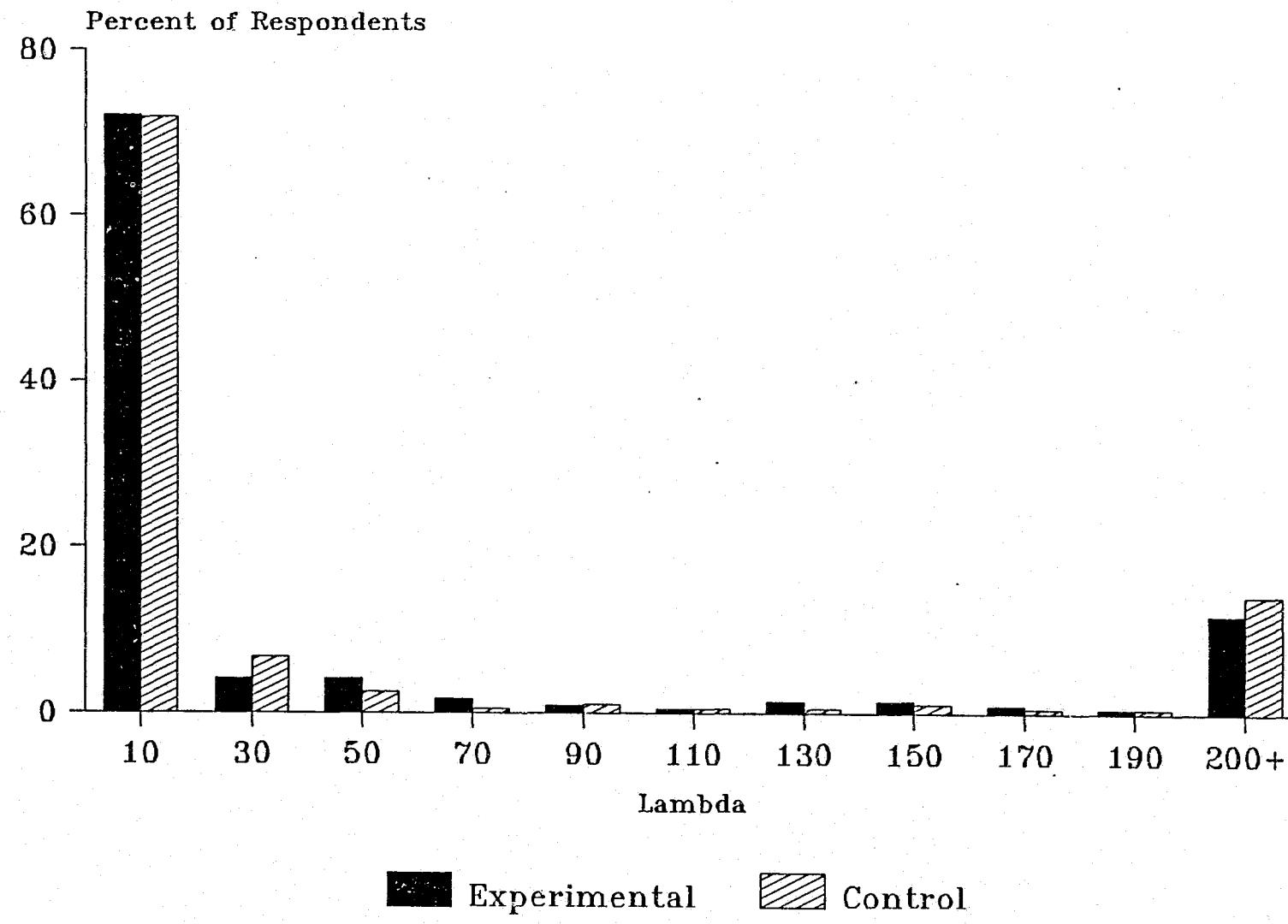
Lambda values represent midpoints

Figure 3. Distribution of Annualized Drug Dealing Rates



Lambda values represent midpoints

Figure 4 Total Crime Rates (Excluding Drug Dealing)



Lambda values represent midpoints

REFERENCES

Blumstein, Alfred, Jacqueline Cohen, Jeffrey A. Roth and Christy Visher (Eds.). (1986) Criminal Careers and "Career Criminals." 2 vols. Washington, D.C.: National Academy Press.

Chaiken, Jan M. and Marcia Chaiken (1982). Varieties of criminal behavior. Santa Monica, CA: Rand Corporation.

Cohen, Jacqueline (1986) Research on criminal careers: individual frequency rates and offense seriousness. In Alfred Blumstein, Jacqueline Cohen, Jeffrey A. Roth and Christy Visher (Eds.), Criminal careers and "career criminals." Vol 1. Washington, D.C.: National Academy Press.

Farrington, David P. (1983). Randomized experiments on crime and justice. In Michael Tonrey and Norval Morris (Eds.), Crime and Justice. Vol. 4. Chicago, IL: University of Chicago Press.

Greenwood, Peter and Allan Abrahamse (1982). Selective incapacitation. Santa Monica, CA: Rand Corporation.

Hindelang, Michael J., Travis Hirschi, and Joseph G. Weis (1981). Measuring delinquency. Beverly Hills, CA.: Sage.

Horney, Julie and Ineke Haen Marshall (1991). Measuring lambda through self-reports. Criminology, 29, 471-495.

Mande, Mary J. and Kim English (1987). Individual crime rates of Colorado prisoners. Denver, CO: Colorado Department of Public Safety, Division of Criminal Justice.

Miranne, Alfred C. and Michael R. Geerken (1991). The New Orleans inmate survey:
A test of Greenwood's predictive scale. Criminology, 29, 497-518.

Peterson, Mark A. and Harriet B. Braiker (1980). Doing crime: a survey of California prison inmates. Santa Monica, CA: Rand Corporation.

Peterson, Mark A., Jan Chaiken, Patricia Ebener and Paul Honig (1982). Survey of prison and jail inmates: background and method. Santa Monica, CA: Rand Corporation.

Rolph, John E., Jan M. Chaiken, and Robert L. Houchens (1981). Methods for estimating crime rates of individuals. Santa Monica: Rand Corporation.

Visher, Christy A. (1986). The Rand inmate survey: a reanalysis. In Alfred Blumstein, Jacqueline Cohen, Jeffrey Roth, and Christy Visher (Eds.), Criminal careers and "career criminals." Vol. 2. Washington, D.C.: National Academy Press.

Zedlewski, Edwin F. (1987) Research in brief: making confinement decisions. Washington, D.C.: U.S. Department of Justice, National Institute of Justice.