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METHODOLOGICAL APPROACHES FOR MEASURING  
SHORT TERM VICTIMIZATION TRENDS

by

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METHODOLOGICAL APPROACHES FOR MEASURING

SHORT TERM VICTIMIZATION TRENDS

Summary of Findings

1. Respondents to victimization surveys are asked to recall the incidents committed against them during a twelve-month time period. This information, however, is subject to severe biases when subdivided on a month-by-month or even a quarterly basis. The problems of time-dependent forgetting and forward telescoping are so severe that the raw victimization data in a single survey cannot be used to analyze victimization trends during the 12-month period.

2. Two methods of correcting the victimization survey data so that it can be used to analyze short term trends are investigated and both survive preliminary tests of their reliability and accuracy.

3. A preliminary application of these models to describe the trend in burglaries for the city of Portland indicates that the trend is not the same as the one shown by the official crime statistics which represent only the crimes known to the police.

4. The two models utilize different assumptions and different sources of information, but each provides almost precisely the same description of burglary trends for the 12-month period. This provides support for the contention that it will be possible to develop procedures for correcting the victimization data and using it to analyze short-term trends. Additional research must be conducted on the parameters of the models, however, before the full potential can be realized.

## PREFACE

This is the second of a series of reports on Crime and Victimization in the Portland metropolitan area for the period of May 1973 through April 1974. The victimization information was collected from a randomly selected sample of 3950 households in the Portland metropolitan area. The research is being conducted by the Oregon Research Institute under a contract from the Oregon Law Enforcement Council and the Law Enforcement Assistance Administration.

Other reports scheduled for immediate release are:

"Crime and Victimization in Portland: A Preliminary Analysis of Trends, 1971-1974."

"Description and Preliminary Analysis of Victimization Rates and Probabilities in the Portland Metropolitan Area."

"The 1974 Portland Victimization Survey: A Report on Procedures."

Additional reports and documents are in preparation, and scheduled for publication by March or April, 1975.

## MEASURING VICTIMIZATION TRENDS

### INTRODUCTION

Victimization surveys have considerable potential for the analysis of trends in crime for areas as large as an entire country or as small as a few census tracts. Those who have conducted victimization surveys, however, are in virtually unanimous agreement that a single survey covering a 12-month recall period cannot be used to measure trends during that year. There are at least four reasons for this:

1. Respondents may telescope events into the one-year time period which actually occurred prior to the first month which was covered by the survey questions. For example, the survey question will ask about incidents that occurred during the previous 12 months, but some respondents may report an event which occurred 13 or 14 months in the past. This will inflate the number of incidents recalled as having occurred during the first month or two of the time-span covered.

2. Respondents definitely have a tendency to telescope an incident forward within the one-year time period. Previous research has documented the bias of respondents toward placing the incident in a more recent month than the one in which it actually occurred.

3. Respondents do not remember all of the incidents which occurred, and the tendency to forget incidents is most marked for the earliest months. Respondents tend to remember a greater proportion of the total events in the more recent months.

4. The actual month of occurrence cannot always be recalled by the respondent, and the tendency to not provide the interviewer with a date for the incident is most likely to occur for the more distant months and least apt to occur for incidents occurring in the months closer to the date of the interview.

These problems have, in the past, prevented analysts from studying victimization trends within the time-span covered by the survey. It is our belief, however, that methods can be devised for studying short-term victimization trends.

One procedure would be to combine the survey information on proportion of incidents reported to the police with the official police data. By ascertaining what percentage of the incidents in a specified time period are

reported, the number of incidents known to the police could be "corrected" to produce an estimate of the total number of incidents. The use of this method for the 12-month recall period, however, requires that there not be any time-dependent bias in respondents ability to remember incidents which were reported to the police as compared to those which were not reported. If respondents have a longer recall ability for reported incidents than for unreported ones, this method would not produce reliable results.

A second method which we believe could be developed to study short-term trends involves the development of an empirical model of telescoping and forgetting. By measuring the amount of forward telescoping and the amount of forgetting, a model could be developed so that these biases could be removed from the victimization survey data.

The purpose of this report is to investigate these two methods of studying short-term trends in victimization. In the first section, the 1974 data will be examined to determine whether there is evidence that the biases existed. A tentative model to correct for the biases is developed in the second section and applied to the Portland (city) burglary data. The use of victimization data to study short-term trends by correcting the official data for changes in the proportion of crimes reported to the police is discussed in the third section.

#### TELESCOPING AND FORGETTING IN THE 1974 VICTIMIZATION DATA

Before developing a model representing the extent of telescoping and forgetting, one must first determine whether or not these biases exist in the 1974 victimization survey data. Three biases will be considered:

1. Placing incidents into the one-year period even though the incident occurred prior to the earliest month covered.
2. Telescoping events forward during the year.
3. Forgetting a greater proportion of the incidents that occurred in the early months and a smaller proportion of the incidents which occurred in the months closer to the interview.

If all three biases are present in the data, the crime trend, month-by-month, should resemble the hypothetical data shown in Figure 1.

The actual crime rate has remained steady, in the diagram, as indicated by the flat dotted line representing the percentage of all the crimes which occurred within each month. If there is no change in the official crime rate, then the percentage of incidents should be the same for each month. If respondents telescope incidents into the one-year time period from the past, then we would expect an inflated percentage during the first month or two. The proportion of incidents in the third and fourth months would be low due to the fact that respondents failed to recall incidents during this time period. As the recall period comes closer to the date of the interview, respondents tend to remember more of the incidents. This partially accounts for the gradual increase in the incident rate. In addition, respondents tend to move incidents forward a month or two further contributing to the apparent increase in the incident rate.

If one or more of these biases exist in the 1974 data, a month-by-month plot of the incidents should resemble the hypothetical data in Figure 1.

Incidents recalled by respondents in the 1974 survey which occurred within any part of the metropolitan area were subdivided on a bi-monthly basis. The number of incidents which respondents said occurred in each two-month segment were counted, and then converted to a percentage of the total number of incidents. These bi-monthly percentages are plotted in Figure 2.

The proportion of incidents which respondents recalled as having occurred in each month gradually increases from the most distant months (May and June, 1973) to the more recent (March and April, 1974). This phenomenon

Figure 1: Hypothetical Model of Telescoping and Forgetting

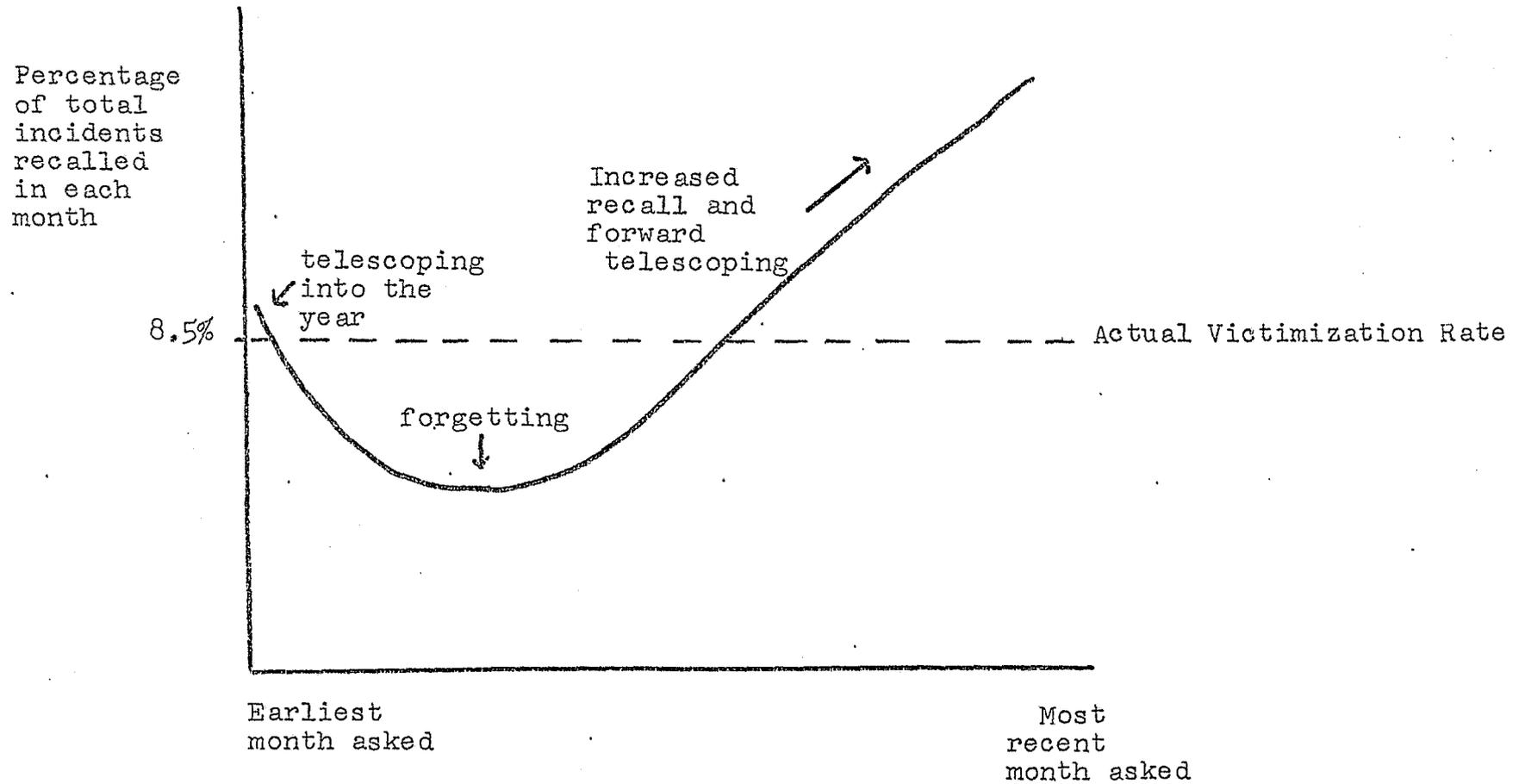
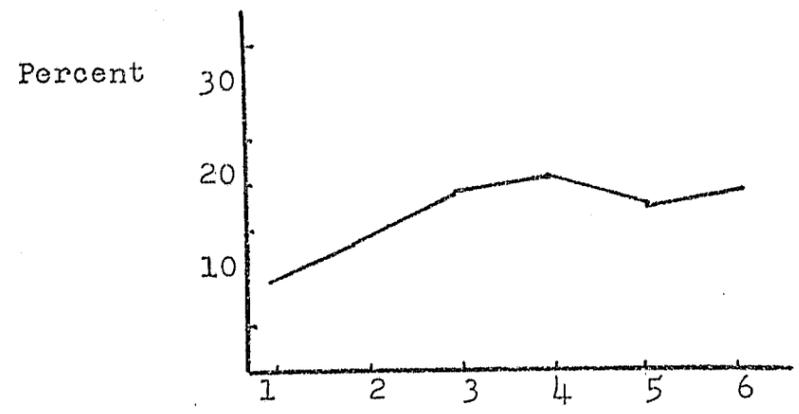
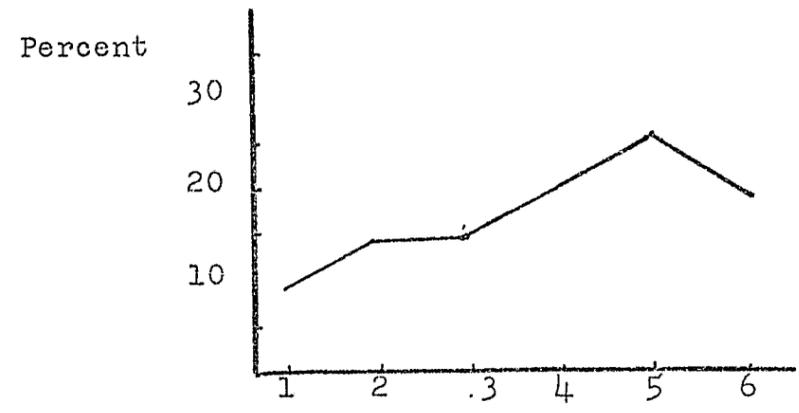


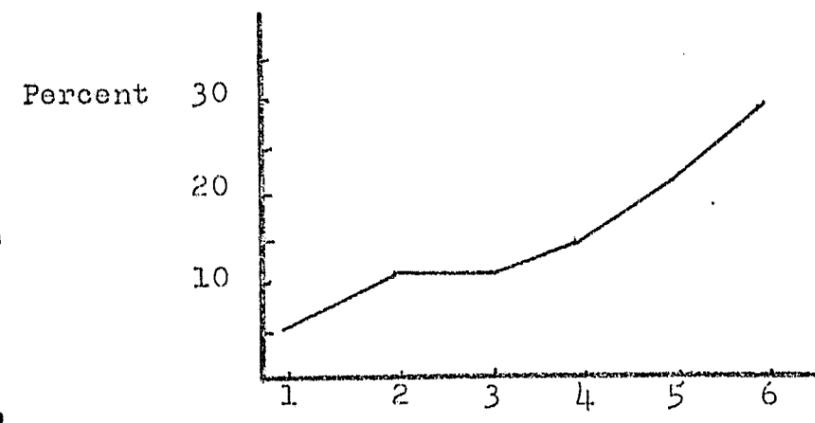
Figure 2. Telescoping and Forgetting in the 1974 Survey Data



Burglaries: Percent of total in each two-month segment



Rapes, Robberies, Assaults: Percent of total in each two-month segment



Larcenies: Percent of total in each two-month segment

is especially marked for larcenies, but also exists for burglaries and for rapes, robberies, and assaults (combined).

Two explanations can be given for the increases. One is that the actual crime rate for all three types of crimes increased during the year. The other explanation is that respondents telescoped events forward in the time period and remembered more of the more recent incidents. Given that the pattern closely resembles the hypothetical description of telescoping and forgetting, the conclusion must be drawn that these biases have occurred.

It should be noted, however, that there is no evidence respondents telescoped incidents into the time period from dates prior to May, 1973. If this type of telescoping had occurred, one would expect a larger proportion of incidents to have been recalled in the first month or two. Instead, the most distant month is the one with the smallest percentage of incidents.

The absence of this type of telescoping was not unexpected, because the question used in the 1974 survey to obtain the date differed from the one used in the 1972 survey, and in other LEAA surveys. In the questionnaire designed for the LEAA surveys, the proper 12-month time period is repeated on most of the screening questions. More importantly, the proper time period is used as an introductory statement to the question which asks for the exact date of the incident. The exact question was:

"You said that during the last 12 months...(you were the victim of... describe incident). In what month did this incident happen?"

With this type of wording and continual emphasis on the "correct" time period, the respondent almost certainly will provide a month which is within the proper time period even though he/she may have inadvertently mentioned on the screening questions an incident that occurred earlier. It is a well-documented characteristic of respondents that they like to give the right answers to questions. This problem can be minimized by de-emphasizing the correct time period. In the ORI questionnaire, the desired time period was mentioned on some of the screening questions (to avoid getting incidents prior to the time period or after it) but the correct time-span is never mentioned at all in the incident report itself. The respondent is asked a number of questions in the detailed-report section, and then is asked "Could you tell me as exactly as possible when this took place." With a lack of

emphasis on the correct time period, the respondent should have no more incentive to say it occurred in the first month of the correct time period than to say it occurred in the month before that. In the 1974 survey, there were almost as many incidents reported in April 1973 as there were in the first month about which we asked (May 1973).

## DEVELOPING A TENTATIVE MODEL OF TELESCOPING AND FORGETTING:

### THE SAN JOSE MODEL

One very valuable study has been conducted from which a tentative model of telescoping and forgetting can be developed. The study was conducted in San Jose, California. Researchers collected a sample of incidents known to the police from official police documents and then conducted a victimization survey of the persons who had been victims of the crimes. This type of study is called a reverse record check, and it permits a comparison of when the crime actually occurred and when the victim remembers it having occurred or whether he/she remembers it at all. The time span used was a 12-month period.

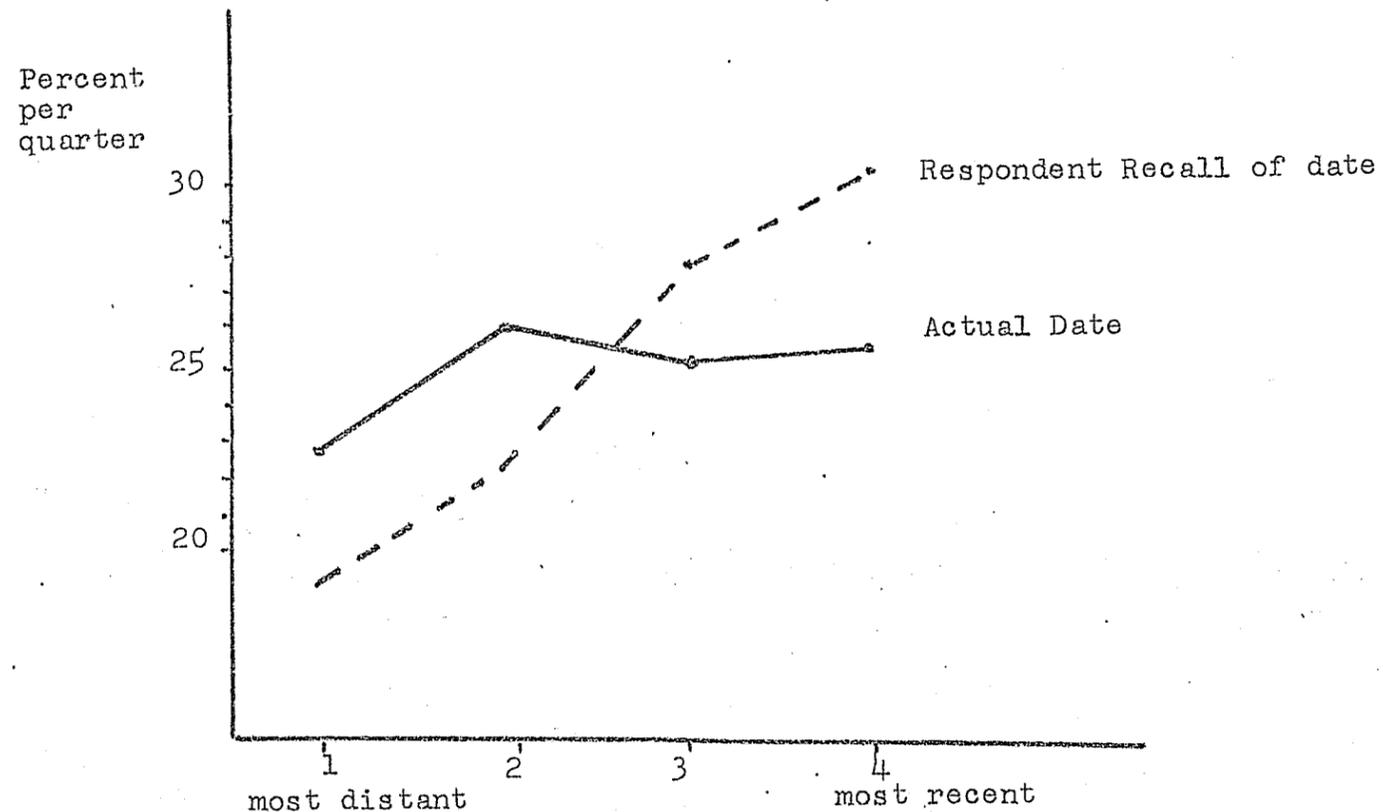
In Figure 3 the solid line indicates the actual number of crimes in the San Jose sample which occurred in each three month segment. The sample was apparently drawn so as to include about the same percentage of incidents from each month.

The dotted line represents the proportion of crimes which respondents to the victimization survey placed in each month. Respondents placed 19.2% of the total incidents in the first quarter, even though 22.8% actually occurred in those months. And, respondents placed 30.5% of the total incidents in the most recent quarter when only 25.5% of them actually occurred in those months. This model was developed from the raw data reported in the appendices to the San Jose report, and is based on all crimes (rapes, robberies, assaults, burglaries, and larcenies).

As indicated by the diagram, survey respondents tended to place too few incidents in the first two quarters and too many in the more recent months. These percentages are based on the incidents which respondents to the survey remembered and, of course, some incidents were not remembered at all. Some were recalled, but the respondent could not provide an estimate of the month when the incident occurred. Forgetting the incidents and not remembering any data also was more apt to occur during the earlier months. Of the incidents forgotten, or for which no date was given, 32% were in the first quarter, 24% in the second, 27% in the third, and 17% in the last quarter.

The simple model of telescoping and forgetting developed here assumes that the total number of victimizations in any time segment is a function of the number which respondents said occurred in that time segment, plus

Figure 3. San Jose Telescoping Data



Data from which the diagram is drawn are taken from the Appendix Tables of the 'San Jose Methods Test of Known Crime Victims,' prepared by Anthony Turner and the Statistics Division, National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, June, 1972, Washington D.C.

those which the respondents forgot, plus those which were telescoped out of the time segment (or, minus those that were incorrectly telescoped into the time segment).

Quarterly data will be used to test the model and the formula is expressed in quarterly time units (3-month segments):

$$C_t = V_t + F_t + T_t$$

where:

$C_t$  = the percent of the year's victimizations which occurred in each quarter of the year

$V_t$  = the percent of the year's incidents which respondents to the survey recalled as having occurred in each quarter

$F_t$  = the percent of all incidents which were forgotten entirely by survey respondents or for which no date was given

$T_t$  = the percentage of over and under recall by respondents who placed incidents within a particular quarter

In other words, the percentage of incidents in the first quarter is equal to the percent which survey respondents said occurred in the first quarter, plus an estimate of how many they forgot and did not report in the survey for the first quarter, plus an estimate of how many which actually occurred in the first quarter and were reported as having occurred in a more recent time period (forward telescoping of events).

The San Jose data will be used to estimate the parameters of the forgetting and telescoping phenomenon even though the San Jose survey was smaller than would be desired for the development of a reliable model. From these parameters a correction factor will be developed and applied to the Portland city burglary incidents in the survey in order to test the potential of such a model. The test of the model will be to compute the expected percentage of burglary incidents occurring within each quarter from the survey data and then to compare this with the actual percentage which occurred in each quarter based on Portland Police Department data for the comparable 12-month time period. Since the official data, however, reflect only crimes known to the police, the test of the model will have to be comparable. That is, only the incidents which respondents said were reported to the police will be used. If the percentage of burglaries in each quarter from

the victimization data (which were reported to the police) are about the same as the percentage of burglaries in each quarter which were known to the police, then the model would have passed this first, preliminary test of its usefulness.

The assumptions which are made in the development, application, and testing of this preliminary model include:

1. The model includes the correct variables (e.g., forgetting and forward telescoping account for the bias in victimization trend data from surveys).
2. The empirical parameters developed from the San Jose data are reliable estimates of the patterns of forgetting and forward telescoping.
3. The 1974 victimization survey data are reliable.
4. The time segment (quarter-years) is large enough to permit reliable estimates from the San Jose data and from the 1974 survey data.
5. The police data with which the model is compared are correct counts of the burglary incidents within each quarter-year.
6. The amount and pattern of forward telescoping and forgetting during a 12-month recall period for a particular type of event does not differ from one sample of persons to another sample of persons.

One additional assumption has to be made at this time because the official data on burglary includes commercial burglaries, whereas the survey data does not. If the trend for commercial burglaries is the same as the trend for household burglaries, then this will not damage the test of the model. If the trend differs, then the official data used in this preliminary test are not as accurate as desired.

Probably the most important of the assumptions is number 6. If the extensiveness of telescoping and forgetting cannot be measured in one sample and used on another, then the possibility of developing a useful and practical model of this type to analyze short-term victimization trends is not at all promising.

#### Parameters of the Model: San Jose Data

In Table 1 are the data taken from the San Jose study which are needed to develop the parameters for the model.

In the first quarter, there should have been 90 incidents, but 30 of these were not reported at all by respondents who were surveyed, or the respondents could not provide any estimate of the date. In the second quarter

Table 1  
SAN JOSE DATA FOR THE MODEL<sup>1</sup>

Distribution of Forgotten Incidents				
Time Period	Number which actually occurred	Number not reported in survey, or no month given	Percent Forgotten	Quarterly distribution of forgotten incidents
1.	90	30	33%	32%
2.	103	26	25	24
3.	100	28	28	27
4.	101	18	18	17

#### Telescoping Pattern of Incidents Recalled in Survey

Time Period	Percent (of those recalled) which occurred in each time period	Percent (of those recalled) which respondent placed in each time period	Over and under recall in survey data
1.	22.8%	19.2%	-3.6%
2.	26.1	22.2	-3.9
3.	25.3	27.8	2.5
4.	25.5	30.5	5.0

For burglaries, 82% were remembered and a date given. No date was given, or the incident was forgotten entirely for 18%

<sup>1</sup>The model parameters are based on all incidents from the San Jose data (rapes, robberies, assaults, burglaries, and larcenies) because there were not enough burglaries per three-month segment to provide reliable estimates. This should not make any difference, however, because the parameters measure the pattern of forgetting, not the amount. For example, 18% of the burglaries were forgotten, and 32% of the 18% are estimated to have been forgotten for the first quarter. This restriction, however, requires the assumption that the pattern and amount of telescoping do not differ from one type of crime to another.

there should have been 103 incidents, but 26 were not reported or the date was not given. In the third column of the table is the percentage of incidents at each time point which were forgotten, and in the last column these have been converted to show what percent of those forgotten belonged in each quarter. Thus, of the 102 incidents which were forgotten or for which no date was given, 32% belonged in the first quarter, 24% in the second, and so on.

In the second portion of the table are the data needed to estimate the forward telescoping phenomenon. This is read in the following way: 22.8% of the incidents actually occurred in the first quarter, but only 19.2% of the incidents recalled by respondents were placed in the first quarter. The remainder were telescoped forward into a more recent time period. 25.5% of the incidents actually occurred in the last quarter, but respondents said that 30.5% of the incidents occurred during the last quarter.

These parameters can now be applied to the burglary information. In San Jose, 82% of the burglaries which actually occurred were remembered by the respondents and a date was given. The remaining 18% were either forgotten entirely or no estimate of the date was given by the respondent in the survey.

#### Applying the Model to the 1974 Burglary Data

As mentioned above, the model will have to be tested against official Portland Police data. Since the latter represents only the crimes known to the police, the model should be used only on the crimes which respondents said they reported to the police. Otherwise, the test will be distorted by changes in the proportion reported.

In the first column of Table 2 are the number of burglaries which respondents to the 1974 survey said occurred within the city in each quarter and which they said were reported to the police. The sum of these incidents (169) is approximately 82% of the total number of burglaries, according to the San Jose estimates. Thus, there were approximately 37 incidents which were forgotten or for which no date was given. Of these 37 incidents, 32% should have been reported as occurring in the first quarter (a total of 12 additional burglaries); 24% should have been reported in the second quarter (an additional 9 incidents); 27% of the forgotten burglaries should be in the third quarter (10) and 17% of the forgotten incidents should be in the last quarter (6). These figures are added to the original number of

Table 3

## APPLYING THE SAN JOSE PARAMETERS TO THE PORTLAND BURGLARY DATA FROM THE VICTIMIZATION SURVEY

<u>Time Period</u>	<u>Number of Burglaries which Respondent said were Reported to police</u>	<u>Add forgotten incidents</u>	<u>Total estimate of incidents reported and those forgotten</u>	<u>Correct for forward telescoping</u>	<u>Final estimate: Percentage per quarter</u>	
				As % of Total		
May - July	27	12	39	19%	+3.6%	22.6%
August - October	38	9	47	23	+3.9	26.9
November - January	49.3	10	59	28.6	-2.5	26.7
February - April	<u>55</u>	<u>6</u>	<u>61</u>	30%	-5.0	25.0
	169	37	206			

## Step-by-step procedure:

1. Count the burglary incidents from the survey which respondents said had been reported to the police.
2. The San Jose data indicates that 18% of the burglaries are forgotten and that 32% of these belong in the first quarter, 24% in the second, 27% in the third, and 17% in the most recent. Thus, in the 1974 data, there should be 206 burglaries, not 169, and these are distributed according to the percentage above.
3. Convert the estimated total burglaries to percentages per quarter.
4. Add the San Jose estimate of the percentage telescoped out of the first quarter (3.6%) to the 19% which respondents to the 1974 survey placed in the first quarter and continue for each quarter.
5. Add the percentages to obtain final estimate of the percentage of the burglaries which occurred in each quarter.

incidents, totaled, and the proportion occurring within each quarter is computed in column 5 of the table.

The final step is to correct for forward telescoping. The proportion under-reported in the first quarter is estimated to 3.6% (from the San Jose data), so 3.6% is added in this quarter for a total of 22.6%. This correction parameter is applied to each quarter, producing the final percent per quarter shown in the next to last column.

In Table 4 the San Jose model corrections are shown along with the official police data and the original survey data. (The official police data were converted to percentages per quarter in order to make the comparison and to validate whether or not the model can replicate the quarterly trend pattern. No validation is being attempted at this time of whether the model can estimate the correct number of incidents per quarter.)

For the first quarter (May to July 1973) the original survey data indicated that 16% of the incidents occurred in this time period. The official police data show that 21.7% of the total burglaries occurred in the first quarter and the corrected survey data estimate is very close to the correct one (22.6%). The San Jose model correction for the second quarter is almost perfect as the model shows that 26.9% of the burglary incidents from the survey occurred in that time frame, whereas the official police data show that 26.7% occurred between August and October. The third quarter estimate from the San Jose model is 26.1%, whereas the actual police data show that 26.7% occurred in that time frame. And, for the last quarter, the two estimates are virtually identical, as the model estimates that 25% of the burglary incidents in the survey occurred in the last quarter, whereas the police data shows that 24.7% actually were in that quarter.

The closeness of the model to the official police data is illustrated in Figure 3, along with additional evidence that the original, uncorrected, victimization information is not an accurate portrayal of the trend pattern.

This test was designed to determine whether or not a model of forgetting and forward telescoping could be developed from the San Jose data. The parameters were applied to the survey burglary data which respondents said had been reported to the police. If the model is useful, it should be capable of replicating the quarterly trend pattern of burglary incidents known to the police. As clearly demonstrated in Table 4 and Figure 3,

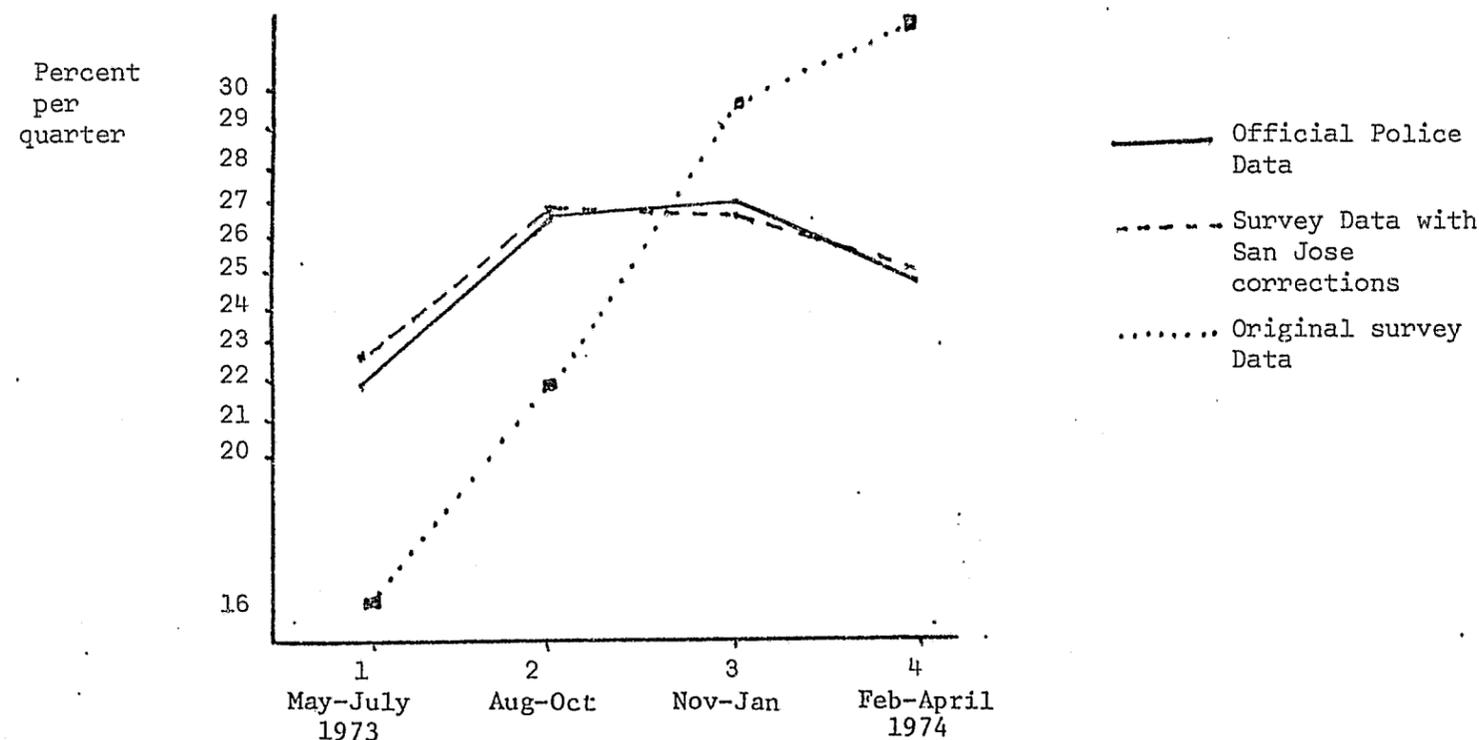
Table 4

Validation of the San Jose Parameters for the Portland Victimization Survey: Burglaries

Time Period	Percentage per quarter: 1974 Survey incidents, no correction	Percentage per quarter: 1974 survey incidents, with San Jose corrections	Actual percentage of burglaries in each quarter from Portland police data
May - July	16%	22.6%	21.7%
Aug. - Oct.	22	26.9	26.4
Nov. - Jan.	29	26.1	26.7
Feb. - April	32.5	25.0	24.7

Figure 3

Validation of the San Jose Model



after the corrections were made (from the San Jose data) for forgetting and forward telescoping, the survey data produced a trend pattern virtually identical to the pattern obtained from official police data. It should be noted that the trend pattern displayed in Figure 3 represents only the burglaries known to the police, and does not include any of those which were not reported.

MEASURING SHORT TERM VICTIMIZATION TRENDS FROM  
THE PROPORTION OF INCIDENTS REPORTED

An alternative method of using the victimization data to estimate change in victimization trends during the year covered by the survey is to calculate the proportion of incidents which respondents said were reported to the police, and then to correct the official data for changes in proportion reported. Before this can be done, some assurance is needed that forgetting and telescoping problems do not exist in the respondents' statements concerning whether they reported the incident to the police or not. There have been no studies of the problem, so the test must be conducted against a theoretical model.

Forgetting and Telescoping Bias in Percentage Reported

If we assume that incidents of a particular crime type which were reported to the police are more apt to be remembered than are incidents which were not reported, then there could be a bias in the victimization data concerning the percentage of incidents reported to the police. For the most distant months, respondents may remember mainly the incidents which were reported to the police, whereas they may forget most of those that were not reported. Through time, the respondents would begin to remember more of those which were not reported. These ideas are based on the notion that the ability to remember events in the more distant past is a function of the saliency of the event. Reporting a crime to the police may increase the saliency of the event and increase the ability of the respondent to remember the incident for a longer period of time. Or, alternatively, the most serious incidents and/or the ones which are most salient in the first place may be the ones most likely to be reported. In either case, the result would be that a high percentage of the most distant events would have been reported to the police, whereas a lower (and more accurate) percentage of the recent incidents would have been reported. If this reasoning is correct, then the percentage of incidents which respondents said were reported to the police should be high during the early months, and decline gradually to a lower percentage in the recent months, as diagrammed in Figure 4.

The percentage reported, in each two-month segment, for the 1974 victimization data is shown in Figure 5.

Figure 4. Hypothetical Model of Time-Dependent Forgetting of Non-Reported Incidents

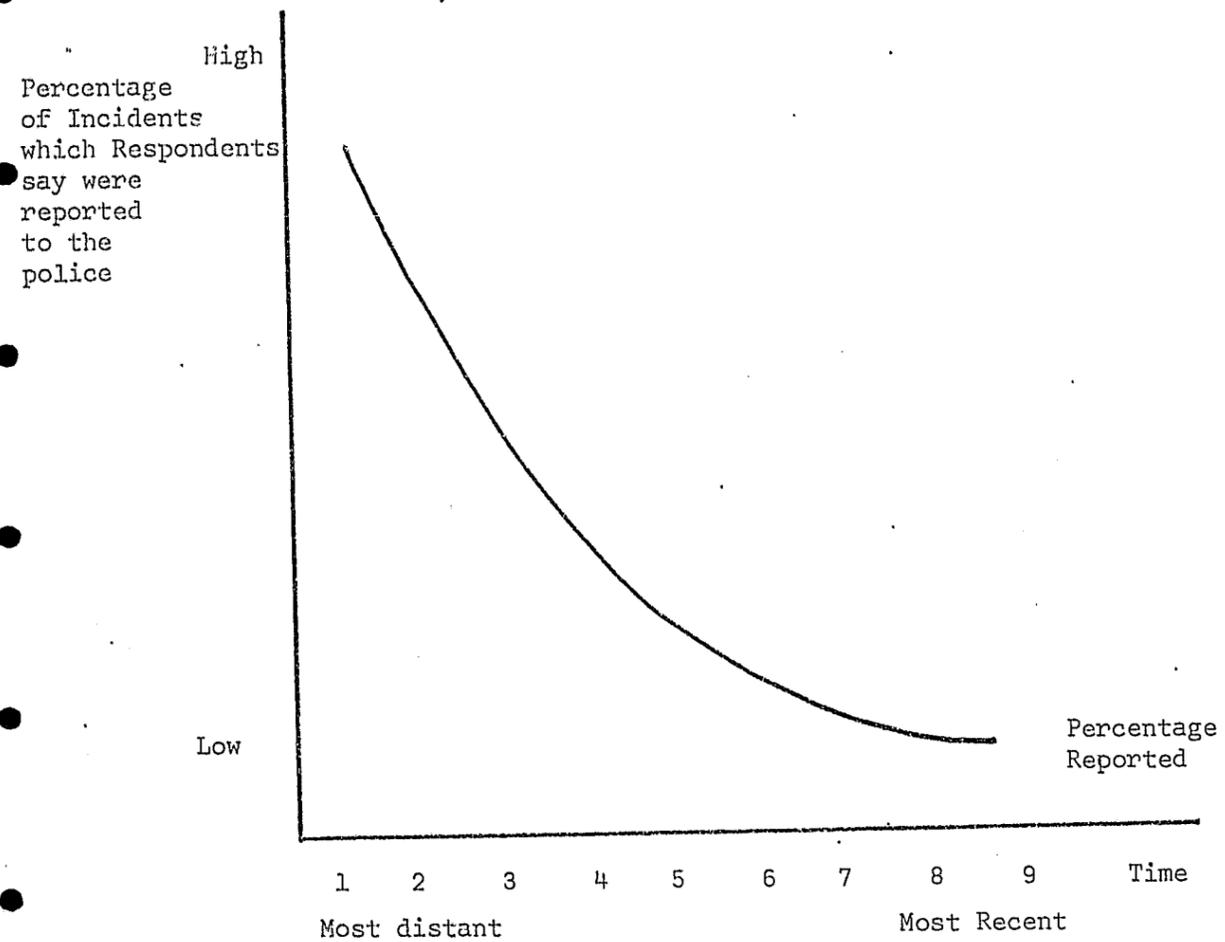
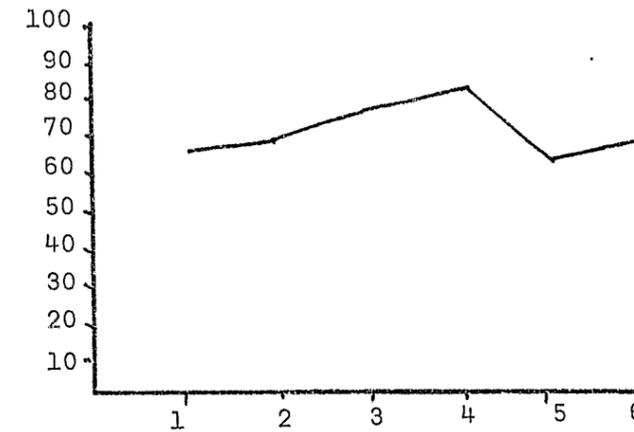
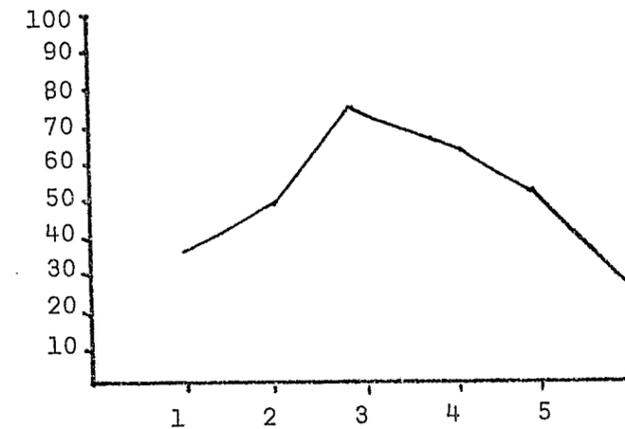


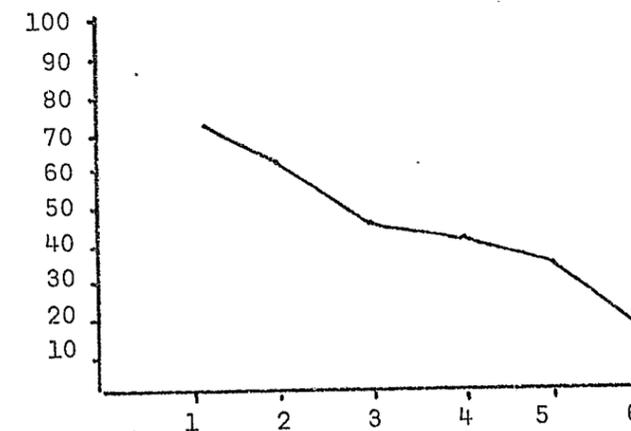
Figure 5. Trend Patterns for Percentage of Incidents Reported to the Police: 1974 Survey Data



Burglaries: Percentage of survey incidents which respondents said were reported to the police



Rapes, Robberies, and Assaults (combined): Percentage of survey incidents which respondents said were reported to the police



Larcenies: Percentage of survey incidents which respondents said were reported to the police

For burglaries, there is no resemblance at all to the theoretical model. Rather than declining smoothly, the proportion reported increases slowly to the end of 1973, and then drops during the first two months of 1974, only to increase again in the most recent two-month segment.

For rapes, robberies and assaults, the pattern is similar to burglaries for the first five time points in that reporting percentages increase and then begin to drop. The final two months, in which only 28% of the incidents were reported, may be indicative of greater remembrance of less serious or of non-reported events, but one would expect a time-dependent bias--if it exists--to show up in a steady declining pattern throughout the year. It is possible that reporting declined sharply in the spring.

For larcenies, however, the pattern fits the theoretical model very precisely. During the earliest months, respondents apparently remembered mainly the larcenies reported to the police. As the time of recall becomes closer to the date of the interview, respondents increasingly are able to recall larcenies which were not reported to the police. The pattern is a smooth decline from 71% reported in the first two months to 18% in the most recent two-month period.

The conclusion drawn from this is that for burglaries, and probably for rape, robbery, and assault, the proportion reported to the police does not suffer from time-dependent forgetting or forward telescoping. This means that the survey estimates of percent reported are relatively accurate for distant as well as recent months. Further research needs to be conducted on this before the conclusion can be accepted with certainty and, if the conclusion is incorrect, a correction factor needs to be developed.

For larcenies, however, the conclusion is that the proportion reported to the police is biased over time, in that respondents are much more apt to remember larcenies in the early time periods which were reported and less apt to remember those which were not. Thus, the percentage reported in the early time periods will be artificially high (because respondents forgot incidents which were not reported to the police), and the proportion will decline through time reaching its lowest (and most accurate) level in the most recent months.

The implications of the findings are:

1. Trend analysis, in which the official burglary data are corrected for percentage reported, can be used to analyze trends during the one-year time period covered by the survey.

2. Analysis of rapes, robberies, and assaults can possibly be undertaken to correct official statistics for changes in percent reported during the one-year time period, but there could be a small bias toward a lower percentage reported in the most recent months.

3. Trends in larcenies cannot be traced during the one-year time period by correcting official statistics with proportion reported.

## TREND ANALYSIS AND COMPARISON OF THE METHODS

Two methods have been developed which may have some potential for the analysis of short-term trends in victimization survey data. It must be emphasized that neither method has been given sufficient testing to validate its accuracy. For the procedure in which official data is corrected in accordance with the proportion of incidents reported to the police, there is insufficient information about what types of biases exist in respondents' recall of reported as compared to unreported incidents. Of particular concern is whether the proportion reported to the police is subject to forward telescoping or other types of time-dependent biases. There was no indication in the 1974 data of a time-dependency for the burglary incidents, but this does not mean that the 1974 data were entirely free of such biases or that other surveys might not suffer from it.

The speculative and preliminary nature of the San Jose model is obvious: the sample size for the San Jose study was small; the empirical parameters from it are subject to sample variability and need replication; the assumption that citizens in all cities (or even just in Portland) suffer from the same patterns and amounts of forgetting and forward telescoping as citizens in San Jose has not been documented.

On the other hand, the test of the San Jose model (in which only the incidents which respondents said had been reported to the police were used in order to make the data sets comparable) clearly demonstrated that at least for this one application, the model produced a crime trend virtually identical to the trend existing in crimes known to the police.

An application of these procedures to the analysis of short-term trends in burglary victimization may be premature due to the limited nature of the validity tests which could be conducted. Nevertheless, each procedure will be used to describe the short-term burglary trends. One reason for this is that the two models utilize different information, are based on different assumptions, and will produce different descriptions of the victimization trends if the assumptions for either are seriously in error, or if the information used in either one is not reliable. If the different methods yield different descriptions of the short-term burglary trends, then one or both are in error, and since no information is available to choose between them, no interpretation could be given to the results. If the different methods produce similar descriptions of the trend, this is additional evidence of the reliability of each.

Table 5

## Description of Burglary Trends

Time Period	Official Data		Survey Data			Rate, corrected for Percent reported (R/%)	Trend (Percent of total in each month)
	Official Data: Burglary N	Rate per 1000	Total Burglary N	Burglary Reported N	Percent Reported		
May - July, 1973	2876	79.3	39	27	.69	115	22.2%
Aug. - Oct.	3503	97	53	38	.71	136.6	26.4
Nov. - Jan.	3552	98	59	49	.83	118	22.8
Feb. - May, 1974	3264	90	90	55	.61	147.5	28.5

San Jose Model

Time Period	1974 Survey data total burglaries	Distribution of the 52 forgotten	Additional incidents (52 * Dist. %)	Total N	Percent per quarter	Telescoping correction
May - July 1973	39	32%	16.6	55.6	18.9%	+3.6 = 22.5
Aug. - Oct.	53	24	12.5	65.5	22.3	+3.9 = 26.2
Nov. - Jan.	59	27	14.0	73	25	-2.5 = 22.5
Feb. - May 1974	90	17	8.8	98.8	33.7	-5.0 = 28.7
	241					

Percent remembered = 82%.  $241/.82 = 293 - 241 = 52$  incidents forgotten

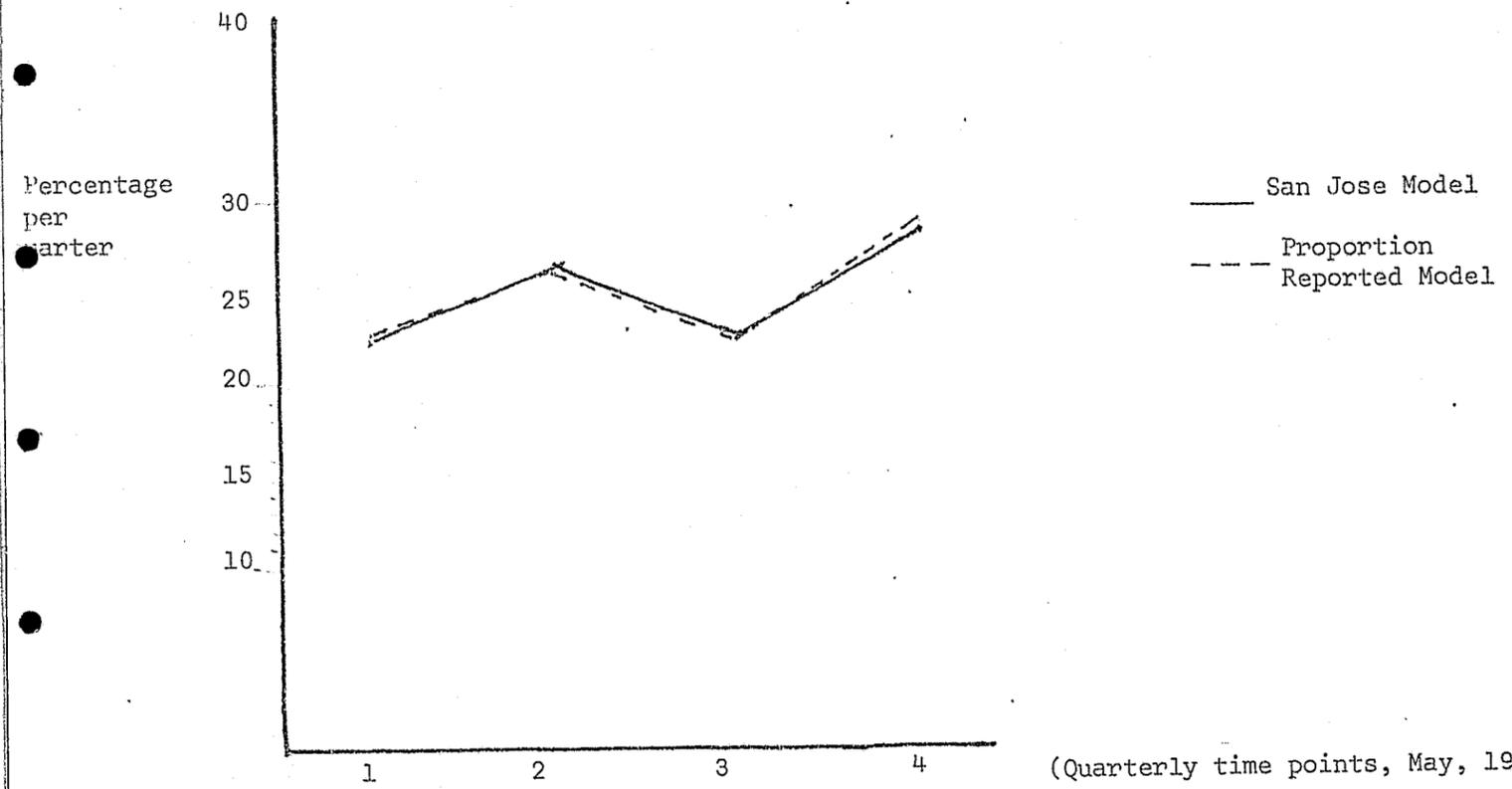
The data in Table 5 include all of the raw data and parameters needed to calculate the trend descriptions from each method. The descriptions of trends, expressed as percentages per quarter, are shown in Figure 6. In the lower diagram is the trend from the official data with no correction for reporting and the trend from the survey victimization data with no correction for forward telescoping or forgetting of incidents.

In the upper diagram are the trend descriptions provided by the two different models.

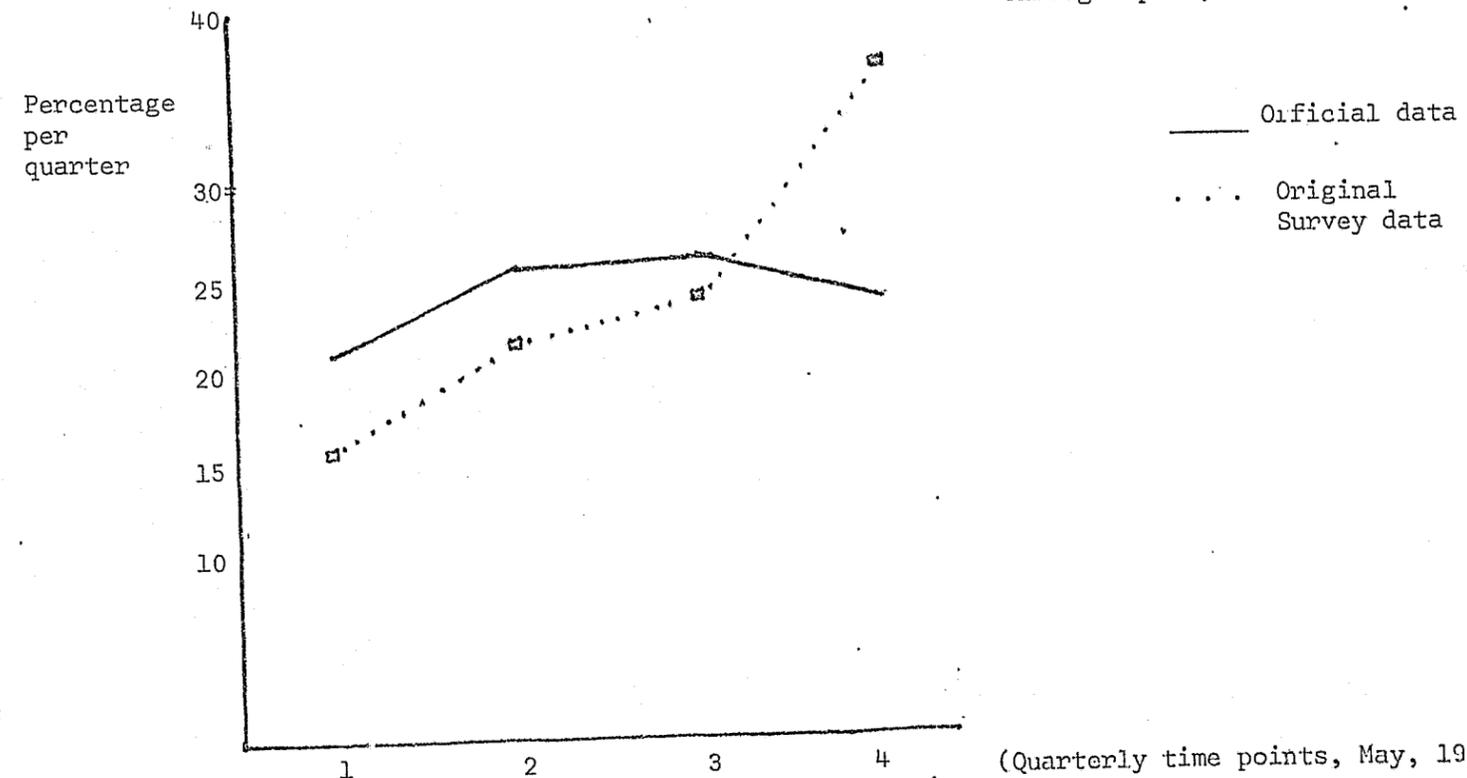
The similarity of the trend description produced by the two models is extremely great. In addition, the trend described by the models is different than the one described by the official data--which includes only the incidents known to the police--and is different than the trend described by the original survey incidents. Both of the models represent the trend in all burglaries, not just those known to the police. The extreme similarity of the two could be interpreted as an additional verification of the accuracy of each. A rival explanation, however, would be that the two models are not independent of each other, but that the two procedures would always produce similar descriptions of trends. This is simply not the case. The proportion reported model relies on two sets of information: the actual number of burglary incidents known to the police, and the percentage of incidents in the survey data which respondents said were reported. The San Jose model uses neither of these information elements. Rather, it uses the total number of incidents recalled in the survey (which has no necessary correspondence at all to the percentage of them which were reported). And, the San Jose model uses correction parameters developed from an entirely different survey in a different city--San Jose, California. The conclusion is that two different models using different information elements and requiring different assumptions, have produced virtually identical descriptions of the trend in total burglaries. Unless some unknown type of dependency exists between the two models, the conclusion is that both models have produced an accurate description of the short-term trends in burglary.

The major difference between the official data, shown in the lower part of the diagram, and the models is in the time periods two through four. The models indicate that the burglary rate declined between the second and third quarters, whereas the official data suggest that the trend was steady.

Figure 6. Description of Burglary Trend and Comparison of Two Models



(Quarterly time points, May, 1973 through April, 1974)



(Quarterly time points, May, 1973 through April, 1974)

The models indicate that burglaries increased from time period three to four, whereas the official crime data indicate that burglaries decreased slightly. Although the differences are not extreme in magnitude, they are sufficient to result in short-term errors in planning or evaluating crime reduction programs. Suppose a highly intense anti-burglary media campaign were begun in time period three and was discontinued at the end of the third quarter. If short-term trends are used to evaluate its effectiveness, the official data would support a conclusion of effectiveness, whereas the modeled data would not. Likewise, a program begun in the second period would be judged ineffective in the short run if the official data were used, but would be considered potentially effective if the modeled data are used.

The analysis strongly suggests that it would be possible to analyze short-term trends in burglary rates from a victimization survey. Although both methods used here produced very similar results, each has its own advantages and disadvantages. The proportion reporting model has to rely on official crime data and, therefore, cannot provide a truly independent estimate of total victimization. Official crime data may differ from one time period to another or, especially, one city to another, due to differences in classification and/or counting methods. The proportion reporting model would suffer accordingly. In particular, it would be less useful for comparative studies and for longitudinal studies in which changes in police personnel or practices resulted in classification or counting changes. Although an estimate of the "real" victimization rate could be produced from the reporting proportion model, the estimate would rely on police judgment about which reports from citizens are to be considered crimes and which are not. Charges have been made by some that police statistics are highly political in the sense that political considerations will produce short-term changes in the police recording practices and in official crime rates. The proportion reporting (PR) model is not independent of such changes.

In order to produce an estimate of the actual or real crime rate from the PR model, an estimate will have to be obtained about the extent to which citizens say they report incidents to the police when, in fact, they did not report them. Studies of voting behavior have shown that from 10% to 20% of the citizens interviewed in a survey will say that they voted in

the last election when they actually did not vote. The respondent in a survey likes for the interviewer to believe that he/she did the "right thing." And, most people wish they had taken the "right" action. This tendency would have to be measured so that the PR model could be altered in order to calculate the "real" crime rate.

The San Jose model does not rely in any way upon official police data. Trend analysis based on it would be free from political factors in police recording procedures (if they exist), from differences in recording practices from one police department to the next, and from policy changes which accompany changes in police department personnel or other factors. This model, however, requires very high reliability not only in the victimization survey (which is needed for both models) but in the surveys and other methods which might be used to estimate the parameters needed. Many estimates have to be used: percent forgotten, distribution of forgotten incidents, and percent telescoped from (or into) one time period from another.

In short, the San Jose model is more difficult but more useful. The PR model is simpler, but more subject to some of the same types of distortions which exist in the official data.