VALIDATION OF NSW POLICE CRIME STATISTICS: A REGIONAL ANALYSIS

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PREFACE

In recent years, recorded crime statistics have come to play a significant role in the assessment of police performance. Influenced by the success of the New York 'CompStat' process which focuses on local area crime statistics, police in Australian States have begun to adopt management practices which incorporate this process. In New South Wales, this occurs in the form of Operation and Crime Review meetings. In these OCR meetings, Local Area Commanders are required to explain and describe strategies which address the trends in crime in the geographical areas under their command. Such close scrutiny of local area crime trends increases the accountability of police commanders and is presumed to enhance individual performance. By the same token, using recorded crime statistics as a performance appraisal tool increases the risk that police commanders will be tempted to under-record crime in order to avoid management or public criticism. Several incidents of under-recording have already been reported in the United States. This possibility makes it very important to validate trends in recorded crime in NSW, particularly where the trend indicates a fall in crime levels.

In 1999, the increase in crime trends for most major crime categories which had been experienced in NSW during the late 1990s stopped and, in some cases, reversed. In response to this development, the Bureau of Crime Statistics and Research began a series of validation tests of the NSW recorded crime data. A report on the first part of this validation process was published earlier this year. In that report several alternative sources of crime trends were used to validate the crime statistics at the aggregate State level. There was no evidence of under-recording at the State level. We felt, however, that the high level of aggregation could mask under-recording at a regional level, and committed ourselves to an ongoing validation and quality check of recorded crime statistics in NSW.

As part of this ongoing validation process, a second set of analyses was carried out. The present report examines NSW recorded crime statistics at the level of NSW police Regions and Local Area Commands. The report describes a series of tests, and the results of these tests, which examine the link between crimes notified to NSW police by the general public, and crimes recorded by police over the same time period.

Dr Don Weatherburn
Director

November 2000

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EXECUTIVE SUMMARY

The recent emphasis placed on recorded crime statistics as a performance appraisal tool for police increases the risk that police may under-record crime. This makes it important to validate trends in recorded crime, particularly where the trend indicates a fall in crime levels.

This report presents a series of statistical tests which examine the link between crimes notified to NSW police, and crimes recorded by police at the level of Local Area Command (LAC). In the report, the concordance between monthly calls for service and offences recorded by police for the categories of break and enter and motor vehicle theft was tested over the two-year period October 1997 to September 1999 using four sets of analyses.

1. The monthly series of offences recorded on the Computerised Operational Policing System (COPS), and calls for police service registered on the Computerised Incident Dispatch System (CIDS) were graphed, and the linear correlation calculated for each pair of series. The graphs showed a generally close correspondence for both break and enter and motor vehicle theft. For break and enter, a significant positive correlation was found between the two series for 96 per cent of LACs. For motor vehicle theft, a significant positive correlation was found for 86 per cent of LACs.

2. Trends in CIDS data were compared with trends in COPS data. For break and enter, 91 per cent of LACs showed confirmatory trends. For motor vehicle theft, 86 per cent of LACs showed confirmatory trends.

3. The annual percentage changes in CIDS calls were compared with the annual percentage changes in COPS records. For break and enter, 99 per cent of LACs showed equivalent changes or greater increases in COPS records compared with CIDS calls. For motor vehicle theft, the changes were similarly confirmed in 86 per cent of LACs.

4. The monthly ratio of COPS records to CIDS calls was calculated and examined for each LAC. A test for trend was performed on each monthly series of ratios to check for stability or an increase. For break and enter, 96 per cent of LACs showed stability or an increased ratio. For motor vehicle theft, 91 per cent of LACs showed an increase or stability.

Overall, the results of the analyses described in the report do not reveal evidence of either systemic or widespread under-recording by NSW police for the offences of break and enter or motor vehicle theft.

1. INTRODUCTION

Since the advent of 'CompStat' and other techniques for highlighting local area crime trends and features (Safir 1997; Brereton 1999), recorded crime statistics have come to play a key role in the assessment of police performance. Since early 1998, the senior executive of the NSW Police Service has closely monitored trends in the five 'index' crimes at regular Operation and Crime Review (OCR) meetings. The index crimes are: assault; robbery; break, enter and steal (break and enter); motor vehicle theft; and stealing. As in the CompStat process devised by New York Police, Local Area Commanders in the NSW Police Service are required at OCR meetings to explain and describe strategies designed to address the trends in the five index crimes in the geographical areas under their command.

The increased emphasis being placed on recorded crime statistics as a performance appraisal tool means that there is also increased risk that police commanders or officers will be tempted to under-record crime in order to avoid management or public criticism. Several incidents of this kind have already been reported in the United States (Butterfield 1998). This makes it very important to try to validate trends in recorded crime, particularly where the trend indicates a fall in crime levels. The most recent annual crime statistics report, NSW Recorded Crime Statistics 1999, produced by the NSW Bureau of Crime Statistics and Research (BOCSAR) showed that the increase in crime trends which had been experienced in NSW during the late 1990s had stopped and, in some cases, reversed (Doak 2000). In response to this development, BOCSAR began a series of validation tests of the NSW recorded crime data.

A report on the first part of this validation process was published by BOCSAR earlier this year (Chilvers 2000). In that report several alternative sources of crime trends were used to validate the results presented in NSW Recorded Crime Statistics 1999. In essence, trends in NSW recorded crime statistics were compared with trends in (1) calls for service to NSW police, (2) insurance claims, and (3) crime victimisation rates. For each set of data, the hypothesis that the trend in the data concords with the trend in recorded crime statistics was tested. The time period covered by the test was the 24 months from October 1997 to September 1999. The crime categories examined were the five index crimes noted above.

Each of the trend tests performed on the alternative sets of data confirmed the leveling and downward trends which had been reported in official recorded crime statistics. The insurance claims data, which were available only for the incident categories of break and enter – dwelling, and motor vehicle theft, confirmed the 24-month significant downward trends for each of these two crime categories. The victimisation survey data, which are less comparable due to differences in the incident category definitions and method of data collection (the survey data are only annual, and include a large number of unreported incidents which are thus not recorded), also broadly confirmed the observed changes in crime. Finally, the tests comparing police calls for service and criminal incidents recorded on the Computerised Operational Policing System (COPS) also confirmed the observed trends in recorded crime.

The first validation report only sought to check trends in recorded crime for the whole of the State. In the present report we extend the validation process down to the level of Local Area Commands. The NSW Police Service is comprised of 80 Local Area Commands (LACs) grouped into 11 Regions. Our strategy is to compare service calls to NSW police with trends in recorded criminal incidents for comparable offence categories. The service calls data were extracted from the NSW Police Service Computerised Incident

Dispatch System (CIDS). These calls are triggered mainly by 000 calls. Each 000 call automatically creates a record in CIDS. Because the calls are not recorded by Local Area Commands, they provide an external check on trends in police crime statistics. For the purposes of this validation exercise, the CIDS data were collected after the third quarter 1999 recorded crime statistics were compiled, and therefore cover the two-year period from October 1997 to September 1999. In six LACs across three Regions of the State, CIDS was not fully operational at the start of the 24-month period analysed in this report. These LACs are excluded from some of the analyses.

Each police service call is recorded on CIDS against a specific offence category. However, it is not expected that the category of the CIDS entry will exactly match the COPS event offence category, even if a COPS crime entry results from the call. This is because calls are logged on CIDS according to the information provided by the reporting agent. Police who respond to the calls make a decision as to whether an actual criminal offence has been committed, and if so, the appropriate offence category for recording the event on COPS. The incident which motivated the CIDS call may therefore either (1) not be recorded at all, (2) be recorded on COPS under an offence category other than that which has been notified, or (3) be recorded in the category on COPS for which the call was made. Only those calls which are classified as having priority 1, 2 or 3 (P1, P2, P3) on CIDS (and hence most likely to result in a recording on COPS) were counted for the purposes of this analysis.

On the other hand, not all COPS events originate from a CIDS notification. As well as telephone notification, police may be approached in person or detect the crimes themselves. Neither of these situations has a parallel CIDS recording. Moreover, changes in the method of offence notification, such as the introduction of the new Police Assistance Line (PAL) which became fully operational statewide in January 2000, may affect the comparability of trends.

Despite the limitations noted here, it is reasonable to expect parity of trends between the two data sources, CIDS and COPS, particularly at the aggregate State level. Table 1 shows the results of trend tests to check for a statistically significant upward or downward trend in the monthly numbers of calls for service, and recorded criminal incidents for each of the index crime offence categories over the 24 months from October 1997 to September 1999.[1] In addition, the annual percentage change has been calculated for each series.

All offence categories other than robbery show broad agreement between the two data sources. For robbery, while the recorded crime data showed no significant trend over the period, CIDS calls had declined. Note, however, that while the trend in recorded robberies was not significant, there was a seven per cent decrease in the total number of incidents of robbery recorded over the successive 12-month periods. The direction of the change is therefore consistent between these two series.

Table 1: Recorded incidents and calls for service, NSW: trends and annual percentage changes, October 1997 to September 1999

Offence	*Recorded incidents (COPS)*	*Calls for service (CIDS)*
Assault	Not significant	Not significant
Robbery	Not significant	Downward (-13%)
Break and enter	Downward (-11%)	Downward (-11%)
Motor vehicle theft	Downward (-15%)	Downward (-14%)
Stealing	Not significant	Not significant

2. VALIDATION AT THE REGIONAL LEVEL

This report will extend the validation process by comparing police calls for service and recorded criminal incidents at LAC level for the two crime categories of break and enter (dwelling and non-dwelling), and motor vehicle theft. These two categories were the only two index crime categories which showed a statistically significant downward trend in NSW over the two-year period from October 1997 to September 1999. It is therefore worthwhile confirming that these significant decreases in recorded incidents are genuine.

In order to validate the recorded crime statistics at the disaggregated level, four sets of analyses will be undertaken in this report. Section 3 covers the first set of analyses. The data series for break and enter and motor vehicle theft will be graphed for each LAC. This will allow a visual inspection of the trend comparisons to be made. In addition, it will enable the impact of LAC-specific events, such as the roll-out of CIDS to be observed. The statistical correlation between each pair of series will be examined in this section.

The second and third sets of analyses are shown in Section 4. In the second analysis the hypothesis that the trends in the CIDS data support the observed trends in recorded crime statistics will be tested at LAC level rather than at the aggregate State level as in the initial validation report. A statistical test for trend will be performed on the CIDS series, and the results compared with the results of a trend test on the monthly series of recorded criminal incidents for each LAC, by offence category.

In the third analysis, the annual percentage changes in total CIDS calls will be compared with changes in total incidents recorded on COPS for each LAC. This will supplement the analysis of the statistical trend tests described above. In the previously described set of trend tests, a statistically significant trend is less likely to be found when the LAC series of data tested contains only a small numbers of incidents or calls for service (because random fluctuations become more pronounced). In such cases, additional information can be obtained from the data by comparing the direction of the change in each series, rather than simply validating those changes which are statistically significant.

The fourth and final test of concordance is contained in Section 5. The ratio of COPS incidents to CIDS calls will be examined for each LAC, by offence category. In this analysis, trend tests will be performed over the 24-month period to determine whether the relationship between COPS and CIDS recordings for both break and enter, and motor vehicle theft incidents in each LAC was maintained over the whole time period. To assist interpretation of these trends, the ratio of COPS to CIDS counts will also be calculated for each LAC for three discrete time periods, each of three months, within the two-year period under consideration. These ratios will quantify the observed differences in recording practices across LACs and Regions, and highlight any changes in these recording practivces over time.

3. GRAPHS AND CORRELATIONS OF 24-MONTH TRENDS BY LAC

As previously noted, the NSW Police Service is comprised of 80 Local Area Commands (LACs) grouped into 11 Regions. Monthly trends in incidents recorded on COPS, and calls recorded on CIDS for the offence categories of break and enter, and motor vehicle theft over the period October 1997 to September 1999 are illustrated in full in the Appendix. The graphs are presented in Figures A1 to A80 by LAC within Regions.

Visual examination of the graphs shows a generally close correspondence in the trends observed between the COPS and CIDS data series for each offence category. However, in most LACs, the number of incidents of break and enter recorded on COPS is generally lower than the number of CIDS calls attributed to this same offence category in the same month. Overall, there are 10 to 15 per cent fewer COPS incidents recorded than CIDS calls collected. The probable reason for this discrepancy is that calls classified as CIDS break and enter type offences may in fact be more accurately recorded by police under another offence classification such as malicious damage to property, stealing or robbery.

On the other hand, the number of motor vehicle theft incidents recorded on COPS is generally higher than the number of CIDS calls attributed to this same offence category. Overall, there are approximately half as many CIDS calls as there are COPS incidents recorded. One likely explanation for this difference is that motor vehicle theft offences are more often reported in person at a police station or the calls made directly to the police station in the locality of the offence. Moreover, CIDS calls for motor vehicle theft may be allocated a lower priority than the priority of the calls which have been counted in this analysis (only P1, P2 and P3 have been included in this analysis, as noted earlier) because a police officer is generally not required to attend the scene of the incident.

The graphs in the Appendix show that there were six LACs where CIDS was not fully operational at the start of the 24-month period analysed in this report. The far north and south coastal Regions of NSW were the last to enter the scheme in mid-1998. These LACs and the approximate commencement date of full CIDS operation are as follows:

- Hunter Region: Manning Great Lakes (July 1998);
- Northern Region: Coffs/Clarence, Mid North Coast, Richmond, Tweed/Byron (April 1998);
- South Eastern Region: Monaro (May 1998).

The above six LACs will be excluded from the trend analyses and the analysis of annual percentage changes in the sections below, where appropriate.

A Pearson correlation coefficient was calculated for each pair of series shown in the graphs in Figures A1 to A80. The correlation coefficient is a numerical measure of the relationship between two series of observations which determines whether the two series are linearly related. The coefficient for a positive correlation ranges from 0 to 1, and for a negative correlation from 0 to -1. A positive correlation is found when large values in one series are associated with large values in another. A correlation coefficient near zero shows that the two series are not linearly related. A statistical test can be performed to determine whether a correlation coefficient is statistically significant.

Because the monthly COPS and CIDS series should generally move together over time, we expect to obtain a significant positive correlation for each pair of series (COPS and CIDS), for both break and enter offences and motor vehicle theft within each LAC. Table A1 in the Appendix details the correlation coefficients for each pair of monthly series by offence category and LAC.

For the offence category of break and enter, 96 per cent of LACs show a statistically significant positive correlation between CIDS calls and COPS records. For the offence category of motor vehicle theft, 86 per cent of LACs show a significant positive correlation between the two series. The strength of the correlations for each offence category vary considerably across the LACs and Regions.

Overall, the correlation coefficients between CIDS calls and COPS records were higher for the break and enter series than for motor vehicle theft. The average correlation between the COPS and CIDS series for the 80 LACs is 0.77, while for the motor vehicle theft series the average correlation is 0.58. In the break and enter offence category, there are three LACs for which the correlation coefficient was not significant (at the 5% level of significance), as follows:

- City East Region: The Rocks;
- South Eastern Region: Lake Illawarra;
- Western Region: Chifley.

Examination of the graphs in the Appendix shows that in both The Rocks (Figure A9) and Chifley (Figure A76), the discordance in trends, as measured by the correlation coefficient, occurs in the early part of the series. In The Rocks LAC, the number of calls to CIDS is particularly low during the first few months of the series. The resident population is also very low in The Rocks and many responses by police to break and enter incidents are likely to be initiated by alarms in commercial premises and hence not recorded on CIDS. There is also some overlap between the Inner Sydney LACs (The Rocks, Central Sydney, Surry Hills and Kings Cross) in regard to which cars actually attend incidents. It is possible that COPS break and enter records for The Rocks correspond to CIDS entries in other adjacent LACs.

In Lake Illawarra LAC (Figure A62), the discordance is notable at the end of the series. However, this does not indicate under-recording on COPS, as the number of COPS records appears to be increasing relative to the number of CIDS calls. This may be due to the trialing in Lake Illawarra LAC of a break and enter response team (BERT) of specially-trained police. Responses by the BERT were generally not recorded on CIDS unless outside office hours.

For motor vehicle theft, there were 11 LACs, spread across seven Regions, for which the correlation coefficient was not significant, as follows:

- City East Region: Redfern, The Rocks;
- Georges River Region: Miranda;
- Hunter Region: Hunter Valley;
- Macquarie Region: Rosehill;
- North Metropolitan Region: Harbourside, Ku-ring-gai;
- Southern Rivers Region: Cootamundra, Deniliquin, Goulburn;
- Western Region: Castlereagh.

It should be noted that the relationship between COPS incidents and CIDS calls is different for the offence of motor vehicle theft compared with break and enter. As can be seen in the Figures detailed in the Appendix, there are far fewer CIDS calls received for motor vehicle thefts than there are incidents recorded on COPS. This causes the relationship between the two series to be less concordant (and less likely to be highly correlated). That is, changes in the monthly numbers of COPS incidents may be in response to changes in other methods of offence notification (which have not been examined in this report) rather than in response to changes in the number of CIDS calls. Furthermore, the small volume of monthly CIDS calls for motor vehicle theft offences also makes the CIDS series appear more variable. This is because a small change in the number of calls can have a disproportionately large impact on the trend line.

For most of the LACs listed above, the monthly number of CIDS calls for motor vehicle theft offences is small and variable. Where the series diverge, the direction of discordance is more frequently in the direction of an increase in COPS relative to CIDS, which does not indicate under-enumeration on COPS. The following section will examine more closely the relationship in trend direction between the COPS and CIDS series for each LAC.

4. COMPARING TRENDS AND ANNUAL PERCENTAGE CHANGES BY LAC

Table A2 in the Appendix details the results of trend tests, percentage change calculations, and calculation of the ratios of COPS incidents to CIDS calls for each LAC for the offence category of break and enter. Table A3 details the results for the offence category of motor vehicle theft. In this section, the results of the trend tests and annual percentage change calculations will be examined. The ratio comparisons will be analysed in a later section of this report.

4.1: BREAK AND ENTER

Table 2 summarises the results of trend tests for break and enter offences recorded on COPS, and for CIDS calls classified as break and enter type incidents, over the 24-month period from October 1997 to September 1999. These results are listed in full by LAC in the Appendix in Table A2. Note that the six LACs which did not have a full 24 months of CIDS data are excluded from this analysis.

Table 2: Comparison of monthly trends in CIDS calls and COPS incidents: Break and enter, October 1997 to September 1999

	COPS			
CIDS	LACs with significant downward trend	LACs with no significant trend	LACs with significant upward trend	**Total LACs**
LACs with significant downward trend	15	24	0	**39**
LACs with no significant trend	6	26	2	**34**
LACs with significant upward trend	0	1	0	**1**
Total LACs	**21**	**51**	**2**	**74**

The numerical entries in the body of Table 2 represent the number of LACs which exhibit the trend in CIDS calls denoted by the row category, and which also exhibit the trend in COPS records denoted by the column category. To understand the table, consider the results represented by the first row of numbers in Table 2. The entries in this row show that 39 of the total 74 LACs tested exhibited a statistically significant downward monthly trend in the number of CIDS calls. Of these 39 LACs, 15 showed an equivalent downward trend in COPS entries, 24 showed no significant upward or downward trend in COPS records, while none of the LACs with a downward trend in CIDS calls showed an upward trend in COPS records for break and enter offences over this period.

Clearly, the entries in the top-left to bottom-right diagonal of Table 2 represent the number of LACs with perfectly concordant trends in the two break and enter series. However, not all of the off-diagonal entries should raise concerns in this analysis. For the purposes of this validation exercise, we are not particularly concerned with any discordance which lies above the left-to-right diagonal in Table 2. The LACs which fall into the cells in Table 2 which lie above the diagonal represent those LACs where the trend in COPS

records was 'above' the trend in CIDS calls. This situation arises when either (1) no significant trend or a downward trend in CIDS is associated with a significant upward trend in COPS, or (2) a significant downward trend in CIDS is associated with no significant trend in COPS. These situations do not suggest under-recording on COPS (in fact, they may suggest more rigorous recording on COPS).

The issue of under-recording on COPS compared to CIDS is only a possibility in the three cells below the diagonal; that is, in LACs which showed either (1) no significant trend or an upward trend in CIDS but a significant downward trend in COPS, or (2) a significant upward trend in CIDS but no significant trend in COPS. These situations are represented by the shaded cells in Table 2. In each of these situations, the trend in COPS is 'below' that which would be expected in an LAC given the observed CIDS trend.

The results summarised in Table 2 confirm that, for the majority of LACs, the COPS and CIDS trends demonstrate a general concordance for the offence category of break and enter. Table 2 shows that, for break and enter offences over the two-year period October 1997 to September 1999, 91 per cent of LACs showed trends in COPS records which were the same or 'more upward' than their trends in CIDS calls recorded (67 of the total 74 LACs). These are the LACs counted in the non-shaded cells of Table 2.

On the other hand, there was one LAC showing a significant upward trend in CIDS calls which was not reflected in incidents recorded on COPS. The trends for this LAC, The Rocks LAC in the City East Region, are illustrated in Figure A9 in the Appendix. Examination of the graph shows that for the first four months of the CIDS series, the number of CIDS calls recorded was particularly low (at approximately half the level of CIDS calls for the rest of the series) and may not be comparable to the rest of the series. When the trend test is repeated on the final 20 months of the series only, the CIDS calls do not exhibit a significant upward or downward monthly trend. This supports the observed lack of a significant upward or downward trend in COPS records for The Rocks LAC.

Table 2 also shows that there are six LACs showing a significant downward trend in COPS records for break and enter offences, but no significant trend in CIDS calls. Of these six LACs, each showed a percentage decrease in the total annual number of CIDS calls, which was comparable to the annual decrease in COPS records. For three of these LACs, Green Valley (in the Greater Hume Region), Darling River and Lachlan (Western Region), the non-significant results for the CIDS series are borderline (each of the three shows a confirmatory significant downward trend in CIDS calls if a 10%, rather than 5%, level of significance is used). Moreover, a very high, significant correlation was found between the COPS and CIDS break and enter series in each of these LACs: Green Valley ($r = 0.93$), Darling River ($r = 0.88$) and Lachlan ($r = 0.86$).

In each of the three remaining LACs, namely in Deniliquin (Southern Rivers Region), Barrier and Mudgee (Western Region), while there was not a statistically significant downward trend in CIDS calls, there was an overall annual decrease in the total number of calls recorded. In each of these LACs the correlation was significant, but was not as strong as in the previously mentioned group. The correlation coefficients for these three LACs were: Deniliquin ($r = 0.45$), Barrier ($r = 0.78$) and Mudgee ($r = 0.45$).

Table 2 shows that almost half of the LACs (34 of the 74 LACs) showed no significant trend in break and enter CIDS calls, while more than two-thirds of them (51 of 74 LACs) exhibited no trend in COPS records for this offence. Although no trends were exhibited,

it is still possible to examine the series for consistency in the direction of the change. A more comprehensive analysis which verifies the direction of changes in recorded criminal incidents and CIDS calls involves comparing the direction of annual changes in total counts for each series, regardless of whether the change is statistically significant. A full list of annual percentage changes in break and enter COPS incidents and CIDS calls by LAC is shown in Appendix Table A2. The corresponding list of annual percentage changes in motor vehicle theft COPS incidents and CIDS calls by LAC is shown in Appendix Table A3.

Table 3, below, summarises the correspondence of change direction in the two series. As before, the six LACs which did not have full CIDS coverage over the two-year period have been excluded from the analysis. The top-left and bottom-right entries in the body of Table 3 again represent the LACs which show agreement in the direction of the annual changes of the two series. As before, only the cell below the diagonal indicates potential under-recording on COPS compared with the number of CIDS calls.

Table 3: Comparison of annual percentage changes in CIDS calls and COPS incidents: Break and enter, October 1997 to September 1999

	COPS		
CIDS	LACs with decrease	LACs with increase	**Total LACs**
LACs with decrease	53	13	**66**
LACs with increase	1	7	**8**
Total LACs	**54**	**20**	**74**

Table 3 shows that, overall, the majority of LACs (89%) showed an annual percentage decrease in CIDS calls over the two-year period. Of the eight LACs which showed an increase in CIDS calls for break and enter, seven showed a comparable increase in COPS incidents. Only one LAC, highlighted by the shaded area in Table 3, showed a discordance in the direction of change. In Cootamundra LAC (Southern Rivers Region), a three per cent decrease in COPS is associated with a six per cent increase in CIDS. Examination of Figure A67 in the Appendix, however, shows general concordance between the trends in the two series after a high number of CIDS calls in the early months of the series. The cause of this discrepancy therefore appears to be the discordance between CIDS calls and COPS records in the first year, rather than low COPS records compared with high CIDS calls towards the end of the series. There is therefore no evidence of misrecording on COPS in the latter part of the series for this LAC.

4.2 MOTOR VEHICLE THEFT

Table 4 summarises the results of trend tests for motor vehicle theft offences recorded on COPS, and for CIDS calls to report motor vehicle theft offences, over the 24-month period from October 1997 to September 1999. These results are listed in full, by LAC, in the Appendix in Table A3. As in the analysis of break and enter offences, the six LACs which did not have a full 24 months of CIDS data are excluded from this analysis.

Table 4: Comparison of monthly trends in CIDS calls and COPS incidents: Motor vehicle theft, October 1997 to September 1999

	COPS			
CIDS	LACs with significant downward trend	LACs with no significant trend	LACs with significant upward trend	**Total LACs**
LACs with significant downward trend	23	11	0	**34**
LACs with no significant trend	7	27	2	**36**
LACs with significant upward trend	0	3	1	**4**
Total LACs	**30**	**41**	**3**	**74**

The numerical entries in the body of Table 4, as in Table 2 in the previous section, represent the number of LACs which exhibit the trend in CIDS calls denoted by the row category, cross-classified by the trend in COPS records (the column category). As before, the entries in the first row of Table 4 show that 34 of the total 74 LACs tested exhibited a statistically significant downward monthly trend in the number of CIDS calls. Of these 34 LACs, 23 showed an equivalent downward trend in COPS entries, 11 showed no significant upward or downward trend in COPS records, while none of the LACs with a downward trend in CIDS calls showed an upward trend in COPS records for motor vehicle theft offences over this period.

As before, the entries in the top-left to bottom-right diagonal of Table 4 represent the number of LACs with perfectly concordant trends in the two motor vehicle theft series. Again, the issue of under-recording on COPS compared to CIDS is only a possibility in the three cells below the diagonal; that is, in LACs which showed either (1) no significant trend or an upward trend in CIDS but a significant downward trend in COPS, or (2) a significant upward trend in CIDS but no significant trend in COPS. These situations are represented by the shaded cells in Table 4. In each of these situations, the trend in COPS is 'below' that which would be expected in an LAC given the observed CIDS trend.

Overall, 86 per cent of LACs showed trends in COPS records which were the same or 'above' the trends in CIDS calls recorded (64 of the total 74 LACs) for the motor vehicle theft offence category. These are the LACs which appear in the unshaded cells above the diagonal in Table 4. On the other hand, there are 10 LACs exhibiting discordant trends which may indicate under-recording on COPS.

The counts shown in the shaded area below the diagonal of Table 4 shows that of these 10 LACs, there are three LACs showing significant upward trends in CIDS calls which were not reflected in the trends in incidents recorded on COPS. These are the LACs of The Hills (Macquarie Region), Wagga Wagga (Southern Rivers Region) and Canobolas (Western Region). The trends for these LACs are shown in Figures A47, A71 and A74, respectively, in the Appendix. Though non-significant, increases in COPS incidents over the period were recorded in both The Hills and Wagga Wagga LACs. The number of CIDS calls relative to COPS incidents appears to have declined in the Canobolas LAC. However, the monthly number of both calls and incidents of motor vehicle theft offences is very small in this LAC.

There are also seven LACs showing a significant downward trend in COPS records for motor vehicle theft offences, but showing no significant trend in CIDS calls. Of these

seven LACs, six show a percentage decrease in CIDS calls, comparable to the decrease in COPS records. Although the decrease in CIDS calls was not significant in the three LACs of Hawkesbury (Macquarie Region), North Shore (North Metropolitan Region) and Chifley (Western Region), the percentage decrease for the CIDS series was of an even greater magnitude than the decrease in the COPS series. In a further three LACs, The Rocks (City East Region), New England (Northern Region) and Orana (Western Region), there was also an overall annual decrease in the total number of CIDS calls recorded, though of a smaller magnitude than in the annual decrease in COPS records.

Only one area, Lachlan LAC in the Western Region, shows a conflict in the direction of the annual change in the total number of CIDS calls compared with the total number of COPS records for motor vehicle theft offences. While the two data series for this LAC, shown in Figure A78, show similar monthly movements, the ratio of COPS records to CIDS calls appears to have reduced over the time period. These discordant trends will be examined in more detail in the next section of this report.

Table 5, below, summarises the correspondence of change direction in the two series for motor vehicle theft. As before, the six LACs which did not have full CIDS coverage over the two-year period have been excluded from the analysis. The top-left and bottom-right entries in the body of Table 5 represent the LACs which show agreement in the direction of the annual changes of the two series. Again, only the shaded cell may indicate under-recording on COPS compared with the number of CIDS calls.

Table 5: Comparison of annual percentage changes in CIDS calls and COPS incidents: Motor vehicle theft, October 1997 to September 1999

	COPS		
CIDS	LACs with decrease	LACs with increase	**Total LACs**
LACs with decrease	52	4	**56**
LACs with increase	10	8	**18**
Total LACs	**62**	**12**	**74**

Table 5 shows that the majority of LACs (56 of the total 74, or 76%) showed an annual percentage decrease in CIDS calls over the two-year period. Of the 18 LACs which showed an increase in CIDS calls for motor vehicle theft, only eight (44%) showed a comparable increase in COPS incidents. The Regions and LACs for which an increase in CIDS calls is contrasted with a decrease in COPS records are as follows:

- North Metropolitan Region: Brisbane Waters;
- Northern Region: Oxley;
- South Eastern Region: Far South Coast, Shoalhaven;
- Southern Rivers Region: Albury, Cootamundra, Deniliquin;
- Western Region: Canobolas, Darling River, Lachlan.

Only two of the 10 LACs listed, Canobolas and Lachlan LACs (Western Region) showed trend discordance in Table 4 above. The monthly number of incidents in each of these LACs, however, is very small (less than 20 motor vehicle theft incidents recorded per

month), and is therefore subject to greater variation in the direction of change (see Figures A74 and A78 in the Appendix). A further six LACs exhibit relatively high, significant correlation coefficients (at a 1% level of significance) between the two series, as detailed in Appendix Table A1. These are the LACs of Brisbane Waters (r = 0.58), Oxley (r = 0.71), Far South Coast (r = 0.63), Shoalhaven (r = 0.57), Albury (r = 0.69) and Darling River (r = 0.64).

The only two LACs listed above which have both non-significant correlations, and a conflicting change direction between the two series are Cootamundra and Deniliquin LACs, both in the Southern Rivers Region. Inspection of the graphs for these two LACs in Figures A67 and A68 shows again that the number of incidents of motor vehicle theft recorded and the number of of CIDS calls received in these two LACs is very small and therefore subject to more erratic variation in the direction of change.

5. COMPARISONS OF COPS/CIDS RATIOS BY LAC

Finally, we will compare the ratios of COPS incidents to CIDS calls calculated for each LAC over the two-year period of analysis. There are two reasons for performing these comparisons: firstly, to compare recording practices across LACs; and, secondly to determine whether there has been a change in recording practice within an LAC over the time period in question. The second test is particularly important for the validation process, as the use of recorded crime data as a performance indicator for police was only in place in the latter part of the two-year period.

5.1 TRENDS IN COPS/CIDS RATIOS

The COPS/CIDS ratio is calculated as the total number of COPS incidents divided by the total number of CIDS calls in each month of the series. This calculation was performed for each of the two offence categories examined in this paper, for each LAC. For each offence category, a statistical test for trend was performed on the series of 24 monthly ratios, by offence category. Note that for those LACs which had not commenced full CIDS operation by October 1997, the test was performed only on the later months for which the ratios are comparable.

In order to further compare the levels of COPS/CIDS ratios between LACs, as well as the stability of the ratios within LACs for each offence category, three summary measures were created by offence category for each LAC. This involved calculating a quarterly estimate of the COPS to CIDS ratio at three separate time periods, for the three-month periods (1) October to December 1997 (at the start of the two-year series, before the commencement of OCRs), (2) October to December 1998 (a comparable time period in the following year, nine months after the commencement of the OCR process), and (3) July to September 1999 (the last available quarterly time period in the series). The ratio calculations for all LACs are shown fully in Tables A2 and A3 for break and enter offences and motor vehicle theft offences, respectively, and will be examined in more detail below in this section.

Table 6 summarises the results of these tests for trend in the 80 NSW LACs for each offence category. There are three possible results for a statistical test for trend of the monthly COPS/CIDS ratios. Each result has implications for the test of trend concordance in COPS records and CIDS calls series, as follows. The results of the significance test for each offence category and each LAC will show either that (1) no significant trend is observed in the ratio over the two-year period, or (2) a significant upward trend is observed in the ratio, or (3) a significant downward trend is observed. We would expect that, in the majority of LACs, there would be no significant upward or downward trend observed in the monthly series of ratios for each offence category. That is, we would expect a change in CIDS calls (the denominator of the ratio) to be reflected in an approximately proportional change in COPS entries (the numerator of the ratio) resulting in a stable ratio over the time period.

A significant upward trend in the ratio is observed if either (1) COPS records increase over the time period at a greater rate than CIDS calls, or (2) CIDS calls decrease over the time period at a greater rate than COPS records. The first situation may arise from COPS records being created more rigorously from CIDS calls, or from COPS records arising more frequently later in the series from sources other than CIDS. The second situation may occur if COPS records arising from CIDS calls early in the series were transferred to an alternative notification method, such as PAL, later in the series.

Finally, a significant downward trend in the ratio is observed if either (1) COPS records decrease at a greater rate than CIDS calls over the time period, or (2) CIDS calls increase more than COPS entries over time. These situations may indicate under-recording on COPS, therefore the trends in LACs which show a significant downward in the COPS/CIDS ratio will be examined more closely below.

Table 6: Summary of results of statistical tests for monthly trend for COPS/CIDS ratios, October 1997 to September 1999

	COPS							
	LACs with significant downward trend		LACs with no significant trend		LACs with significant upward trend		**Total LACs**	
Offence category	***No.***	***%***	***No.***	***%***	***No.***	***%***	***No.***	***%***
Break and enter	3	4	49	61	28	35	**80**	**100**
Motor vehicle theft	7	9	63	79	10	12	**80**	**100**

Table 6 shows that, in the majority of LACs, there is no significant upward or downward trend in the COPS/CIDS ratio for either offence category over the time period. Overall, more than 60 per cent of LACs show a stable ratio for the break and enter offence category, while almost 80 per cent of all LACs showed a stable ratio for the motor vehicle theft offence category over the two-year period.

The results in Table 6 further show that, overall, significant upward trends in the COPS/CIDS ratio were recorded in 35 per cent of LACs for break and enter offences, and in 12 per cent of LACs for motor vehicle theft offences. As suggested earlier, an upward trend, (that is, an increase in the COPS/CIDS ratio over time), will occur if the total number of COPS entries increases relative to CIDS calls for successive time periods. This may come about through increased recording on COPS due to a change in procedure, training or personnel within an LAC, or through an increased proportion of notification of COPS incidents via means other than CIDS.

The shaded entries in Table 6 detail the number and percentage of LACs showing a significant downward trend in the monthly ratio of COPS records to CIDS calls. In these LACs (which are identified in Tables A4 and A5 of the Appendix) there has been some offset occurring in the number of COPS entries compared with CIDS calls. That is, the monthly number of COPS entries has declined relative to the number of CIDS calls over the 24-month period, suggesting that there may be under-enumeration of COPS entries for some LACs. In total, a significant downward trend occurred in the break and enter ratio for four per cent of LACs, and in the motor vehicle theft ratio for nine per cent of LACs.

As suggested above, the COPS/CIDS ratio will trend downwards (or show a decrease over time) when the number of COPS entries decreases relative to CIDS calls. This could occur either through a change in COPS recording practices or by an increase in CIDS notifications which is somehow not reflected by subsequent recording of the incidents on COPS.

Table A4 shows that the following LACs showed a significant downward trend in the COPS/CIDS ratio between October 1997 and September 1999 for the break and enter offence category.

- Greater Hume Region: Campbelltown (Figure A27);
- Macquarie Region: The Hills (Figure A47);
- Western Region: Darling River (Figure A77).

Examination of the break and enter series in Figure A47 confirms the change in the relationship between COPS incidents and CIDS calls in The Hills LAC which has occurred since about February 1999. Moreover, Table A2 shows that the ratio of COPS records to CIDS calls in The Hills LAC recently decreased from similar levels in the December quarters of 1997 and 1998 (0.81 and 0.85, respectively) down to 0.60 in the September quarter of 1999.

In Campbelltown LAC, Figure A27 shows that a smaller change occurred in the relationship between COPS records and CIDS calls over the two-year time period. This is confirmed by the gradual decline in the three-month summary ratios - from 0.97 and 0.94 in December quarters of 1997 and 1998, down to 0.82 in September quarter 1999.

The change in the ratio of COPS records to CIDS calls for the Darling River LAC, shown in Figure A77, appears to be due to the volatility of the numbers in the whole series. Because a relatively small number of break and enter incidents are notified and recorded in this area, when the ratios are calculated a small change in the absolute number of incidents or service calls can result in a relatively large change in the ratio. This can be seen in the summary ratios shown in Table A2 for the Darling River LAC. The ratio has changed from 1.28 in the December quarter of 1997, to 0.96 in the same quarter of 1998, down to 0.79 in the September quarter 1999.

Both the Darling River and Campbelltown LACs showed a high correlation between the two series, as shown by the correlation coefficients detailed in Appendix Table A1. In Darling River, the correlation coefficient was 0.88, while in Campbelltown it was 0.83. The correlation between the two series in The Hills LAC, whilst lower at 0.62, showed a similarly strong statistical significance (each was significant at 1% level of significance). Note that where the two series diverge for a longer period, as is the case in The Hills LAC, we expect to observe a lower correlation coefficient.

It should be noted that the contribution of recorded criminal incidents of break and enter offences in these three LACs to the total number of incidents recorded in NSW is very small. Overall, for the two-year period analysed in this paper, the total offences in these three LACs comprised just 3.1 per cent of break and enter offences recorded in NSW.

Table A5 shows that there was a statistically significant downward trend in the COPS/CIDS ratio between October 1997 and September 1999 for motor vehicle theft offences in the LACs listed below.

- Macquarie Region: The Hills (Figure A47);
- North Metropolitan Region: Brisbane Waters (Figure A48);
- Southern Rivers Region: Albury (Figure A66), Griffith (Figure A70), Wagga Wagga (Figure A71);
- Western Region: Canobolas (Figure A74), Lachlan (Figure A78).

Note, however, that the number of motor vehicle theft offences recorded in each LAC is much lower than the number of break and enter offences, and therefore more variability

is apparent in the graphs for each series. In particular, in The Hills LAC, and in the LACs listed in the Southern Rivers and Western Regions, very few CIDS calls were received for motor vehicle theft offences. The ratios described in this section are therefore likely to be subject to substantial variation.

Table A3 in the Appendix details the three-month COPS/CIDS ratios for motor vehicle theft offences. The ratios for each of the LACs listed above are generally high and variable over the time period. The graphs in the Appendix indicate that the numbers of offences and calls are low, which leads to the substantial variability in the ratios (for reasons noted earlier in the analysis of the COPS/CIDS ratios for break and enter offences). The Pearson correlation coefficients listed in Table A1 are significant for each of these LACs, though of smaller magnitude for The Hills, Canobolas and Lachlan than for the Brisbane Waters, Albury, Griffith, and Wagga Wagga LACs.

As before, it should be noted that the contribution of recorded criminal incidents of motor vehicle theft in these LACs to the NSW total is very small. Overall, for the two-year period analysed in this paper, the total offences in these seven LACs comprised just 4.5 per cent of motor vehicle theft offences recorded in NSW.

5.2 DIFFERENCES AND CHANGES OVER TIME IN COPS/CIDS RATIOS BY REGION

In order to enumerate and summarise the differences in COPS/CIDS ratios between Regions, a further set of analyses of the summary three-month ratios was undertaken and will be described in this section.

As noted earlier in this report, the summary quarterly ratios for break and enter offences, and motor vehicle theft offences are shown in full in Appendix Tables A2 and A3. These calculations are summarised in Table 7 which shows the average ratio and standard deviations and ranges in selected three-month periods. Note that the calculations have taken account of the late uptake of CIDS in six LACs by excluding these LACs from the summary statistics in the first quarter.

Table 7: Summary statistics for quarterly COPS/CIDS ratios in LACs

Offence category	*October to December 1997 (74 LACs)*	*October to December 1998 (80 LACs)*	*July to September 1999 (80 LACs)*
Break and enter			
average	**0.87**	**0.87**	**0.94**
(sd)	(0.24)	(0.10)	(0.14)
range	0.52 - 2.62	0.64 - 1.14	0.60 - 1.40
Motor vehicle theft			
average	**2.01**	**1.89**	**2.04**
(sd)	(0.98)	(0.90)	(0.85)
range	0.76 - 7.50	0.62 - 5.20	0.76 - 4.86

Table 7 details the average COPS/CIDS ratio across all LACs for each of the three-month periods October to December 1997, October to December 1998 and July to September 1999 for both break and enter, and motor vehicle theft. In addition the standard deviation (sd) of these ratios, and the lowest and highest ratio (the range) are shown in the table. If systematic or widespread under-recording on the COPS system

has taken place, we would expect the average ratio to have decreased over time. The results in Table 7 show that, overall, the average ratio did not change between 1997 and 1998 (the first two quarters tested) for either break and enter or motor vehicle theft offences. (The apparent decrease from 2.01 to 1.89 in the COPS/CIDS ratio for the motor vehicle theft category is not statistically significant because of the large variability in the ratio between LACs, as evidenced by the high standard deviation). Between 1998 and 1999, however, the ratio for break and enter offences significantly increased, from 0.87 to 0.94. As noted earlier in this report, the increase may be due to changes in the method of offence notification, or from more rigorous recording of offences on the COPS system.

There is, however, a large amount of variation in the summary statistics between Regions for both break and enter and motor vehicle theft offences. Table 8 shows a summary of the COPS/CIDS ratio by Region for break and enter offences. The results show that, for break and enter, the average COPS/CIDS ratio in the first quarter, October to December 1997, varied between 0.69 and 1.05 across the 11 Regions. In the second quarter, October to December 1998, the average varied between 0.76 and 0.98, and in the third quarter between 0.84 and 1.12. Table 8 also shows that there was considerable variation in the ratio between the LACs within Regions, as evidenced by the large ranges shown in each cell.

Between the first and second quarters, there was an increase in the average COPS/CIDS ratio for break and enter offences in seven of the 11 Regions, and a decrease in three Regions; one showed stability. Between the second and third quarters, however, there was an increase in the average ratio in each Region. In some cases, the increase was substantial. For example, Table 8 shows that in the Hunter Region the ratio increased from 0.95 in December quarter 1998 to 1.12 in September quarter 1999. The next highest absolute increase in the ratio occurred in the Greater Hume Region over this time period (from 0.81 to 0.91). The ratios observed in LACs within the Greater Hume Region may have been substantially affected by the introduction of the PAL notification system, thereby increasing the COPS/CIDS ratio as calls which would normally be entered on CIDS were transferred to PAL. By early 1999, all nine LACs within the Greater Hume Region were using PAL. This is the only Region having complete coverage of the PAL system by mid-1999.

The pattern differs for motor vehicle theft offences, as shown in Table 9. For motor vehicle theft offences, the average COPS/CIDS ratio in the first quarter varied between 1.25 and 3.22 across the 11 Regions. In the second quarter, the average varied between 1.01 and 2.65, and in the third quarter between 1.05 and 3.00. However, the variation within Regions, as shown by the standard deviation and range in each cell, is much wider for this offence than for the break and enter offence category.

Between the first and second quarters, there was an increase in the COPS/CIDS ratio for motor vehicle theft offences in only four of the 11 Regions, and a decrease in seven Regions. Between the second and third quarters, there was an increase in the average ratio in eight of the Regions while three showed a decrease. Note, however, that because of the large variability in the calculated averages for this offence category, as evidenced by the large standard deviations within each Region, the changes are not statistically significant.

Table 8: Summary statistics for quarterly COPS/CIDS ratios by Region: Break and enter

Region	*December quarter 1997*	*December quarter 1998*	*September quarter 1999*
City East	n = 9	n = 9	n = 9
average (sd)	**0.96** (0.63)	**0.85** (0.13)	**0.91** (0.15)
range	0.52 - 2.62	0.73 - 1.14	0.74 - 1.27
Endeavour	n = 8	n = 8	n = 8
average (sd)	**0.83** (0.03)	**0.87** (0.06)	**0.95** (0.10)
ange	0.78 - 0.89	0.78 - 0.94	0.81 - 1.07
Georges River	n = 6	n = 6	n = 6
average (sd)	**0.86** (0.08)	**0.98** (0.07)	**1.04** (0.11)
ange	0.79 - 1.02	0.90 - 1.07	0.95 - 1.25
Greater Hume	n = 9	n = 9	n = 9
average (sd)	**0.81** (0.09)	**0.81** (0.08)	**0.91** (0.10)
range	0.67 - 0.97	0.71 - 0.94	0.77 - 1.10
Hunter	n = 5	n = 6	n = 6
average (sd)	**0.84** (0.05)	**0.95** (0.06)	**1.12** (0.13)
range	0.79 - 0.91	0.85 - 1.05	0.96 - 1.35
Macquarie	n = 9	n = 9	n = 9
average (sd)	**0.79** (0.04)	**0.84** (0.05)	**0.89** (0.13)
range	0.70 - 0.85	0.78 - 0.93	0.60 - 1.04
North Metropolitan	n = 7	n =7	n = 7
average (sd)	**0.89** (0.03)	**0.92** (0.09)	**1.01** (0.08)
range	0.86 - 0.94	0.84 - 1.09	0.93 - 1.13
Northern	n = 2	n = 6	n = 6
average (sd)	**0.69** (0.03	)**0.87** (0.10)	**0.95** (0.10)
range	0.67 - 0.71	0.76 - 1.01	0.75 - 1.06
South Eastern	n = 4	n = 5	n = 5
average (sd)	**0.82** (0.03)	**0.89** (0.13)	**0.95** (0.14)
range	0.79 - 0.86	0.73 - 1.01	0.83 - 1.17
Southern Rivers	n = 6	n = 6	n = 6
average (sd)	**0.86** (0.11)	**0.76** (0.09)	**0.84** (0.11)
range	0.67 - 0.97	0.69 - 0.88	0.66 - 0.96
Western	n = 9	n = 9	n = 9
average (sd)	**1.05** (0.19)	**0.84** (0.10)	**0.90** (0.22)
range	0.80 - 1.28	0.64 - 0.98	0.70 - 1.40

Table 9: Summary statistics for quarterly COPS/CIDS ratios by Region: Motor vehicle theft

Region	*December quarter 1997*	*December quarter 1998*	*September quarter 1999*
City East	n = 9	n = 9	n = 9
average (sd)	**3.22** (1.85)	**2.65** (1.06)	**3.00** (0.87)
range	1.19 - 7.50	1.47 - 4.53	2.23 - 4.86
Endeavour	n = 8	n = 8	n = 8
average (sd)	**1.97** (0.45)	**1.94** (0.36)	**2.54** (0.40)
range	1.18 - 2.62	1.53 - 2.53	1.96 - 3.07
Georges River	n = 6	n = 6	n = 6
average (sd)	**2.07** (0.38)	**2.26** (0.78)	**2.68** (1.05)
range	1.64 - 2.75	1.58 - 3.80	1.81 - 4.76
Greater Hume	n = 9	n = 9	n = 9
average (sd)	**1.72** (0.40)	**1.88** (0.48)	**2.05** (0.37)
range	1.26 - 2.55	1.32 - 2.92	1.67 - 2.74
Hunter	n = 5	n = 6	n = 6
average (sd)	**1.57** (0.51)	**2.30** (1.52)	**1.93** (0.78)
range	1.06 - 2.42	1.20 - 5.20	0.97 - 3.34
Macquarie	n = 9	n = 9	n = 9
average (sd)	**2.06** (0.85)	**2.16** (1.07)	**2.08** (0.52)
range	1.13 - 3.52	1.13 - 4.79	1.12 - 2.71
North Metropolitan	n = 7	n = 7	n = 7
average (sd)	**2.60** (0.57)	**2.36** (0.41)	**2.60** (0.84)
range 1.54 - 3.28	1.88 - 3.17	1.77 - 4.05	
Northern	n = 2	n = 6	n = 6
average (sd)	**1.27** (0.29)	**1.20** (0.16)	**1.38** (0.25)
range	1.06 - 1.47	1.03 - 1.39	1.00 - 1.73
South Eastern	n = 4	n = 5	n = 5
average (sd)	**1.25** (0.22)	**1.07** (0.34)	**1.37** (0.34)
range	0.97 - 1.44	0.62 - 1.43	0.97 - 1.82
Southern Rivers	n = 6	n = 6	n = 6
average (sd)	**1.74** (0.89)	**1.01** (0.31)	**1.05** (0.29)
range	0.76 - 3.14	0.70 - 1.38	0.76 - 1.55
Western	n = 9	n = 9	n = 9
average (sd)	**1.53** (0.56)	**1.40** (0.67)	**1.26** (0.37)
range	0.89 - 2.63	0.89 - 3.10	0.90 - 2.00

6. SUMMARY AND CONCLUSION

The purpose of this report was to present and discuss the results of four (non-independent) tests for concordance between COPS and CIDS records at the level of LACs. The tests were conducted to see whether the decline in recorded rates of break and enter and motor vehicle theft observed between October 1997 and September 1999 could have come about because of deliberate non-recording of crime by police.

The pre-eminent finding to emerge from the analysis is that the vast majority of NSW Police LACs show a strong concordance between their COPS and CIDS data in relation to both break and enter and motor vehicle theft.

Tests examining the linear correlation between COPS and CIDS data for break and enter reveal a significant positive correlation for 96 per cent of LACs. For motor vehicle theft the correlation is somewhat lower but, at 86 per cent, is still extremely high. The trend analysis produced similar levels of concordance. For break and enter, approximately 90 per cent of LACs showed trends in COPS records which were the same or 'more upward' than their trends in CIDS calls. For motor vehicle theft, 86 per cent of LACs showed significant trends in COPS records which were the same or 'more upward' than the trends in CIDS calls.

The same pattern appears when the annual percentage changes in the numbers of break and enter and motor vehicle theft offences and changes in the COPS to CIDS ratios are examined. Only one LAC out of the 74 examined showed a decrease in COPS records of break and enter but no corresponding decrease in the CIDS calls. Only 16 per cent of LACs which showed an annual percentage decline in COPS records for motor vehicle theft failed to exhibit an annual percentage decline in CIDS calls for this offence. Only four per cent of LACs showed any significant decline in the ratio of COPS to CIDS records for break and enter, while only nine per cent exhibited any decline in this ratio for motor vehicle theft.

Although there is a very high level of concordance between COPS and CIDS data for the vast majority of LACs, a number of LACs did show some evidence of discordance on one or more of the tests. Should such discordance be taken as evidence of deliberate non-recording of crime? There are several reasons for doubting that it should.

Firstly, quite a few of the anomalies are associated with country LACs which have small populations and small numbers of both CIDS and COPS registered occurrences of break and enter or motor vehicle theft. A strong concordance between COPS and CIDS trends is less likely where the numbers of cases involved are small simply because the trends in this instance tend to be much more volatile. That probably explains why the level of concordance for motor vehicle theft is generally lower than that for break and enter.

Secondly, some of the discordance between COPS and CIDS data is in the opposite direction to that which one would expect if deliberate non-recording of crime were occurring. In other words, the lack of concordance arises in some instances because for some LACs COPS shows an increase in break and enter or motor vehicle theft when the corresponding CIDS data are showing no increase or a decrease.

Thirdly, virtually all LACs which exhibit anomalous results on the trend, percentage change and ratio tests exhibited strong concordance on the test for correlation. The Rocks, Green Valley, Darling River and Lachlan LACs, for example, all showed a significant upward

trend in break and enter in CIDS but no corresponding increase in COPS. Nevertheless they all showed evidence of a strong positive correlation in their overall trend and their test results, if not significant, were close to being significant.

Taken as a whole, then, the analyses described in this report do not reveal evidence of either systemic or widespread under-recording for the offences of break and enter and motor vehicle theft by individual LACs. It needs to be borne in mind that statistical analysis of this kind is incapable of uncovering individual instances of misrecording of break and enter and motor vehicle theft on COPS. However at this stage such misrecording, if it exists, cannot be considered to be widespread and could not account for the fall in break and enter and motor vehicle theft which occurred between October 1997 and September 1999.

NOTES

1 The statistical test used is Kendall's rank order correlation test for trend; see, for example, Conover, W. J. 1980, Practical Non-Parametric Statistics, 2nd edn, John Wiley and Sons, pp. 256-260. A 5% two-tailed test was used to determine whether there was an increasing or decreasing trend in the monthly rates of recorded criminal incidents. Some month-to-month variations in the rates of recorded criminal incidents suggest seasonal factors may be at work. The test for trend is not sensitive to seasonal variations; it is sensitive only to a generally increasing or decreasing trend over the time period examined.

REFERENCES

Brereton, D. 1999, Zero Tolerance and the NYPD; Has it worked there and will it work here? Paper presented to the Australian Institute of Criminology Conference 'Mapping the Boundaries of Australia, Criminal Justice System', Canberra, March 1998.

Butterfield, F. 1998, Fiddling Statistics: it's a crime, Sydney Morning Herald, 4 August 1998.

Chilvers, M. 2000, Validation of NSW Police Crime Statistics, Crime and Justice Statistics Bureau Brief, April 2000. NSW Bureau of Crime Statistics and Research, Sydney.

Conover, W. J. 1980, Practical Non-Parametric Statistics, 2nd edn, John Wiley and Sons.

Doak, P. 2000, New South Wales Recorded Crime Statistics 1999, NSW Bureau of Crime Statistics and Research, Sydney.

Safir, M. 1997, The CompStat Process, Office of Management Analysis and Planning, City of New York Police Department, NY.

APPENDIX

Table A1: Pearson correlation coefficients for monthly COPS and CIDS data series for break and enter and motor vehicle theft, October 1997 to September 1999

Region/LAC	*Break and enter*	*Motor vehicle theft*
City East		
Botany Bay	0.88**	0.59**
City Central	0.43*	0.75**
Eastern Beaches	0.98**	0.71**
Eastern Suburbs	0.85**	0.68**
Rose Bay	0.92**	0.75**
Kings Cross	0.92**	0.54**
Redfern	0.93**	0.37
Surry Hills	0.76**	0.55**
The Rocks	0.31	0.20
Endeavour		
Ashfield	0.96**	0.75**
Burwood	0.76**	0.76**
Campsie	0.95**	0.81**
Eastwood	0.55**	0.74**
Gladesville	0.84**	0.57**
Leichhardt	0.92**	0.43*
Marrickville	0.92**	0.77**
Newtown	0.54**	0.52**
Georges River		
Bankstown	0.69**	0.69**
Flemington	0.79**	0.56**
Hurstville	0.89**	0.63**
Kogarah	0.92**	0.58**
Miranda	0.75**	0.39
Sutherland	0.67**	0.69**
Greater Hume		
Blacktown	0.65**	0.65**
Cabramatta	0.93**	0.63**
Camden	0.55**	0.61**
Campbelltown	0.83**	0.78**
Fairfield	0.66**	0.75**
Green Valley	0.93**	0.74**
Liverpool	0.67**	0.58**
Macquarie Fields	0.79**	0.46*
Mt Druitt	0.76**	0.89**
Hunter		
Hunter Valley	0.70**	0.30
Lake Macquarie	0.57**	0.54**
Lower Hunter	0.83**	0.77**
Manning Great Lakes †	0.70**	0.80**
Newcastle	0.73**	0.79**
Waratah	0.59**	0.65**

Table A1: Pearson correlation coefficients for monthly COPS and CIDS data series for break and enter and motor vehicle theft, October 1997 to September 1999, continued

Region/LAC	*Break and enter*	*Motor vehicle theft*
Macquarie		
Blue Mountains	0.92**	0.49*
Hawkesbury	0.89**	0.75**
Holroyd	0.89**	0.50*
Parramatta	0.64**	0.50*
Penrith	0.83**	0.52**
Quakers Hill	0.58**	0.43*
Rosehill	0.75**	0.38
St Marys	0.91**	0.83**
The Hills	0.62**	0.42*
North Metropolitan		
Brisbane Waters	0.92**	0.58**
Harbourside	0.81**	0.37
Ku-ring-gai	0.62**	0.18
Manly-Davidson	0.90**	0.49*
North Shore	0.89**	0.48*
Northern Beaches	0.95**	0.57**
Tuggerah Lakes	0.76**	0.69**
Northern		
Coffs/Clarence †	0.92**	0.79**
Mid North Coast †	0.85**	0.64**
New England	0.68**	0.47*
Oxley	0.89**	0.71**
Richmond †	0.83**	0.63**
Tweed/Byron †	0.92**	0.50*
South Eastern		
Far South Coast	0.76**	0.63**
Lake Illawarra	0.40	0.56**
Monaro †	0.58*	0.78**
Shoalhaven	0.93**	0.57**
Wollongong	0.81**	0.60**
Southern Rivers		
Albury	0.76**	0.69**
Cootamundra	0.70**	0.37
Deniliquin	0.45*	0.32
Goulburn	0.57**	0.14
Griffith	0.75**	0.71**
Wagga Wagga	0.77**	0.79**
Western		
Barrier	0.78**	0.59**
Barwon	0.87**	0.62**
Canobolas	0.87**	0.41*
Castlereagh	0.73**	0.32
Chifley	0.36	0.48*
Darling River	0.88**	0.64**
Lachlan	0.86**	0.45*
Mudgee	0.45*	0.44*
Orana	0.93**	0.69**

* *Correlation is significant at 0.05 level*

** *Correlation is significant at 0.01 level*

† *Correlation calculated for 18 months, April 1998 - September 1999*

Table A2: Summary of trend tests and comparisons of monthly CIDS calls and COPS incidents for break and enter; October 1997 to September 1999

	COPS		*CIDS*		*Ratio COPS/CIDS*		
Region/LAC	*Annual percentage change*	*Kendall trend test p-value*	*Annual percentage change*	*Kendall trend test p-value*	*Oct-Dec 1997*	*Oct-Dec 1998*	*Jul-Sep 1999*
City East							
Botany Bay	-17.2	0.106	-19.4	0.007*	0.79	0.94	0.86
City Central	-5.0	0.253	-27.0	0.009*	0.52	0.80	0.92
Eastern Beaches	-32.6	0.000*	-34.6	0.000*	0.82	0.86	0.89
Eastern Suburbs	5.4	0.727	-2.3	0.804	0.69	0.77	0.79
Rose Bay	-26.6	0.008*	-25.9	0.001*	0.78	0.73	0.85
Kings Cross	-35.6	0.042*	-38.5	0.002*	0.80	0.75	0.99
Redfern	-14.1	0.062	-12.0	0.136	0.79	0.78	0.74
Surry Hills	-20.2	0.117	-18.7	0.008*	0.85	0.86	0.92
The Rocks	8.4	0.765	33.4	0.024*	2.62	1.14	1.27
Endeavour							
Ashfield #	-29.7	0.001*	-32.1	0.000*	0.89	0.92	0.98
Burwood #	1.1	0.862	-4.7	0.471	0.82	0.78	0.88
Campsie #	-32.1	0.003*	-39.5	0.000*	0.80	0.82	1.07
Eastwood	1.9	0.941	-10.1	0.009*	0.82	0.94	1.07
Gladesville	7.8	0.164	11.8	0.070	0.84	0.91	0.81
Leichhardt	-13.5	0.398	-11.9	0.309	0.83	0.87	0.86
Marrickville #	-15.1	0.172	-20.2	0.015*	0.78	0.90	1.02
Newtown	-14.1	0.011*	-3.3	0.032*	0.85	0.83	0.89
Georges River							
Bankstown #	-13.1	0.107	-28.9	0.000*	0.79	1.07	1.25
Flemington #	-8.7	0.785	-16.6	0.004*	0.82	0.90	0.99
Hurstville	-16.7	0.008*	-24.1	0.000*	0.86	0.96	1.01
Kogarah	-19.6	0.005*	-27.9	0.000*	0.80	0.96	0.95
Miranda	-4.0	0.150	-6.5	0.062	1.02	1.04	1.02
Sutherland	4.6	0.215	-8.0	0.234	0.85	0.92	0.99
Greater Hume							
Blacktown #	-11.6	0.487	-15.7	0.005*	0.72	0.74	0.98
Cabramatta #	-24.6	0.005*	-27.8	0.001*	0.86	0.89	0.90
Camden #	-5.2	0.747	-10.1	0.042*	0.82	0.83	0.98
Campbelltown #	-10.1	0.297	-0.8	0.862	0.97	0.94	0.82
Fairfield #	-3.8	0.602	-4.2	0.056	0.77	0.77	0.97
Green Valley #	-16.8	0.027*	-15.5	0.078	0.86	0.85	0.84
Liverpool #	-1.5	0.747	-15.0	0.009*	0.82	0.84	1.10
Macquarie Fields #	-4.0	0.823	-10.2	0.309	0.80	0.71	0.87
Mt Druitt #	-25.1	0.050*	-29.1	0.000*	0.67	0.76	0.77
Hunter							
Hunter Valley	3.8	0.441	-9.0	0.117	0.79	0.85	1.11
Lake Macquarie #	1.9	0.413	-8.9	0.083	0.91	0.94	1.35
Lower Hunter	-5.0	0.747	-12.4	0.025*	0.86	1.05	1.05
Manning Great Lakes †	12.6	0.172	0.96	0.96			
Newcastle	7.1	0.015*	-8.0	0.205	0.82	0.95	1.17
Waratah	12.2	0.037*	-4.7	0.082	0.82	0.96	1.10

Table A2: Summary of trend tests and comparisons of monthly CIDS calls and COPS incidents for break and enter; October 1997 to September 1999, continued

	COPS		*CIDS*		*Ratio COPS/CIDS*		
Region/LAC	*Annual percentage change*	*Kendall trend test p-value*	*Annual percentage change*	*Kendall trend test p-value*	*Oct-Dec 1997*	*Oct-Dec 1998*	*Jul-Sep 1999*
Macquarie							
Blue Mountains #	-21.1	0.188	-17.9	0.157	0.80	0.78	0.97
Hawkesbury	4.2	0.765	2.1	0.862	0.85	0.83	0.87
Holroyd #	-12.5	0.233	-15.5	0.035*	0.77	0.79	0.84
Parramatta #	15.2	0.130	-8.6	0.032*	0.79	0.93	1.02
Penrith #	-22.8	0.003*	-22.3	0.000*	0.70	0.87	0.83
Quakers Hill #	-2.9	0.413	-11.7	0.050*	0.82	0.79	0.96
Rosehill #	-8.8	0.106	-21.0	0.000*	0.80	0.90	1.04
St Marys #	-8.2	0.010*	-10.4	0.003*	0.80	0.84	0.89
The Hills	3.3	0.862	27.5	0.074	0.81	0.85	0.60
North Metropolitan							
Brisbane Waters #	-7.5	0.309	-8.5	0.039*	0.89	0.86	0.98
Harbourside	-2.2	0.188	-15.5	0.002*	0.92	1.09	1.09
Ku-ring-gai	-0.1	0.442	-2.8	0.031*	0.86	0.90	0.93
Manly-Davidson	-14.0	0.112	-18.3	0.026*	0.87	0.84	1.04
North Shore	16.2	0.124	17.1	0.130	0.94	0.96	0.94
Northern Beaches	-18.6	0.015*	-18.7	0.009*	0.90	0.87	0.93
Tuggerah Lakes #	5.7	0.457	-5.8	0.078	0.86	0.90	1.13
Northern							
Coffs/Clarence †	-10.0	0.552				0.95	1.06
Mid-North Coast †	-5.4	0.427				0.84	0.93
New England	6.8	0.371	-6.6	0.052	0.71	0.76	0.99
Oxley	-2.7	0.172	-6.2	0.039*	0.67	0.78	0.75
Richmond †	3.7	0.602				0.89	0.97
Tweed/Byron †	-19.7	0.003*				1.01	0.97
South Eastern							
Far South Coast	-8.5	0.143	-5.2	0.385	0.80	0.78	0.86
Lake Illawarra #	2.6	0.843	-17.3	0.000*	0.86	1.01	1.17
Monaro †	-3.5	0.157				0.73	0.83
Shoalhaven	-28.0	0.011*	-34.4	0.002*	0.81	0.94	0.89
Wollongong #	-12.3	0.585	-22.8	0.007*	0.79	0.98	1.00
Southern Rivers							
Albury	-12.2	0.413	-13.5	0.037*	0.84	0.73	0.83
Cootamundra	-2.7	0.370	5.8	0.655	0.67	0.70	0.66
Deniliquin	-22.9	0.035*	-6.7	0.232	0.87	0.86	0.94
Goulburn	-7.9	0.274	-3.8	0.205	0.94	0.69	0.88
Griffith	2.7	0.253	-3.0	0.921	0.97	0.88	0.96
Wagga Wagga	-13.2	0.059	-9.8	0.050*	0.84	0.70	0.76
Western							
Barrier	-18.8	0.044*	-11.5	0.224	1.13	0.98	0.89
Barwon	-28.4	0.427	-20.4	0.487	0.82	0.88	0.71
Canobolas	1.9	0.359	11.7	0.091	0.85	0.74	0.81
Castlereagh	9.8	0.518	10.8	0.881	1.26	0.87	1.40
Chifley #	-5.2	0.087	-12.0	0.066	1.15	0.83	1.07
Darling River	-26.4	0.002*	-16.4	0.074	1.28	0.96	0.79
Lachlan	-21.3	0.019*	-13.1	0.086	1.14	0.81	0.93
Mudgee	-13.8	0.047*	-9.2	0.112	1.01	0.64	0.76
Orana	-22.8	0.002*	-22.9	0.001*	0.80	0.85	0.70

LACs with PAL before September 1999
† *LACs with CIDS commencing mid-1998*
* *Significant at 0.05 level*

Table A3: Summary of trend tests and comparisons of monthly CIDS calls and COPS incidents for motor vehicle theft; October 1997 to September 1999

	COPS		*CIDS*		*Ratio COPS/CIDS*		
Region/LAC	*Annual percentage change*	*Kendall trend test p-value*	*Annual percentage change*	*Kendall trend test p-value*	*Oct-Dec 1997*	*Oct-Dec 1998*	*Jul-Sep 1999*
City East							
Botany Bay	-34.1	0.001*	-38.7	0.000*	1.69	1.77	2.23
City Central	-35.7	0.000*	-35.1	0.000*	2.16	2.56	2.24
Eastern Beaches	-27.9	0.000*	-33.7	0.003*	3.18	3.95	3.22
Eastern Suburbs	-32.6	0.000*	-26.9	0.006*	3.61	3.31	2.90
Rose Bay	-42.1	0.000*	-38.3	0.009*	4.14	4.53	3.67
Kings Cross	-37.4	0.000*	-31.2	0.001*	2.53	1.47	2.33
Redfern	-14.7	0.197	-29.1	0.000*	1.19	1.73	2.34
Surry Hills	-28.2	0.000*	-22.9	0.033*	2.97	2.15	3.23
The Rocks	-27.6	0.000*	-19.5	0.282	7.50	2.40	4.86
Endeavour							
Ashfield #	-30.6	0.002*	-30.8	0.000*	1.80	1.53	2.07
Burwood #	-25.3	0.000*	-26.1	0.000*	2.15	2.05	2.68
Campsie #	-34.1	0.000*	-41.5	0.000*	1.89	2.53	1.96
Eastwood	-30.3	0.003*	-36.9	0.009*	2.42	1.93	2.31
Gladesville	-5.8	0.486	-19.9	0.036*	1.63	2.15	2.89
Leichhardt	-23.0	0.001*	-17.1	0.004*	2.62	2.18	3.07
Marrickville #	-22.2	0.164	-48.0	0.000*	1.18	1.54	2.58
Newtown	-18.1	0.002*	-20.7	0.032*	2.09	1.63	2.79
Georges River							
Bankstown #	-12.8	0.014*	-12.6	0.042*	1.64	1.58	1.81
Flemington #	2.0	0.215	-16.5	0.253	1.89	1.87	2.59
Hurstville	-18.5	0.001*	-22.2	0.000*	1.92	2.14	2.48
Kogarah	-19.7	0.000*	-21.9	0.009*	2.02	1.99	2.20
Miranda	-6.3	0.052	-26.7	0.003*	2.75	3.80	4.76
Sutherland	-20.5	0.214	-19.5	0.075	2.22	2.20	2.25
Greater Hume							
Blacktown #	-20.0	0.001*	-16.7	0.007*	2.01	2.25	2.03
Cabramatta #	-15.8	0.179	-26.0	0.003*	1.61	1.64	1.99
Camden #	-8.7	0.263	-8.4	0.241	1.91	1.32	2.09
Campbelltown #	-2.8	0.535	-2.9	0.823	1.72	2.14	2.55
Fairfield #	-12.2	0.086	-16.9	0.180	1.35	1.69	1.71
Green Valley #	-10.3	0.243	-20.6	0.004*	1.43	1.82	1.93
Liverpool #	-14.8	0.001*	-16.6	0.035*	2.55	2.92	2.74
Macquarie Fields #	-11.7	0.165	-21.6	0.022*	1.26	1.55	1.67
Mt Druitt #	-24.2	0.000*	-24.2	0.002*	1.63	1.62	1.73
Hunter							
Hunter Valley	15.2	0.036*	-23.8	0.707	1.06	5.20	1.78
Lake Macquarie #	-5.0	0.861	-7.6	0.568	1.46	1.30	1.70
Lower Hunter	-10.3	0.585	-21.3	0.077	1.48	1.67	2.05
Manning Great Lakes †	26.1	0.308				1.20	0.97
Newcastle	-1.6	0.243	-15.4	0.013*	2.42	2.74	3.34
Waratah	-8.3	0.021*	-24.0	0.002*	1.42	1.71	1.71

Table A3: Summary of trend tests and comparisons of monthly CIDS calls and COPS incidents for motor vehicle theft; October 1997 to September 1999, continued

	COPS		*CIDS*		*Ratio COPS/CIDS*		
Region/LAC	*Annual percentage change*	*Kendall trend test p-value*	*Annual percentage change*	*Kendall trend test p-value*	*Oct-Dec 1997*	*Oct-Dec 1998*	*Jul-Sep 1999*
Macquarie							
Blue Mountains #	-21.4	0.077	-6.2	0.369	1.71	1.13	1.62
Hawkesbury	-16.2	0.002*	-18.4	0.371	1.32	1.75	1.12
Holroyd #	-12.4	0.052	-10.2	0.171	2.01	2.11	2.30
Parramatta #	-1.5	0.804	-4.2	0.980	3.52	4.79	2.71
Penrith #	-27.3	0.000*	-10.9	0.001*	2.22	2.15	2.39
Quakers Hill #	15.3	0.013*	29.4	0.204	1.13	1.38	1.74
Rosehill #	-4.1	0.766	-16.2	0.021*	1.64	1.69	2.09
St Marys #	-16.5	0.004*	-16.8	0.017*	1.62	1.86	2.01
The Hills	3.6	0.425	44.9	0.013*	3.35	2.56	2.70
North Metropolitan							
Brisbane Waters #	-7.2	0.602	9.8	0.156	2.44	2.02	2.10
Harbourside	-23.3	0.010*	-22.7	0.009*	2.84	2.46	4.05
Ku-ring-gai	-13.5	0.055	-9.2	0.727	3.28	3.17	2.74
Manly-Davidson	-6.9	0.187	-3.2	0.567	3.09	2.23	2.08
North Shore	-17.0	0.002*	-19.1	0.069	2.58	2.40	2.07
Northern Beaches	1.4	0.332	-18.0	0.017*	2.45	2.38	3.41
Tuggerah Lakes #	-5.7	0.274	-17.1	0.135	1.54	1.88	1.77
Northern							
Coffs/Clarence †	-33.3	0.007*				1.08	1.25
Mid North Coast †	0.0	0.980				1.08	1.38
New England	-24.8	0.016*	-11.8	0.376	1.47	1.39	1.00
Oxley	-0.8	0.281	17.0	0.861	1.06	1.03	1.56
Richmond †	2.8	0.441				1.24	1.73
Tweed/Byron †	12.7	0.171				1.39	1.37
South Eastern							
Far South Coast	-14.2	0.468	6.4	0.471	0.97	0.62	0.97
Lake Illawarra #	12.7	0.107	-1.7	0.960	1.20	1.43	1.61
Monaro †	-33.9	0.187				0.96	1.26
Shoalhaven	-2.8	0.746	9.2	0.881	1.44	0.95	1.19
Wollongong #	-4.6	0.980	-10.4	0.011*	1.40	1.38	1.82
Southern Rivers							
Albury	-22.7	0.549	10.1	0.222	1.50	1.14	0.91
Cootamundra	-4.4	0.617	40.0	0.353	1.40	0.70	0.76
Deniliquin	-8.0	0.803	24.6	0.073	0.76	0.76	0.83
Goulburn	0.7	0.726	56.8	0.454	1.18	0.76	1.21
Griffith	37.7	0.002*	108.8	0.000*	3.14	1.38	1.55
Wagga Wagga	10.9	0.484	89.6	0.003*	2.47	1.32	1.04
Western							
Barrier	-26.7	0.303	-23.9	0.467	1.36	0.89	1.07
Barwon	26.9	0.092	32.9	0.147	0.97	0.90	0.90
Canobolas	-10.8	0.920	47.4	0.001*	1.86	1.07	0.96
Castlereagh	23.1	0.780	16.2	1.000	2.00	1.20	1.64
Chifley #	-20.2	0.018*	-23.0	0.342	2.63	3.10	2.00
Darling River	-3.8	0.581	3.7	0.940	0.89	1.17	1.23
Lachlan	-44.3	0.040*	22.5	0.900	1.60	1.44	1.29
Mudgee	46.0	0.112	13.7	0.119	1.06	1.50	1.31
Orana	-25.9	0.011*	-9.9	0.332	1.43	1.29	0.92

LACs with PAL before September 1999
† *LACs with CIDS commencing mid-1998*
* *Significant at 0.05 level*

Table A4: Results of statistical tests for monthly trend COPS/CIDS ratios for break and enter, October 1997 to September 1999

Region	*Significant downward trend*	*No significant trend*	*Significant upward trend*
City East		Botany Bay Eastern Beaches Rose Bay Kings Cross Redfern Surry Hills The Rocks	City Central Eastern Suburbs
Endeavour		Ashfield Burwood Gladesville Leichhardt Newtown	Campsie Eastwood Marrickville
Georges River		Miranda	Bankstown Flemington Hurstville Kogarah Sutherland
Greater Hume	Campbelltown	Cabramatta Camden Fairfield Green Valley Macquarie Fields Mt Druitt	Blacktown Liverpool
Hunter		Manning Great Lakes	Hunter Valley Lake Macquarie Lower Hunter Newcastle Waratah
Macquarie	The Hills	Blue Mountains Hawkesbury Penrith Quakers Hill St Marys	Holroyd Parramatta Rosehill
North Metropolitan		Brisbane Waters Ku-ring-gai North Shore Northern Beaches	Harbourside Manly-Davidson Tuggerah Lakes

Table A4: Results of statistical tests for monthly trend COPS/CIDS ratios for break and enter, October 1997 to September 1999, continued

Region	*Significant downward trend*	*No significant trend*	*Significant upward trend*
Northern		Mid North Coast Oxley Richmond Tweed/Byron	Coffs/Clarence New England
South Eastern		Far South Coast Monaro	Lake Illawarra Shoalhaven Wollongong
Southern Rivers		Albury Cootamundra Deniliquin Goulburn Griffith Wagga Wagga	
Western	Darling River	Barrier Barwon Canobolas Castlereagh Chifley Lachlan Mudgee Orana	

Table A5: Results of statistical tests for monthly trend COPS/CIDS ratios for motor vehicle theft, October 1997 to September 1999, continued

Region	*Significant downward trend*	*No significant trend*	*Significant upward trend*
City East		Botany Bay City Central Eastern Beaches Eastern Suburbs Rose Bay Kings Cross Surry Hills The Rocks	Redfern
Endeavour		Ashfield Burwood Campsie Eastwood Leichhardt Newtown	Gladesville Marrickville
Georges River		Bankstown Hurstville Kogarah Miranda Sutherland	Flemington
Greater Hume		Blacktown Cabramatta Camden Campbelltown Fairfield Liverpool Macquarie Fields Mt Druitt	Green Valley
Hunter		Hunter Valley Lake Macquarie Manning Great	Lower Hunter Newcastle Lakes Waratah
Macquarie	The Hills	Blue Mountains Hawkesbury Holroyd Parramatta Penrith Quakers Hill Rosehill St Marys	
North Metropolitan		Brisbane Waters Ku-ring-gai North Shore Northern Beaches	Harbourside Manly-Davidson Tuggerah Lakes

Table A5: Results of statistical tests for monthly trend COPS/CIDS ratios for motor vehicle theft, October 1997 to September 1999, continued

Region	*Significant downward trend*	*No significant trend*	*Significant upward trend*
North Metropolitan	Brisbane Waters	Harbourside Ku-ring-gai Manly-Davidson North Shore Tuggerah Lakes	Northern Beaches
Northern		Coffs/Clarence Mid North Coast New England Oxley Richmond Tweed/Byron	
South Eastern		Far South Coast Lake Illawarra Monaro Shoalhaven	Wollongong
Southern Rivers	Albury Griffith Wagga Wagga	Cootamundra Deniliquin Goulburn	
Western	Canobolas Lachlan	Barrier Barwon Castlereagh Chifley Darling River Mudgee Orana	

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Figure	*Region*	*Local Area Command*
A1	CITY EAST	Botany Bay
A2	CITY EAST	City Central
A3	CITY EAST	Eastern Beaches
A4	CITY EAST	Eastern Suburbs
A5	CITY EAST	Rose Bay
A6	CITY EAST	Kings Cross
A7	CITY EAST	Redfern
A8	CITY EAST	Surry Hills
A9	CITY EAST	The Rocks
A10	ENDEAVOUR	Ashfield
A11	ENDEAVOUR	Burwood
A12	ENDEAVOUR	Campsie
A13	ENDEAVOUR	Eastwood
A14	ENDEAVOUR	Gladesville
A15	ENDEAVOUR	Leichhardt
A16	ENDEAVOUR	Marrickville
A17	ENDEAVOUR	Newtown
A18	GEORGES RIVER	Bankstown
A19	GEORGES RIVER	Flemington
A20	GEORGES RIVER	Hurstville
A21	GEORGES RIVER	Kogarah
A22	GEORGES RIVER	Miranda
A23	GEORGES RIVER	Sutherland
A24	GREATER HUME	Blacktown
A25	GREATER HUME	Cabramatta
A26	GREATER HUME	Camden
A27	GREATER HUME	Campbelltown
A28	GREATER HUME	Fairfield
A29	GREATER HUME	Green Valley
A30	GREATER HUME	Liverpool
A31	GREATER HUME	Macquarie Fields
A32	GREATER HUME	Mt Druitt
A33	HUNTER	Hunter Valley
A34	HUNTER	Lake Macquarie
A35	HUNTER	Lower Hunter
A36	HUNTER	Manning Great Lakes
A37	HUNTER	Newcastle
A38	HUNTER	Waratah

Index: Figures for break and enter and motor vehicle theft, pages 36-62, continued

Figure	*Region*	*Local Area Command*
A39	MACQUARIE	Blue Mountains
A40	MACQUARIE	Hawkesbury
A41	MACQUARIE	Holroyd
A42	MACQUARIE	Parramatta
A43	MACQUARIE	Penrith
A44	MACQUARIE	Quakers Hill
A45	MACQUARIE	Rosehill
A46	MACQUARIE	St Marys
A47	MACQUARIE	The Hills
A48	NORTH METROPOLITAN	Brisbane Waters
A49	NORTH METROPOLITAN	Harbourside
A50	NORTH METROPOLITAN	Ku-ring-gai
A51	NORTH METROPOLITAN	Manly-Davidson
A52	NORTH METROPOLITAN	North Shore
A53	NORTH METROPOLITAN	Northern Beaches
A54	NORTH METROPOLITAN	Tuggerah Lakes
A55	NORTHERN	Coffs/Clarence
A56	NORTHERN	Mid North Coast
A57	NORTHERN	New England
A58	NORTHERN	Oxley
A59	NORTHERN	Richmond
A60	NORTHERN	Tweed/Byron
A61	SOUTH EASTERN	Far South Coast
A62	SOUTH EASTERN	Lake Illawarra
A63	SOUTH EASTERN	Monaro
A64	SOUTH EASTERN	Shoalhaven
A65	SOUTH EASTERN	Wollongong
A66	SOUTHERN RIVERS	Albury
A67	SOUTHERN RIVERS	Cootamundra
A68	SOUTHERN RIVERS	Deniliquin
A69	SOUTHERN RIVERS	Goulburn
A70	SOUTHERN RIVERS	Griffith
A71	SOUTHERN RIVERS	Wagga Wagga
A72	WESTERN	Barrier
A73	WESTERN	Barwon
A74	WESTERN	Canobolas
A75	WESTERN	Castlereagh
A76	WESTERN	Chifley
A77	WESTERN	Darling River
A78	WESTERN	Lachlan
A79	WESTERN	Mudgee
A80	WESTERN	Orana

Figure A1 - CITY EAST REGION: Botany Bay LAC

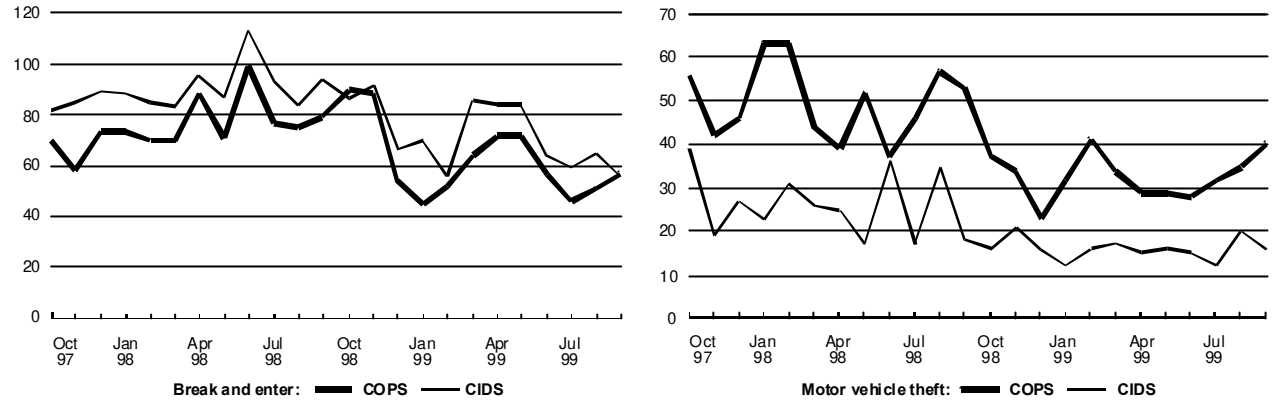


Figure A2 - CITY EAST REGION: City Central LAC

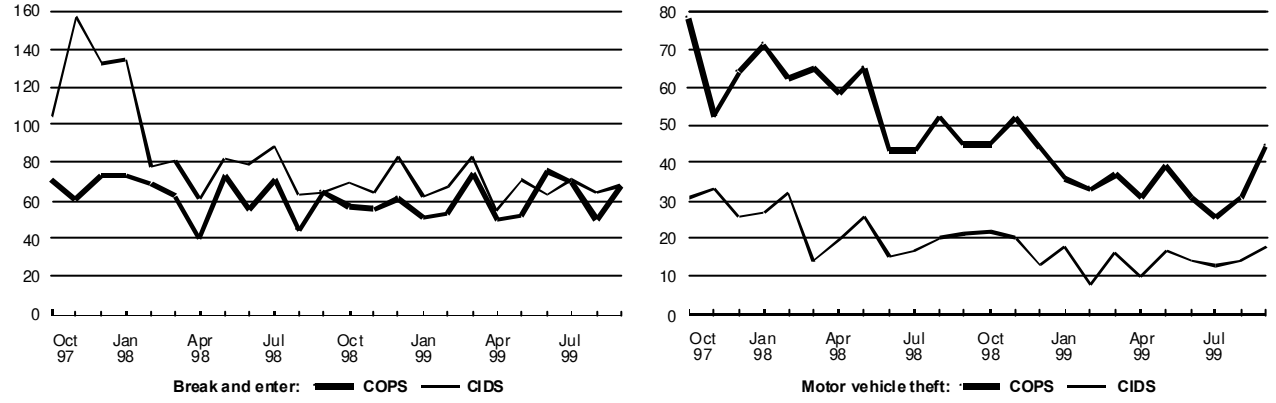


Figure A3 - CITY EAST REGION: Eastern Beaches LAC

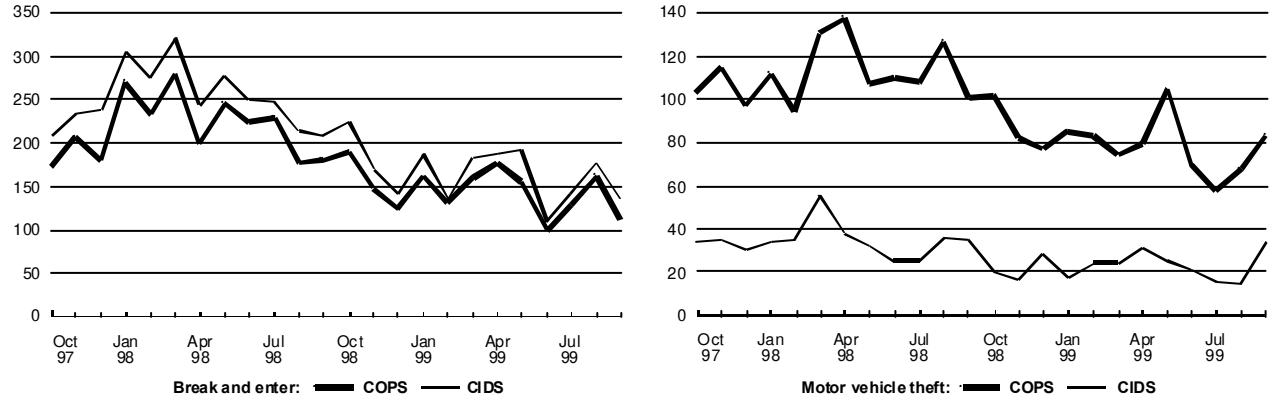


Figure A4 - CITY EAST REGION: Eastern Suburbs LAC

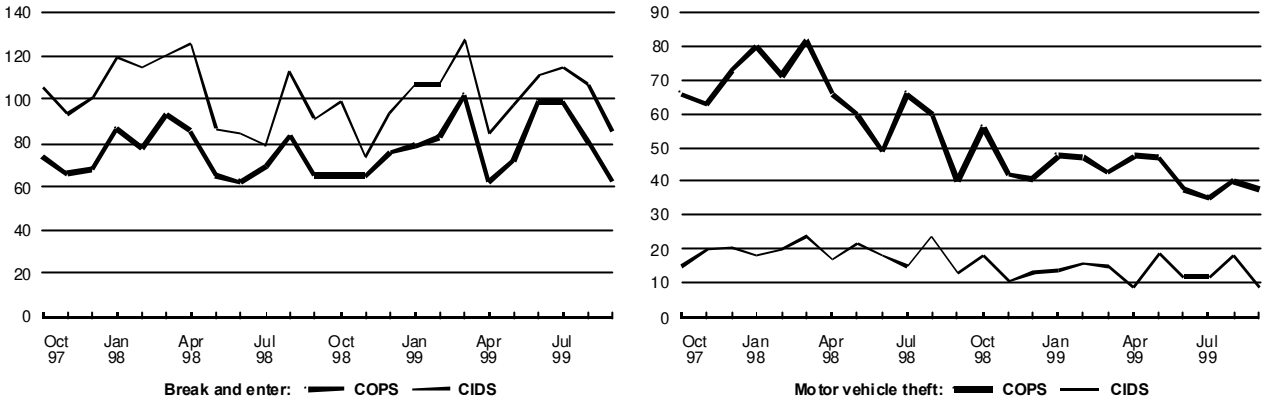


Figure A5 - CITY EAST REGION: Harbourside LAC

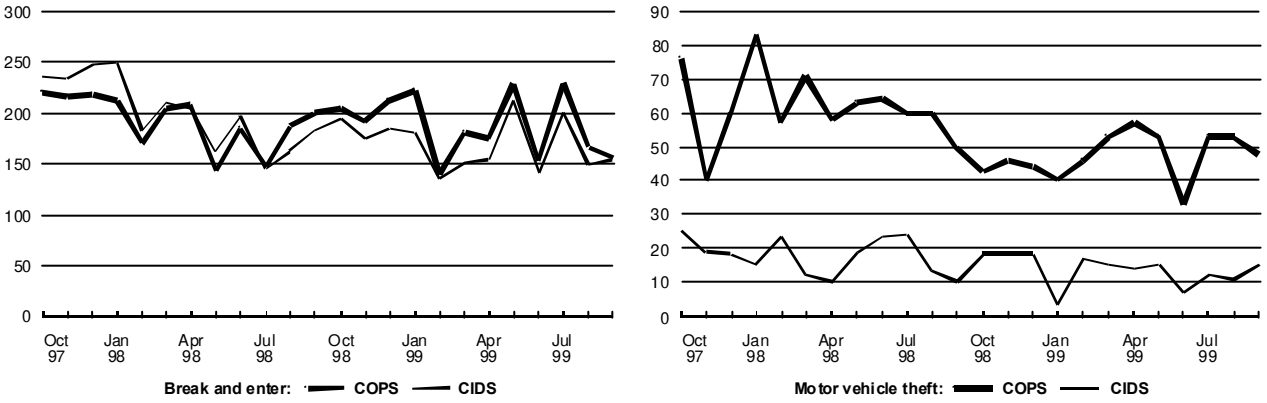


Figure A6 - CITY EAST REGION: Kings Cross LAC

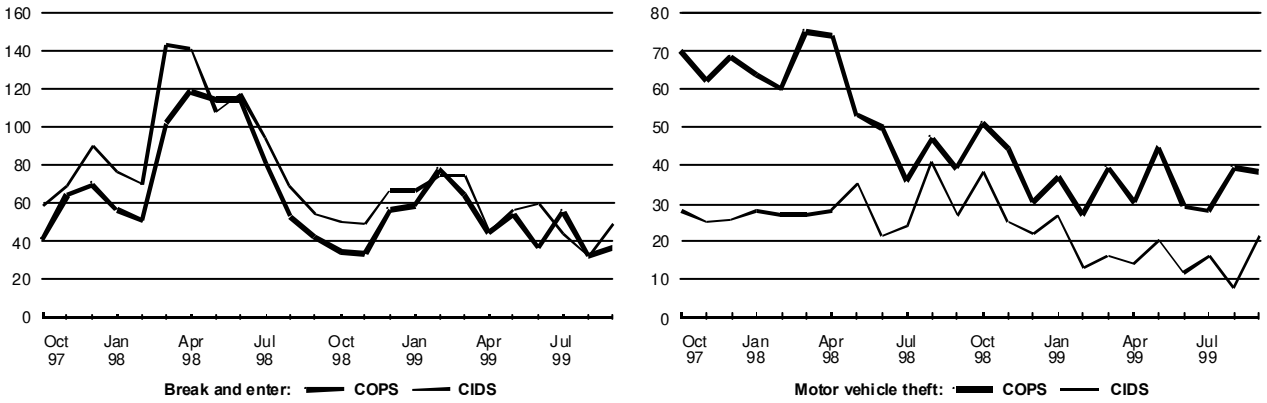


Figure A7 - CITY EAST REGION: Redfern LAC

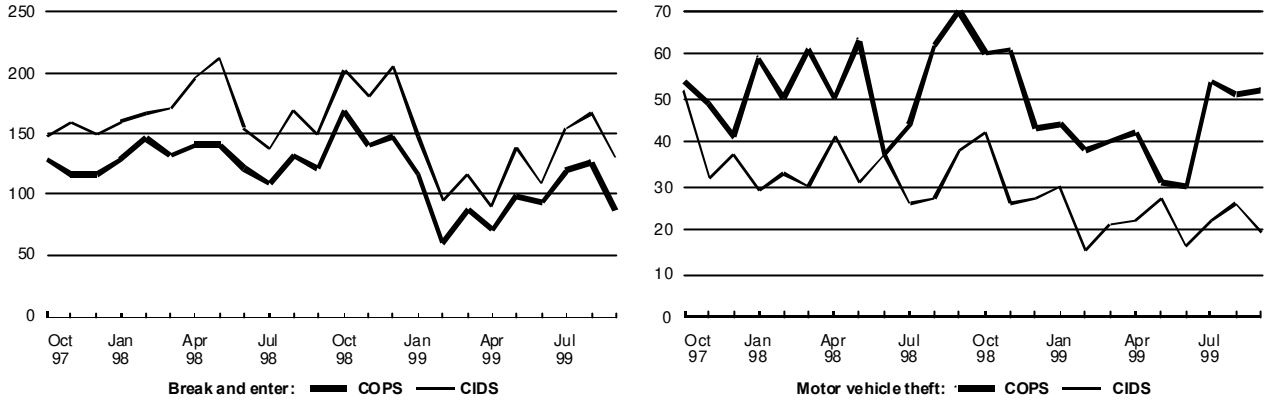


Figure A8 - CITY EAST REGION: Surry Hills LAC

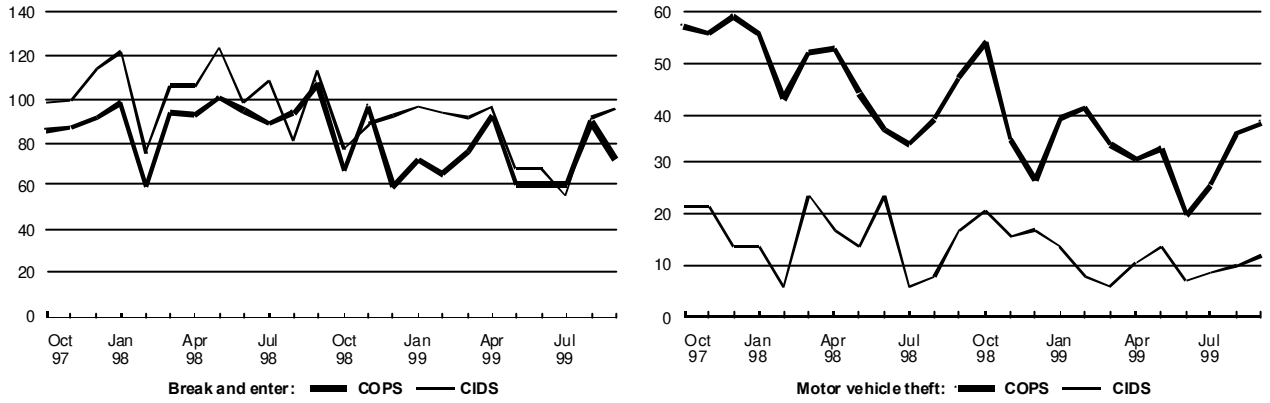


Figure A9 - CITY EAST REGION: The Rocks LAC

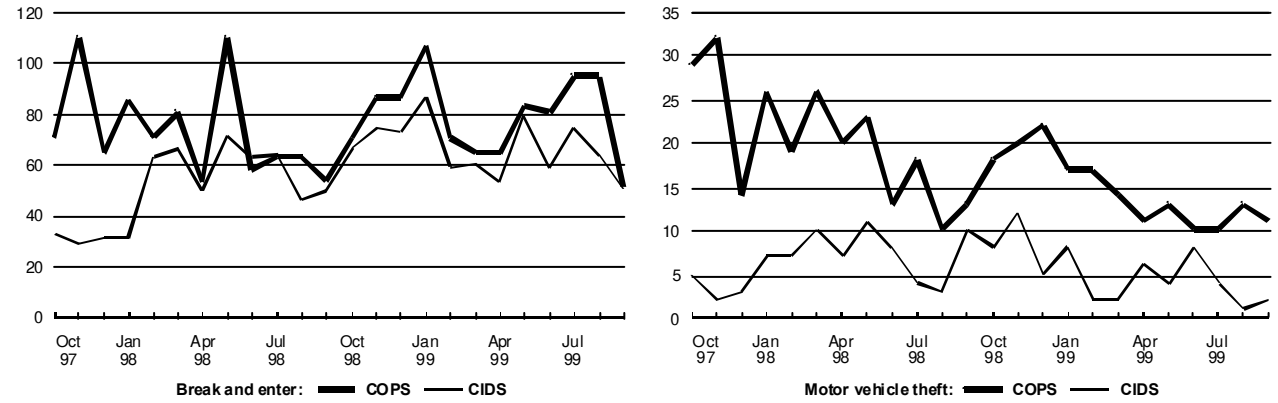


Figure A10 - ENDEAVOUR REGION: Ashfield LAC

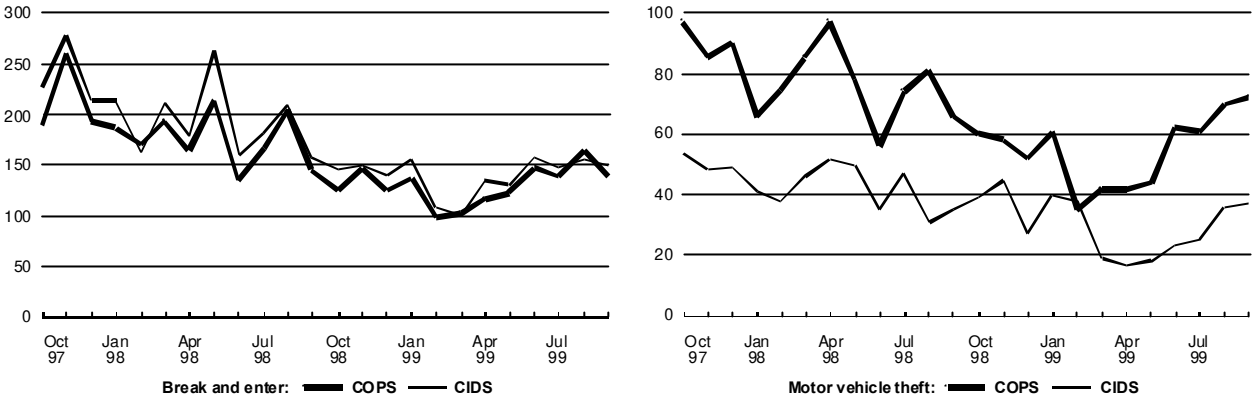


Figure A11 - ENDEAVOUR REGION: Burwood LAC

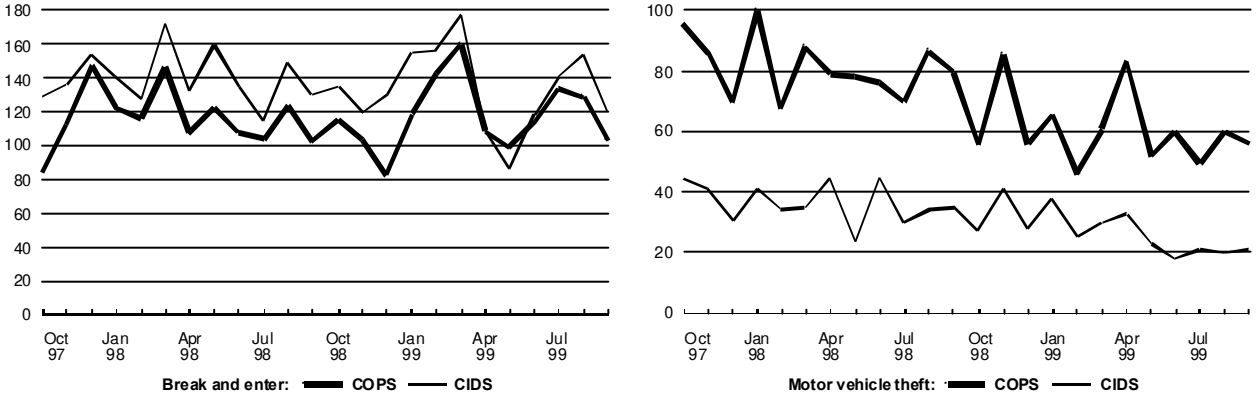


Figure A12 - ENDEAVOUR REGION: Campsie LAC

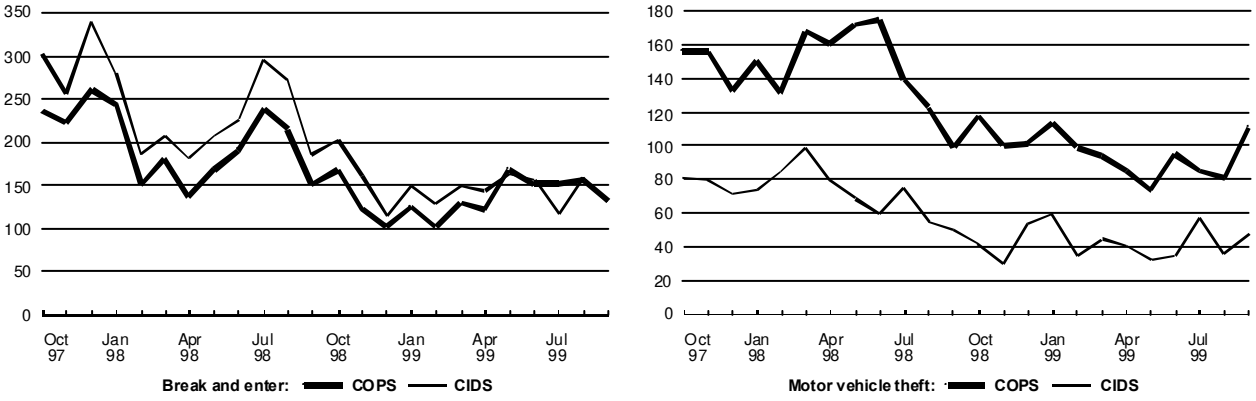


Figure A13 - ENDEAVOUR REGION: Eastwood LAC

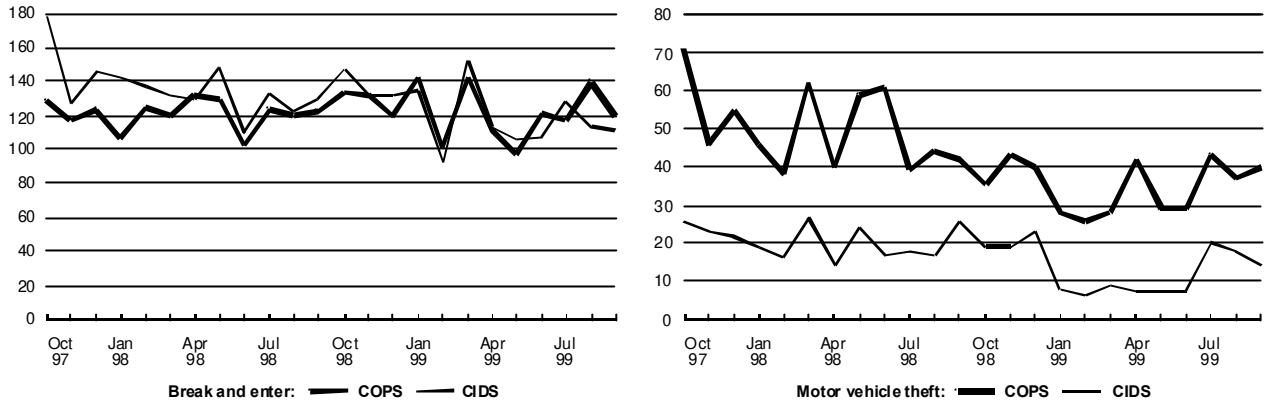


Figure A14 - ENDEAVOUR REGION: Gladesville LAC

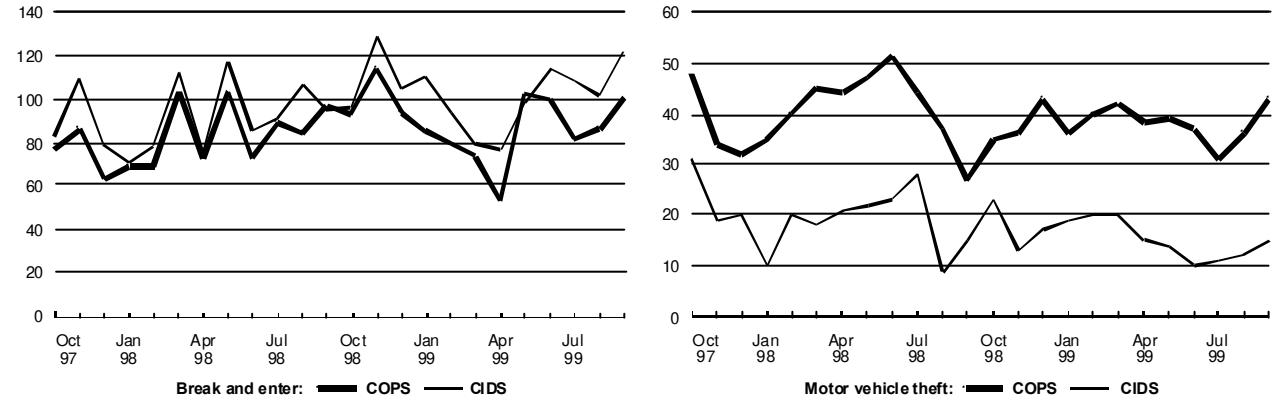


Figure A15 - ENDEAVOUR REGION: Leichhardt LAC

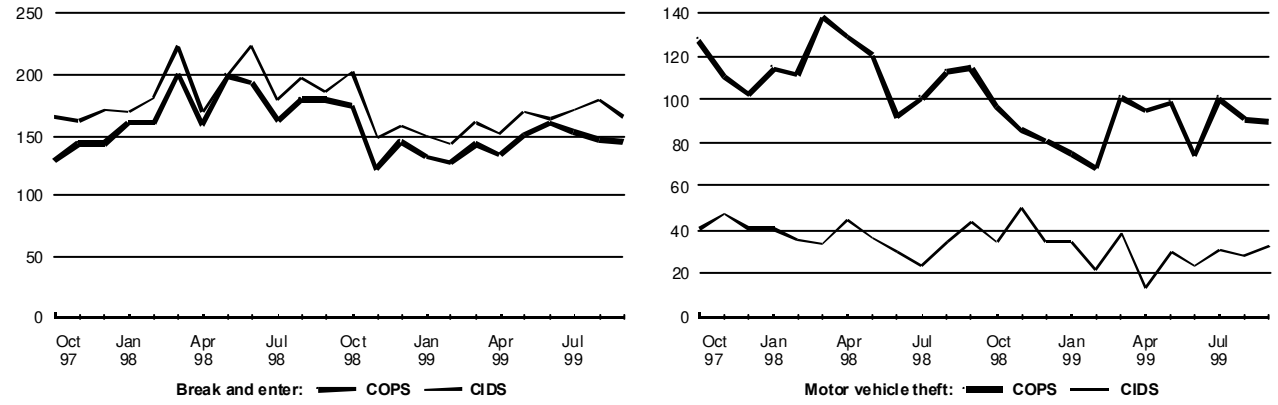


Figure A16 - ENDEAVOUR REGION: Marrickville LAC

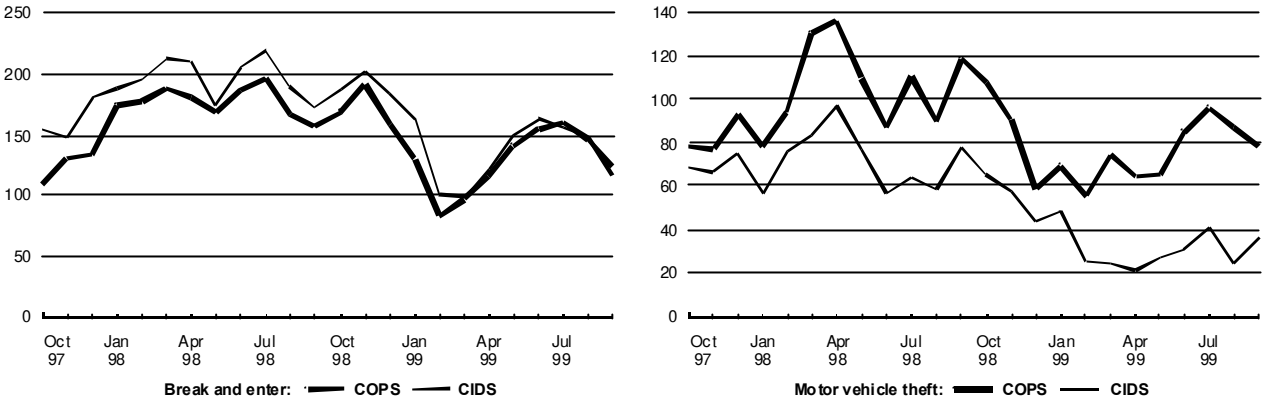


Figure A17 - ENDEAVOUR REGION: Newtown LAC

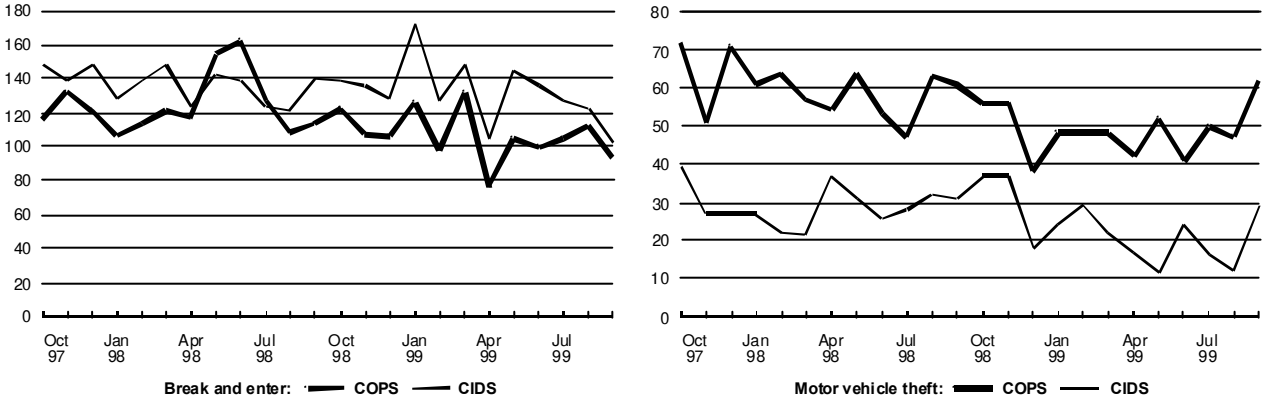


Figure A18 - GEORGES RIVER REGION: Bankstown LAC

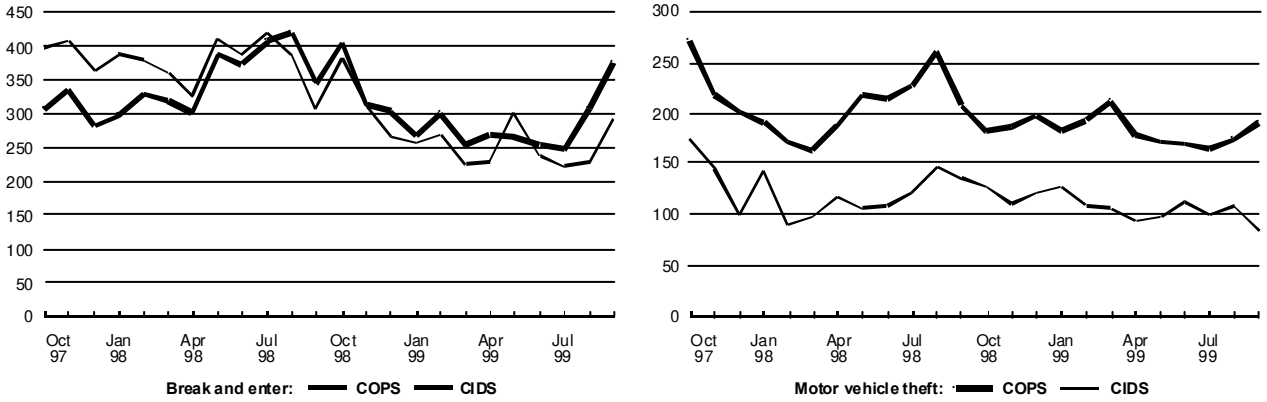


Figure A19 - GEORGES RIVER REGION: Flemington LAC

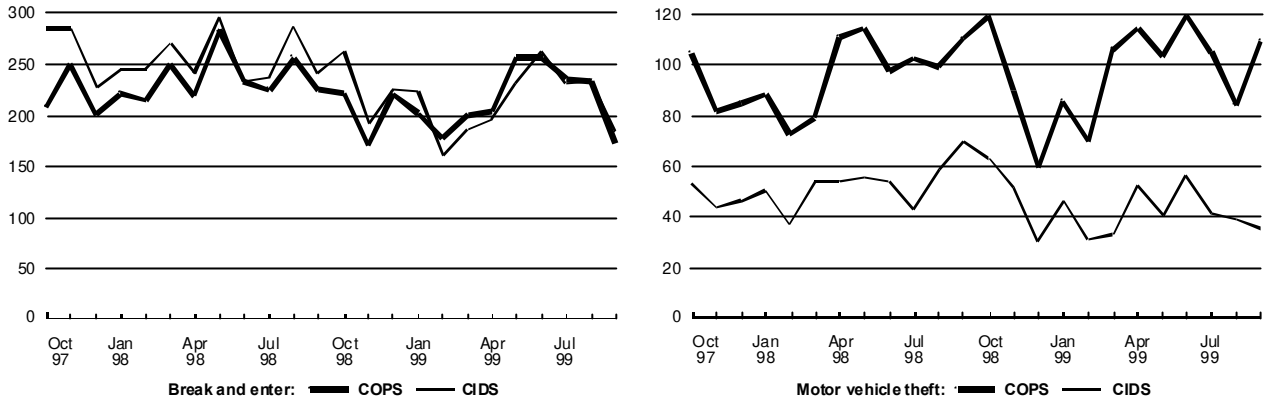


Figure A20 - GEORGES RIVER REGION: Hurstville LAC

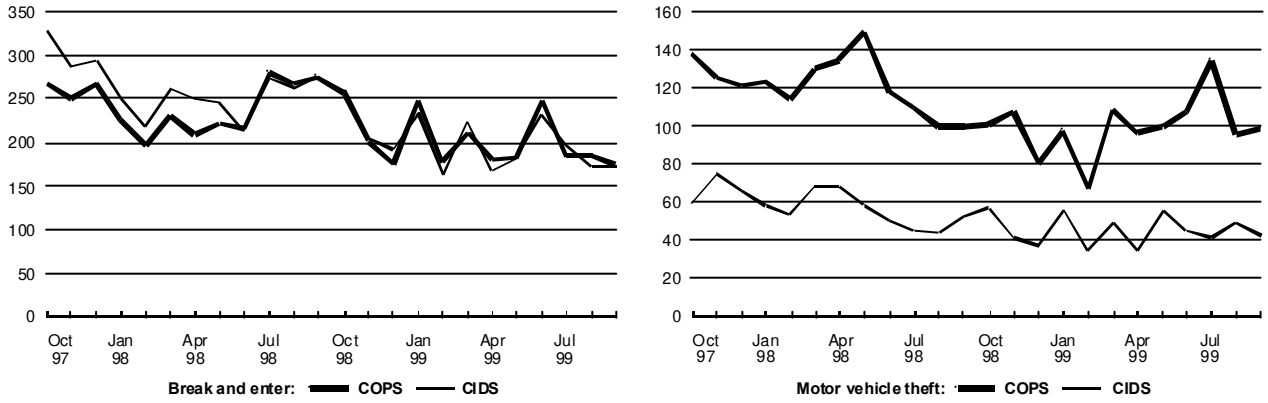


Figure A21 - GEORGES RIVER REGION: Kogarah LAC

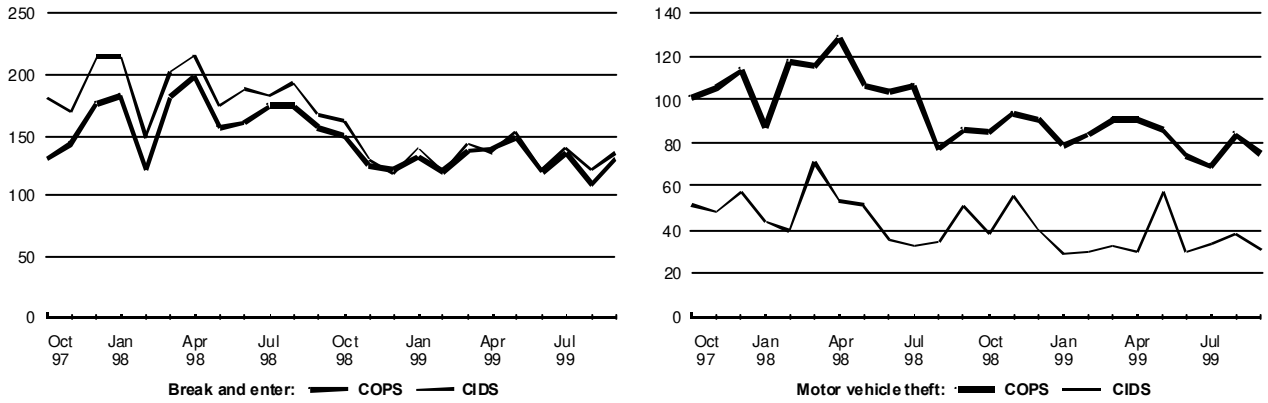


Figure A22 - GEORGES RIVER REGION: Miranda LAC

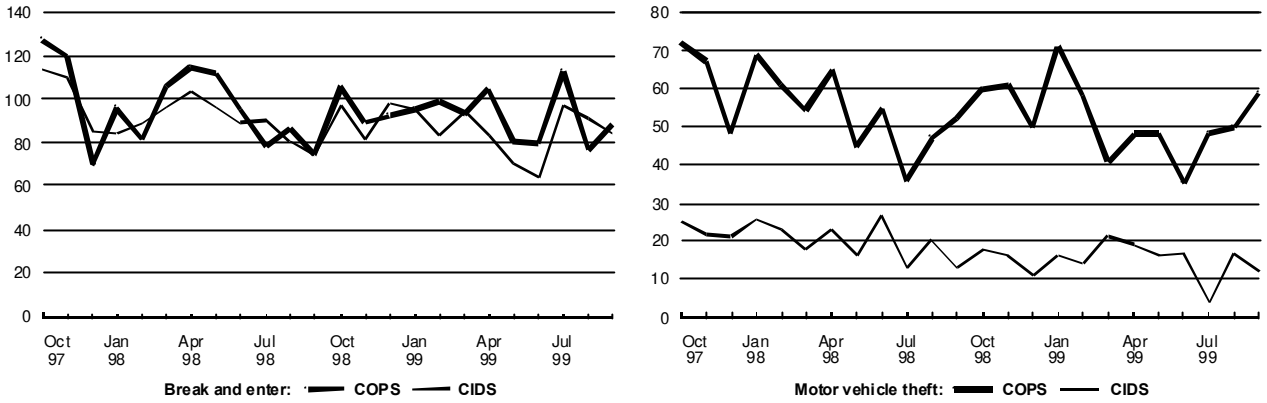


Figure A23 - GEORGES RIVER REGION: Sutherland LAC

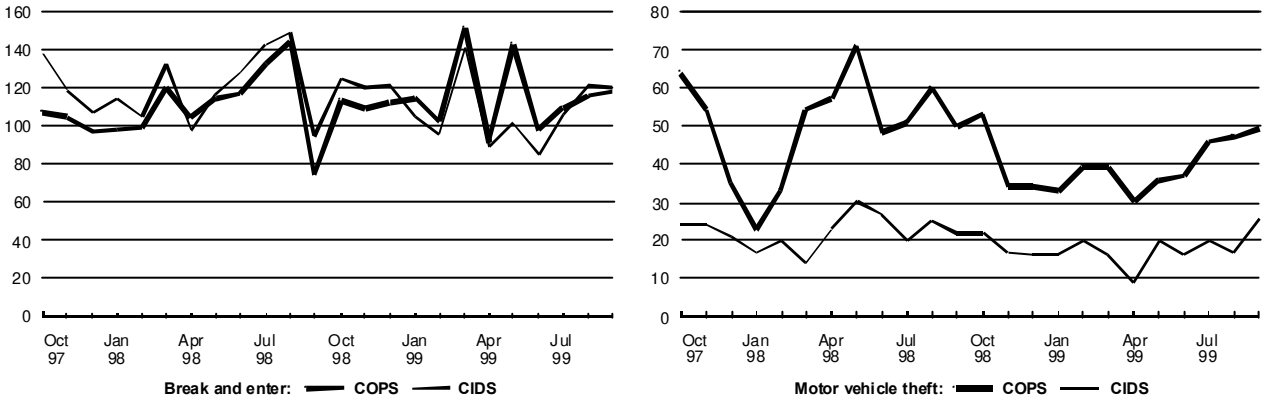


Figure A24 - GREATER HUME REGION: Blacktown LAC

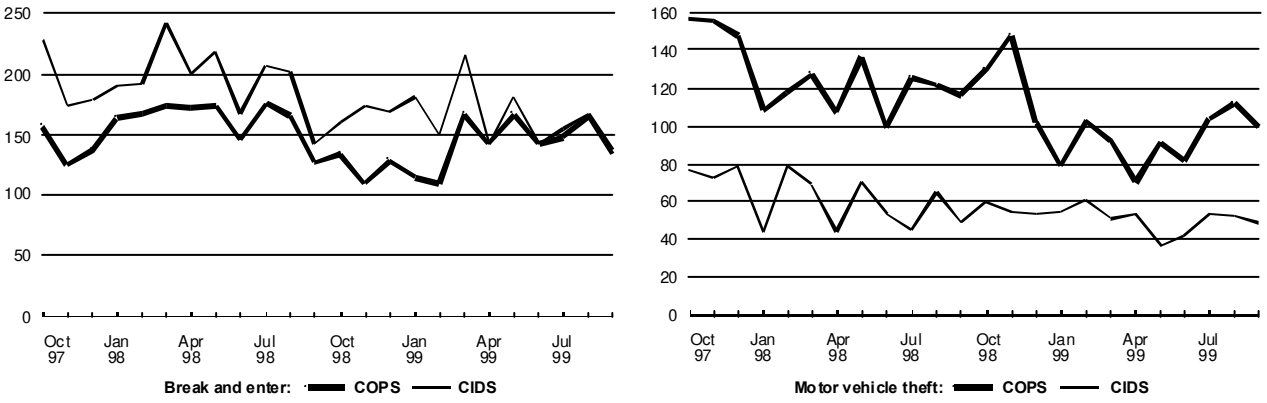


Figure A25 - GREATER HUME REGION: Cabramatta LAC

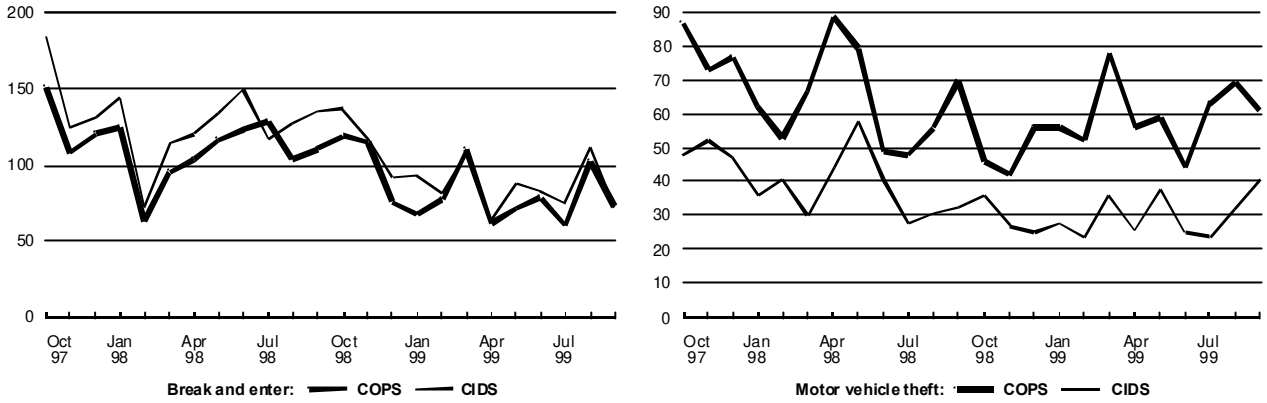


Figure A26 - GREATER HUME REGION: Camden LAC

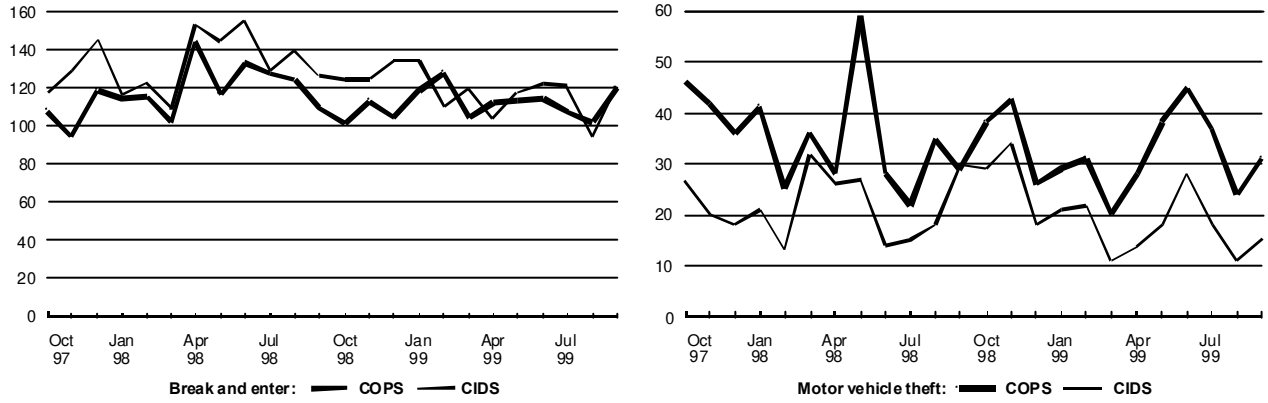


Figure A27 - GREATER HUME REGION: Campbelltown LAC

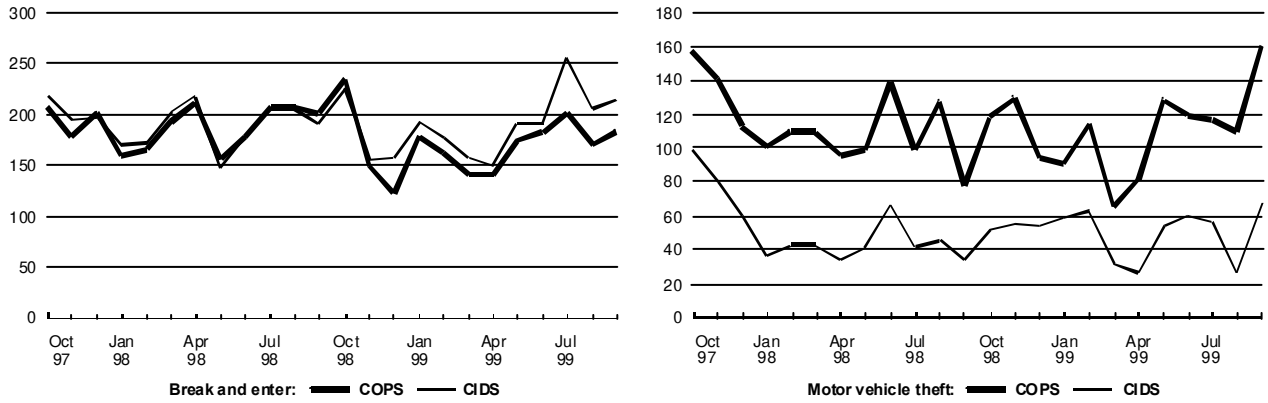


Figure A28 - GREATER HUME REGION: Fairfield LAC

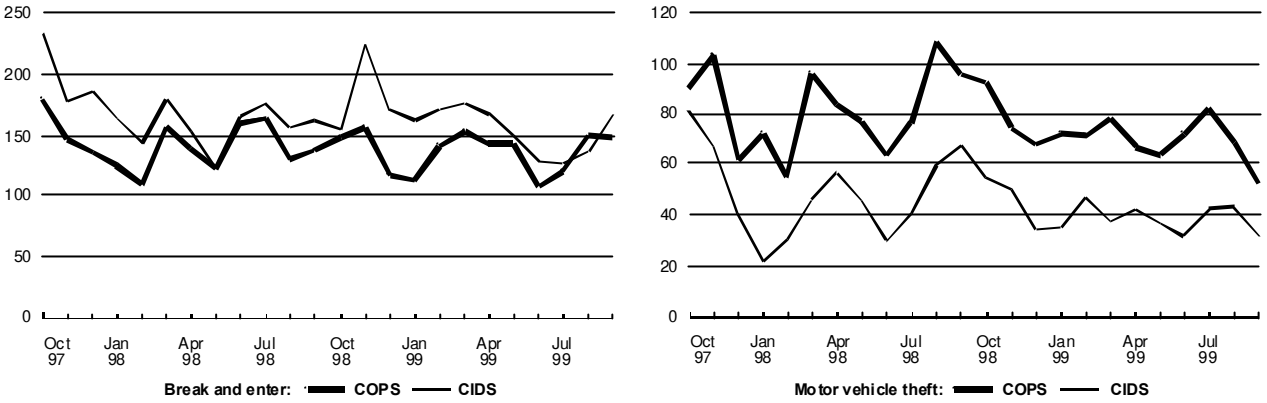


Figure A29 - GREATER HUME REGION: Green Valley LAC

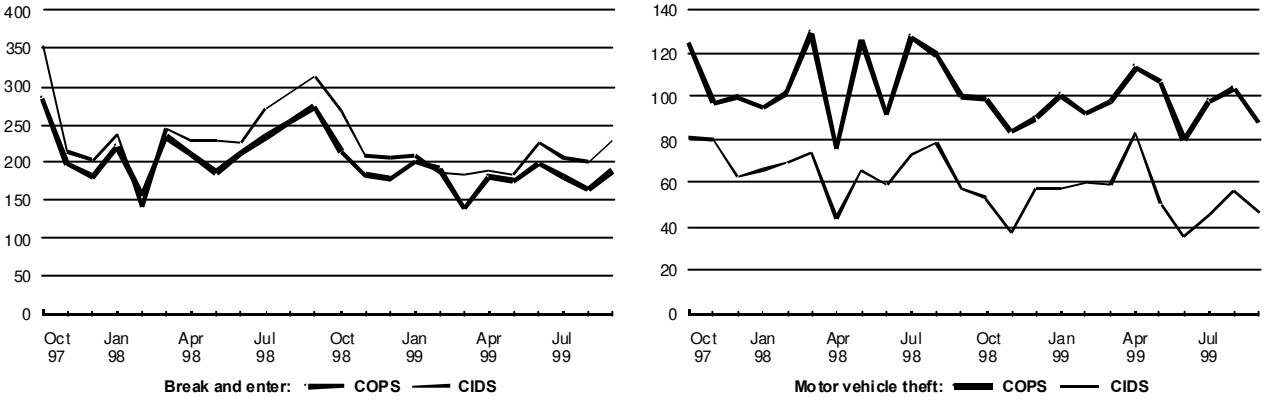


Figure A30 - GREATER HUME REGION: Liverpool LAC

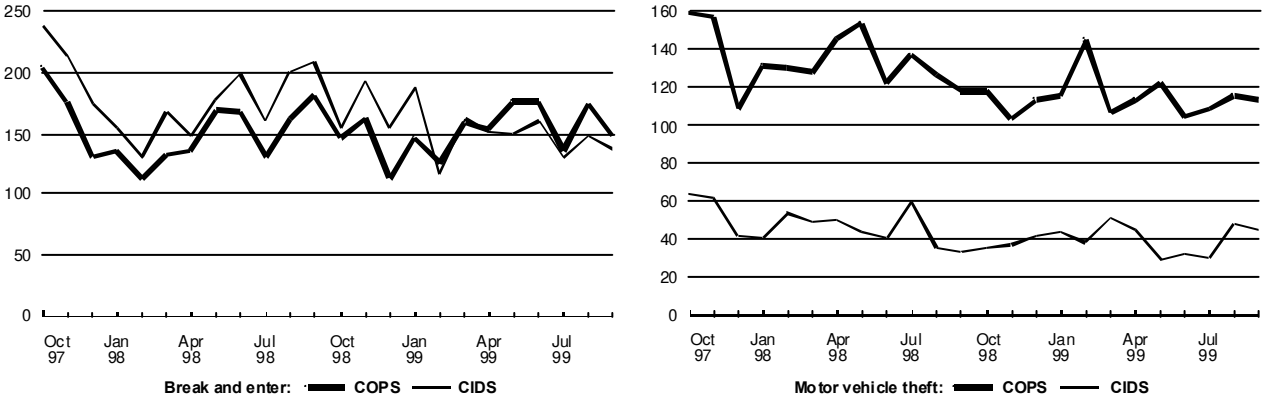


Figure A31 - GREATER HUME REGION: Macquarie Fields LAC

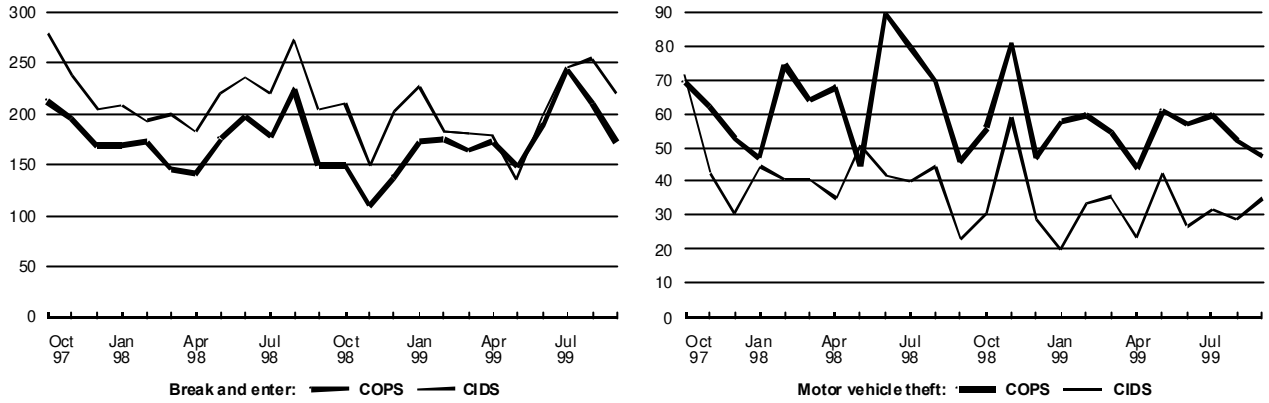


Figure A32 - GREATER HUME REGION: Mount Druitt LAC

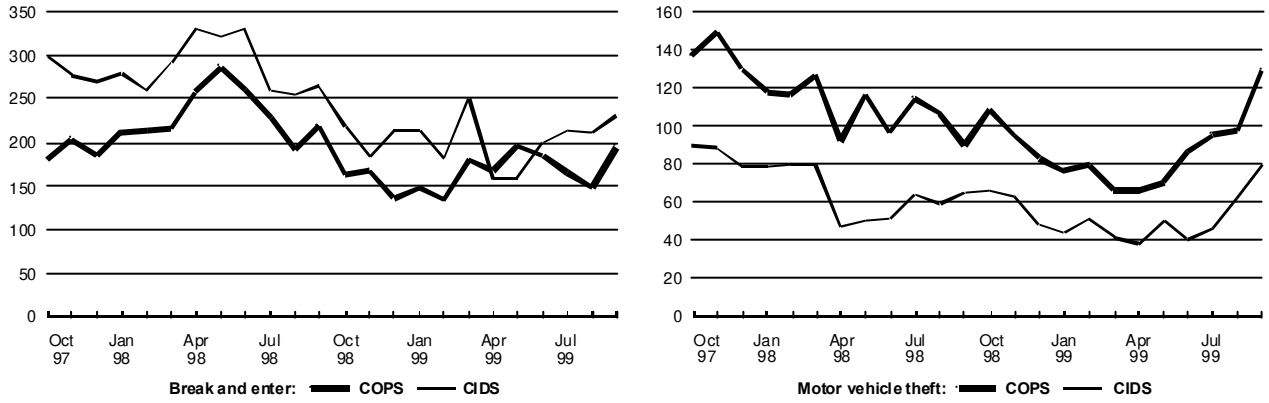


Figure A33 - HUNTER REGION: Hunter Valley LAC

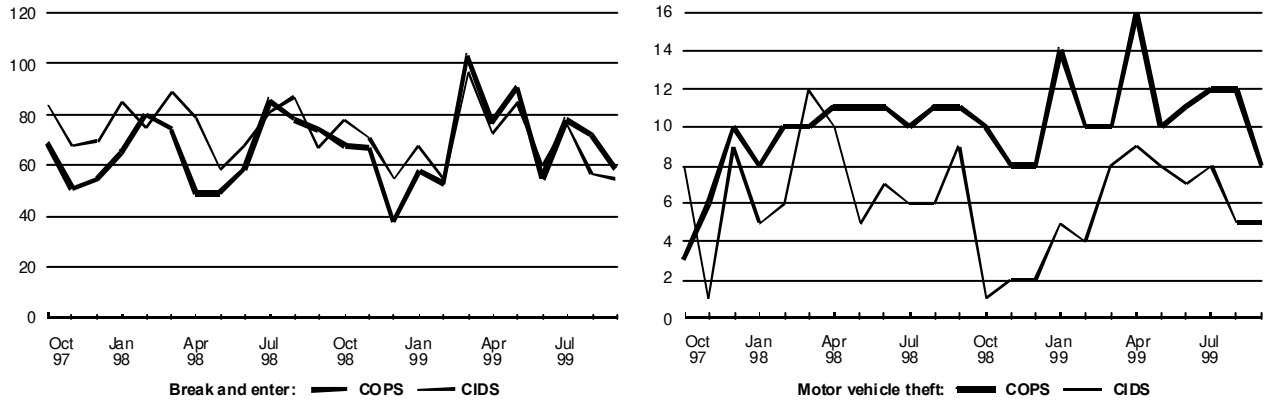
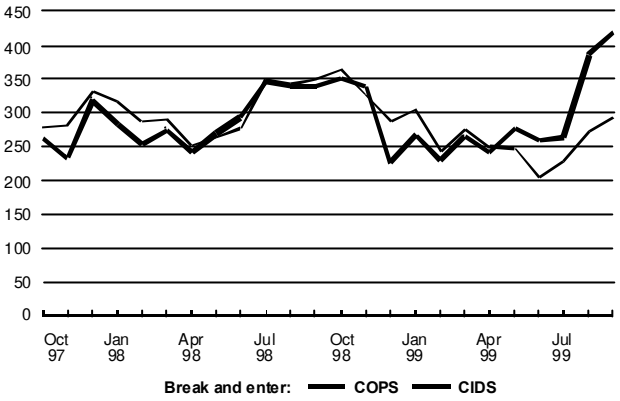


Figure A34 - HUNTER REGION: Lake Macquarie LAC



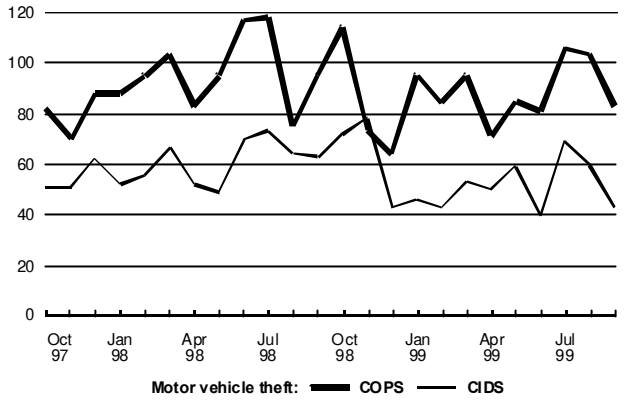
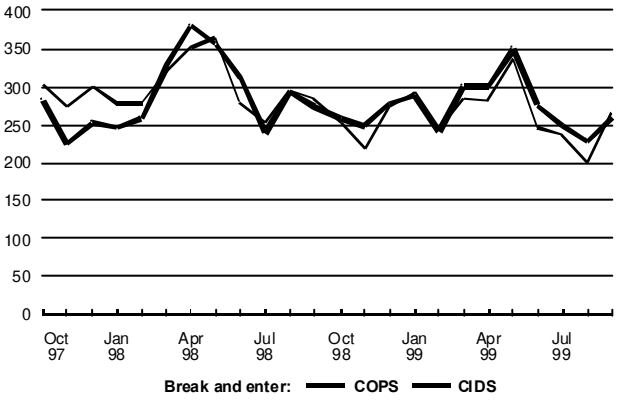


Figure A35 - HUNTER REGION: Lower Hunter LAC



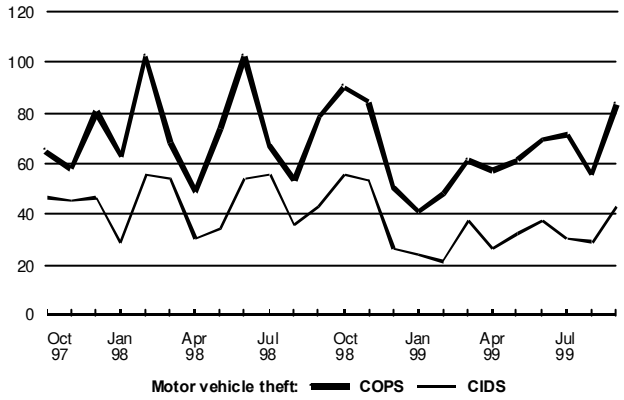
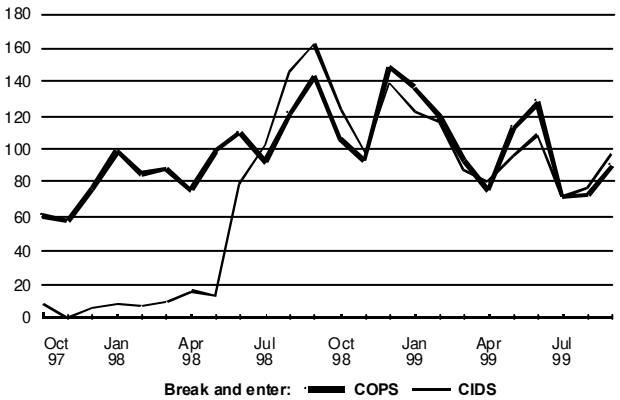


Figure A36 - HUNTER REGION: Manning Great Lakes LAC



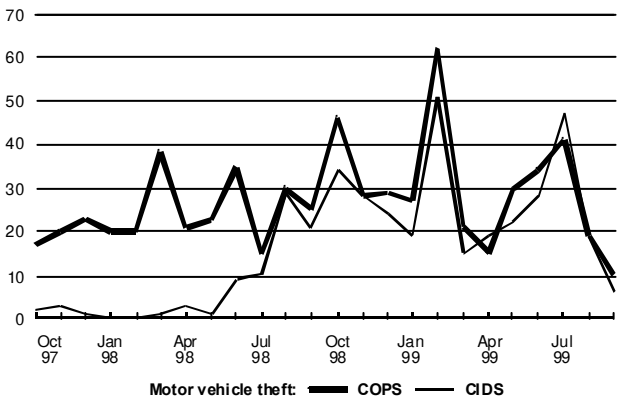


Figure A37 - HUNTER REGION: Newcastle LAC

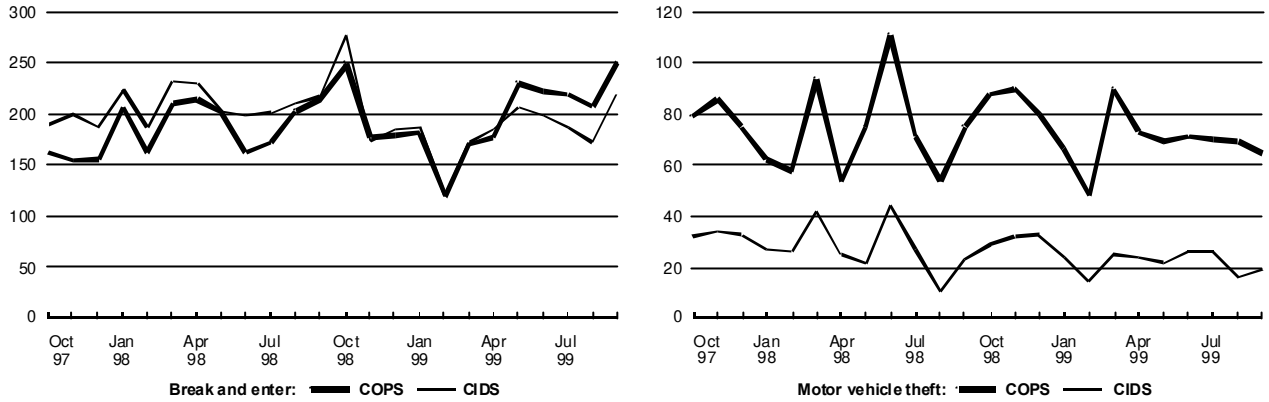


Figure A38 - HUNTER REGION: Waratah LAC

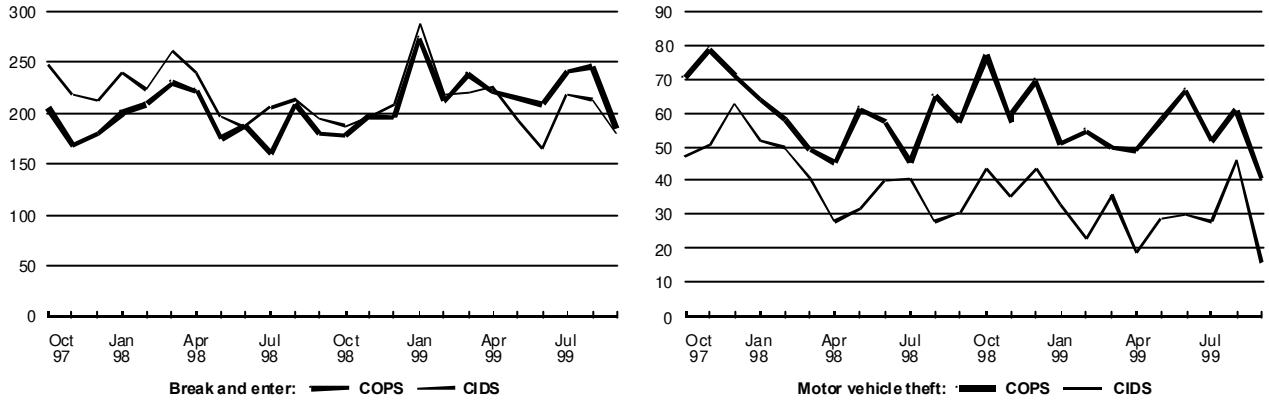


Figure A39 - MACQUARIE REGION: Blue Mountains LAC

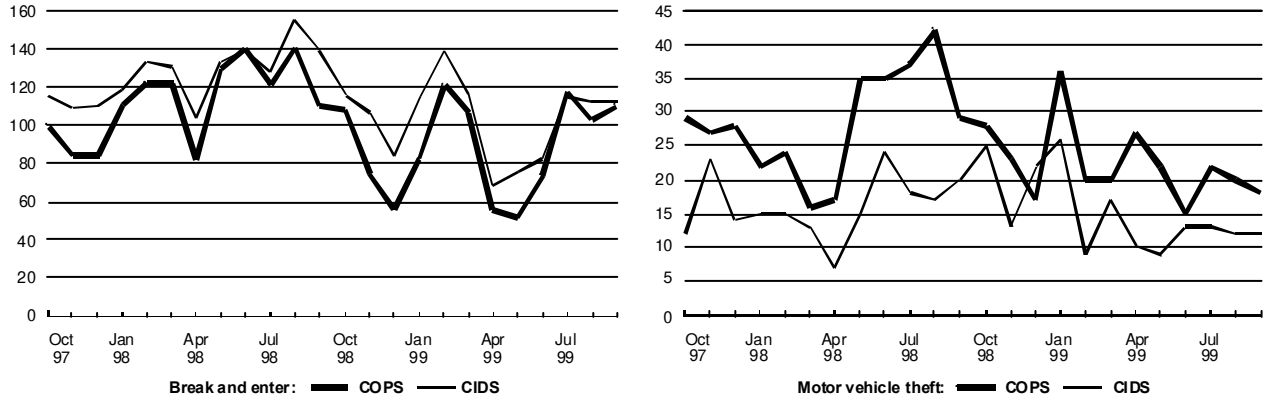


Figure A40 - MACQUARIE REGION: Hawkesbury LAC

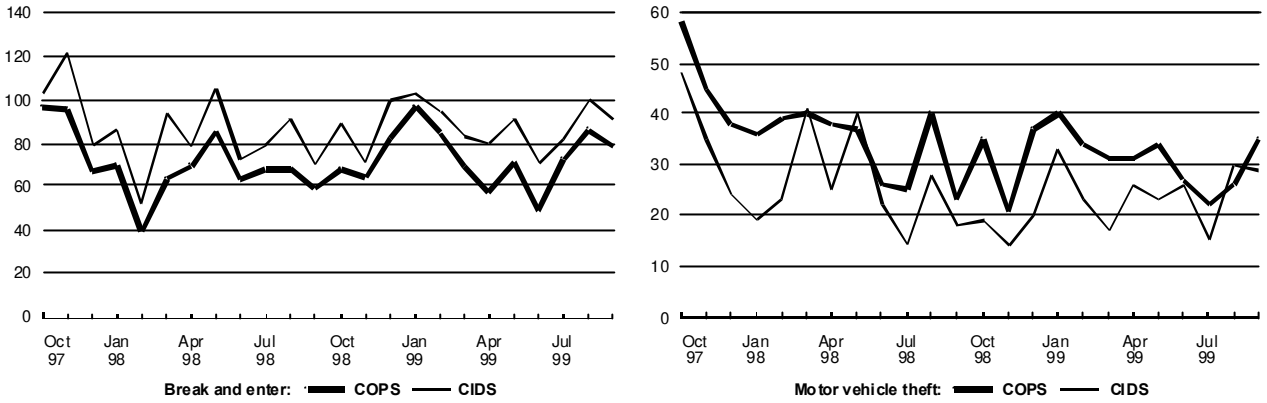


Figure A41 - MACQUARIE REGION: Holroyd LAC

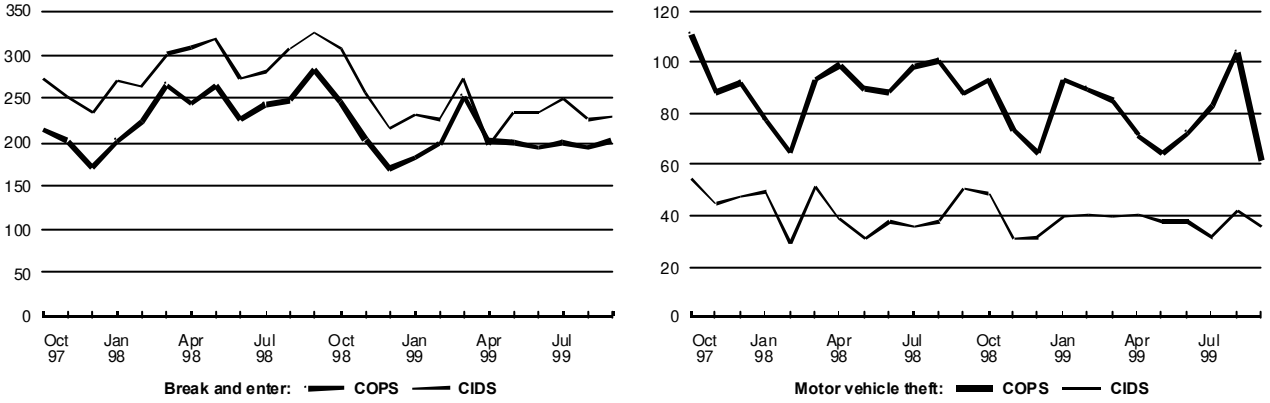


Figure A42 - MACQUARIE REGION: Parramatta LAC

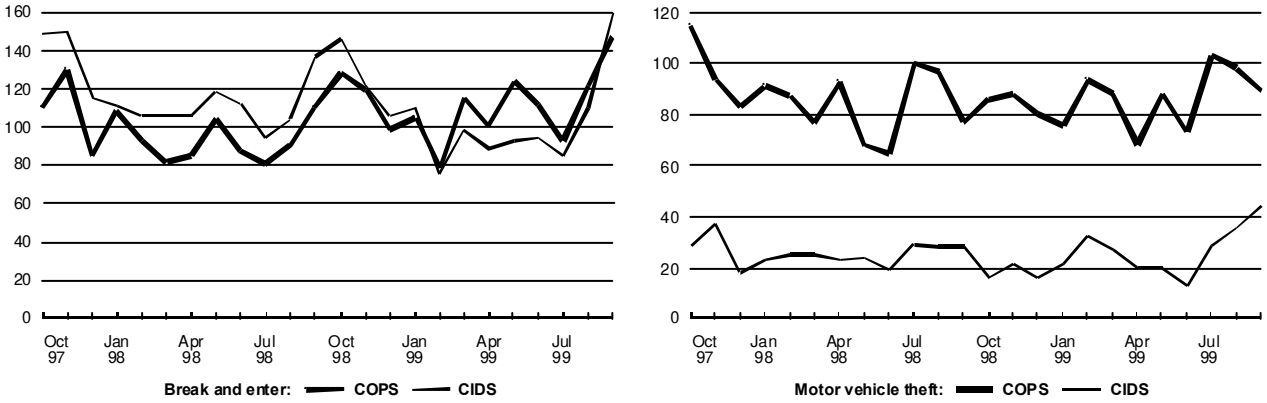


Figure A43 - MACQUARIE REGION: Penrith LAC

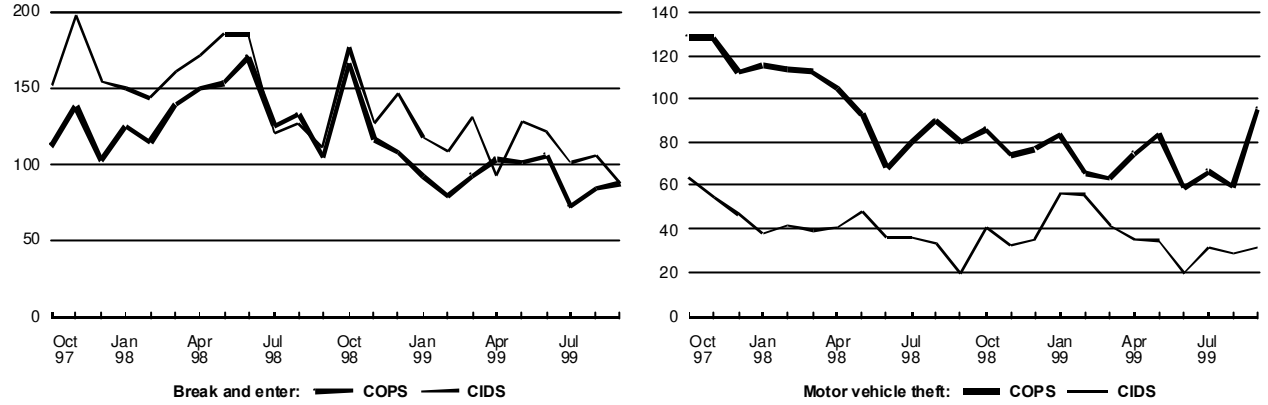


Figure A44 - MACQUARIE REGION: Quakers Hill LAC

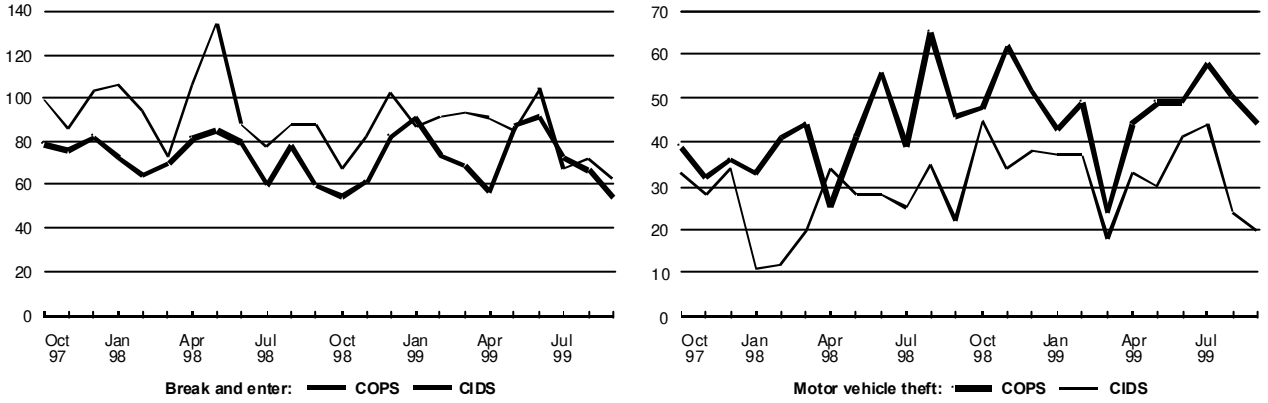


Figure A45 - MACQUARIE REGION: Rosehill LAC

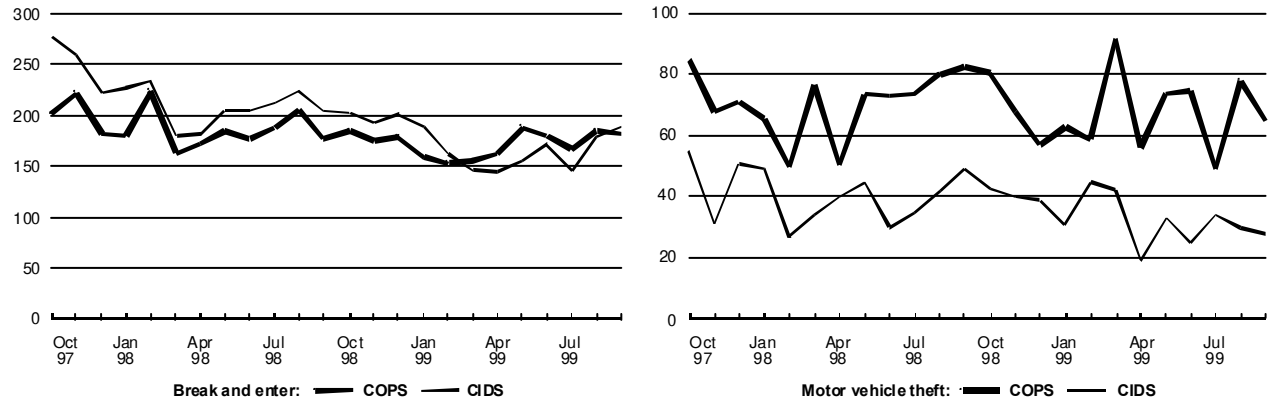


Figure A46 - MACQUARIE REGION: St Marys LAC

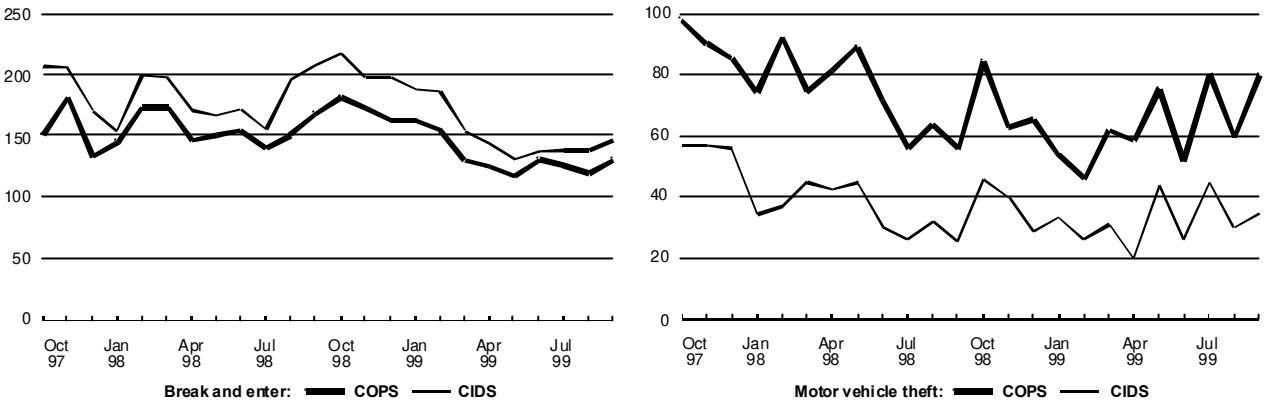


Figure A47 - MACQUARIE REGION: The Hills LAC

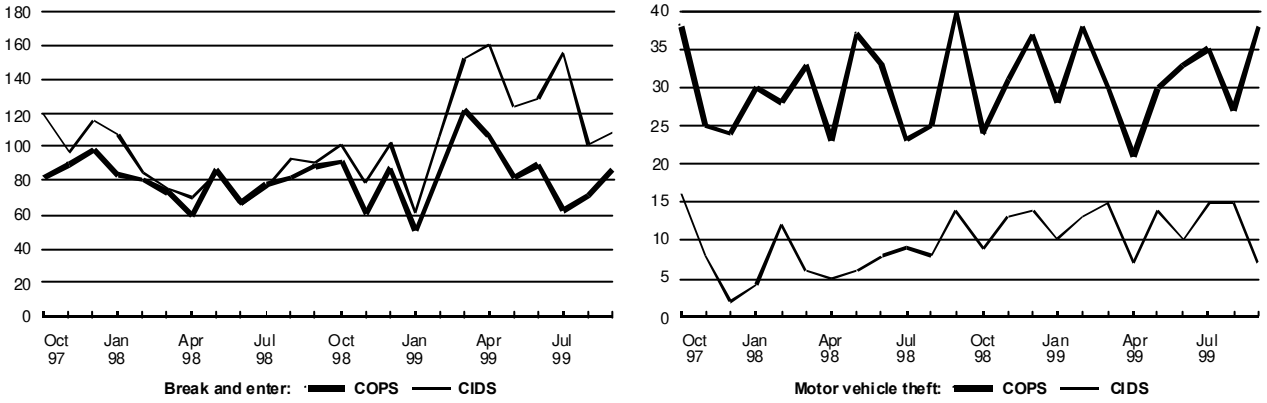


Figure A48 - NORTH METROPOLITAN REGION: Brisbane Waters LAC

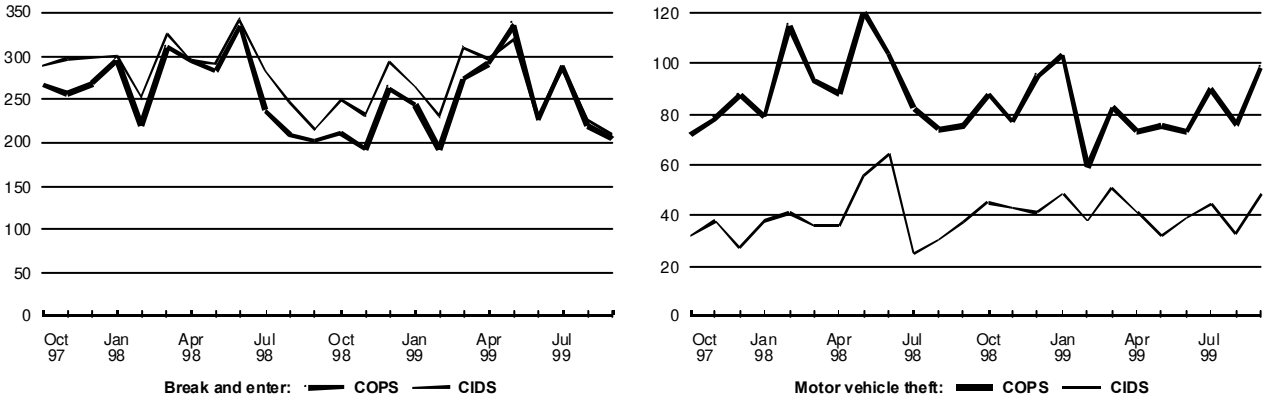


Figure A49 - NORTH METROPOLITAN REGION: Harbourside LAC

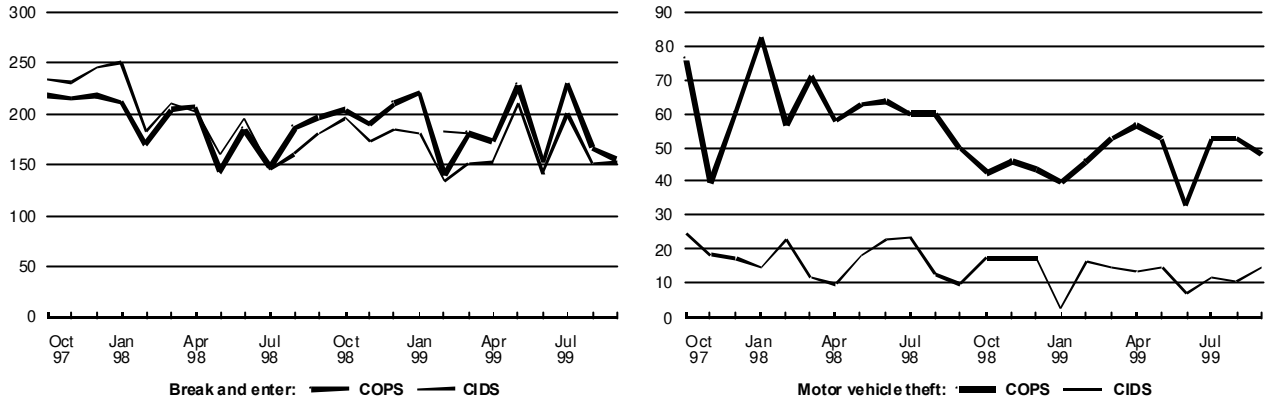


Figure A50 - NORTH METROPOLITAN REGION: Ku-Ring-Gai LAC

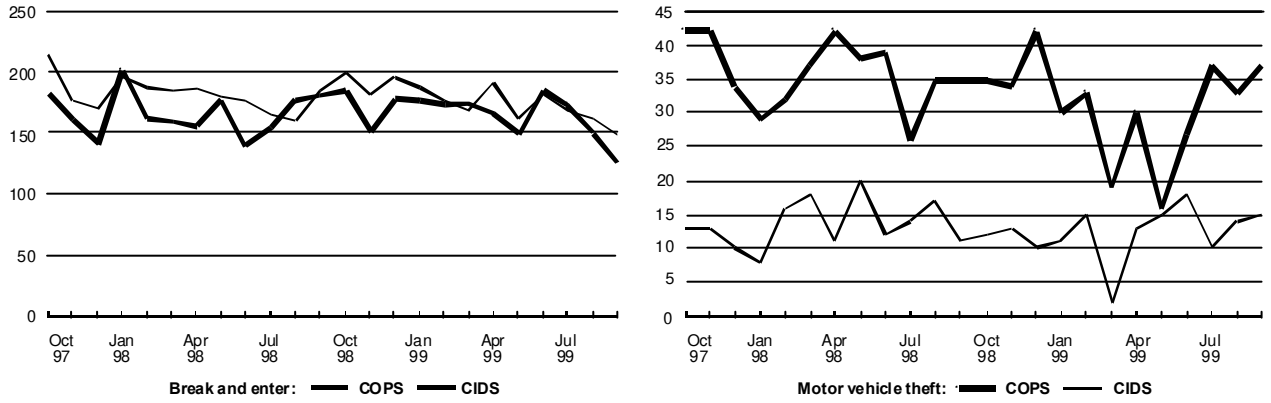


Figure A51 - NORTH METROPOLITAN REGION: Manly-Davidson LAC

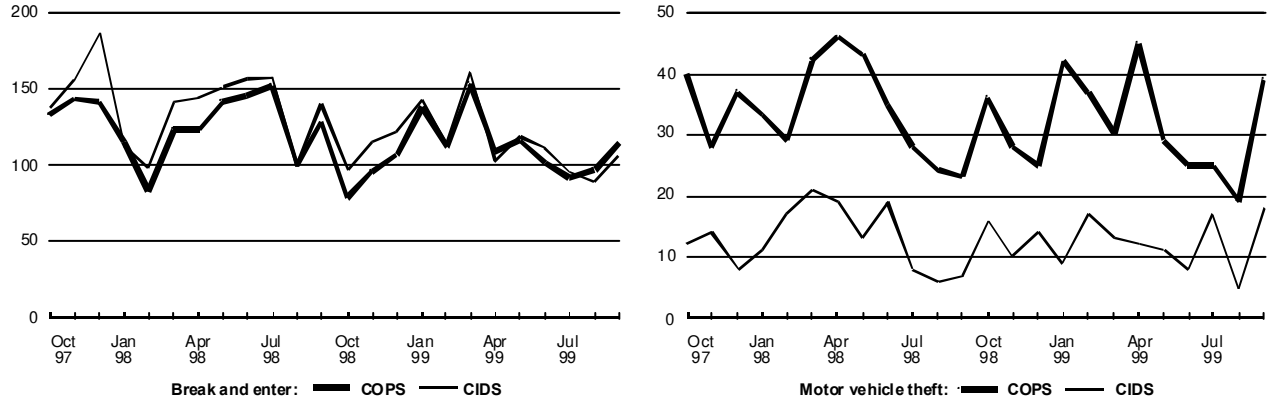


Figure A52 - NORTH METROPOLITAN REGION: North Shore LAC

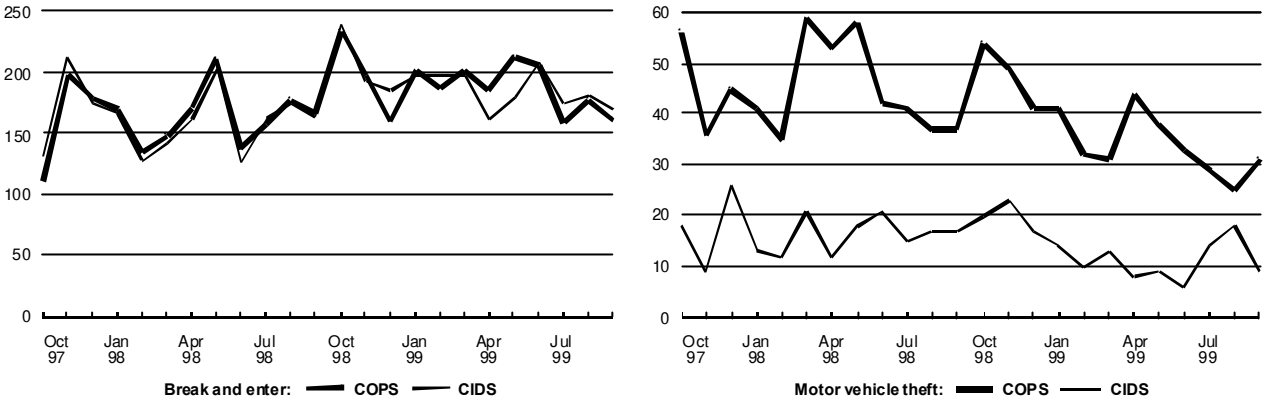


Figure A53 - NORTH METROPOLITAN REGION: Northern Beaches LAC

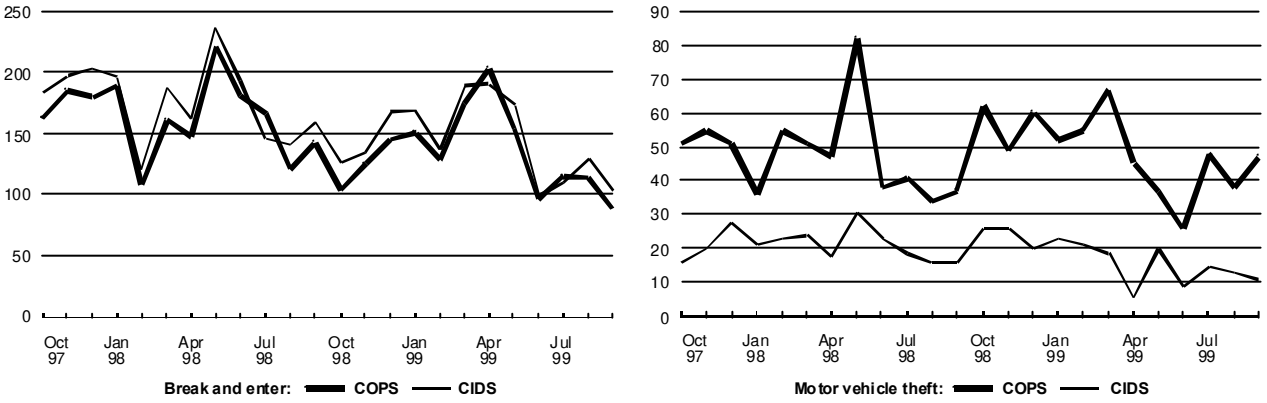


Figure A54 - NORTH METROPOLITAN REGION: Tuggerah Lakes LAC

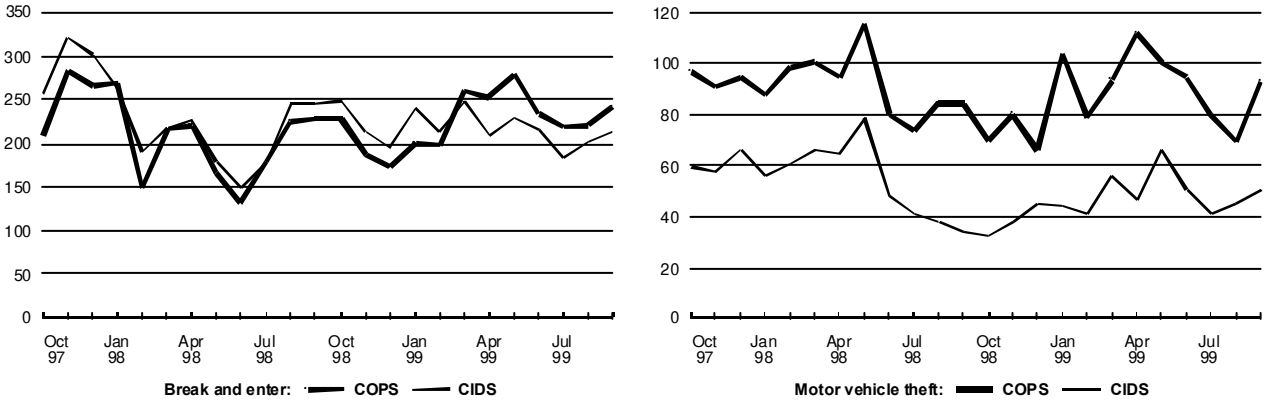


Figure A55 - NORTHERN REGION: Coffs/Clarence LAC

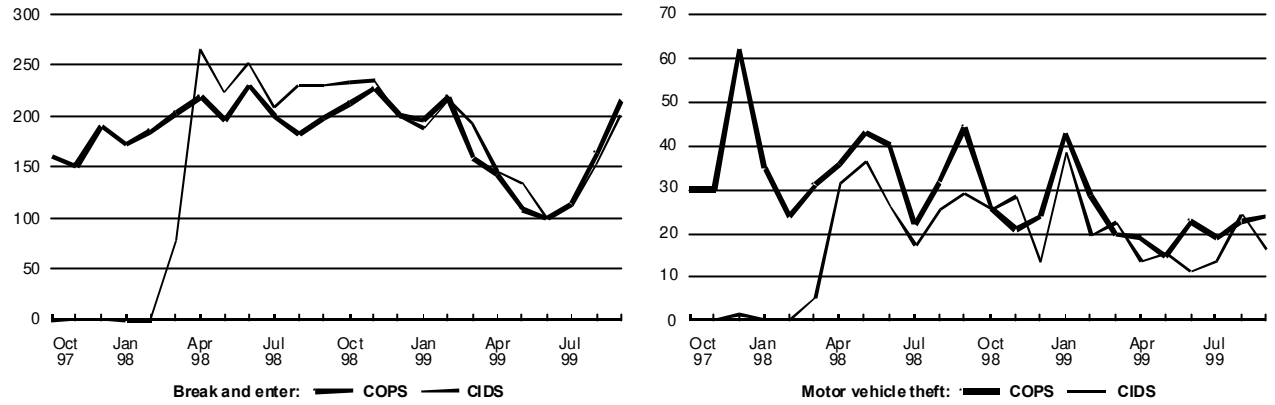


Figure A56 - NORTHERN REGION: Mid North Coast LAC

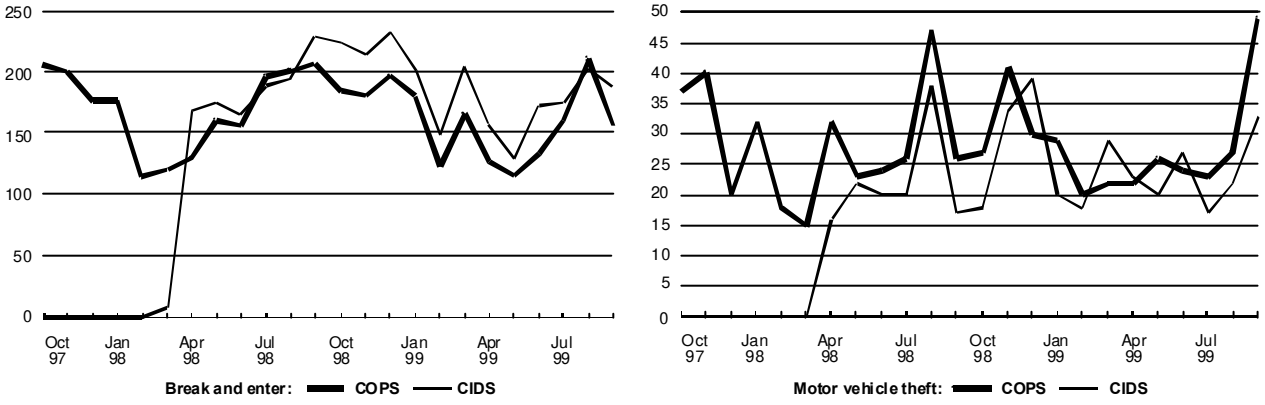


Figure A57 - NORTHERN REGION: New England LAC

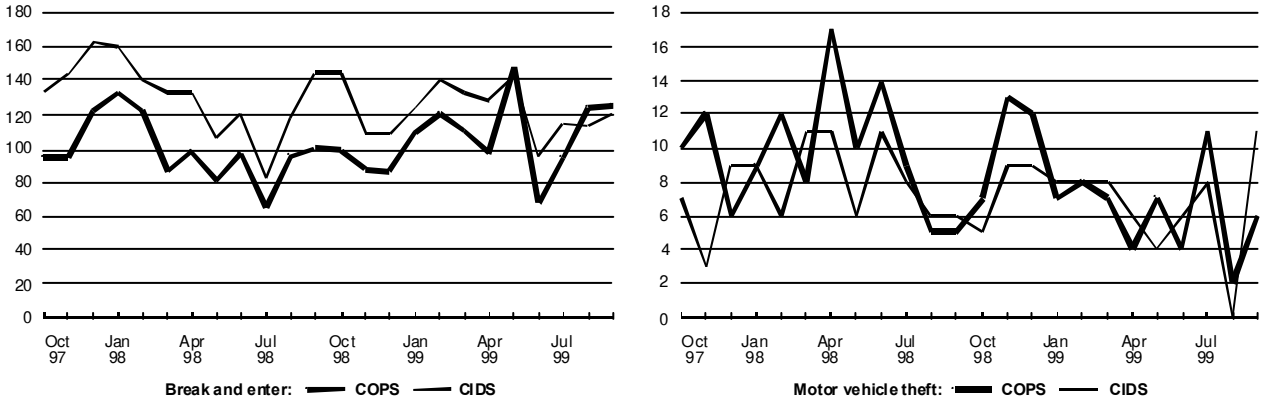


Figure A58 - NORTHERN REGION: Oxley LAC

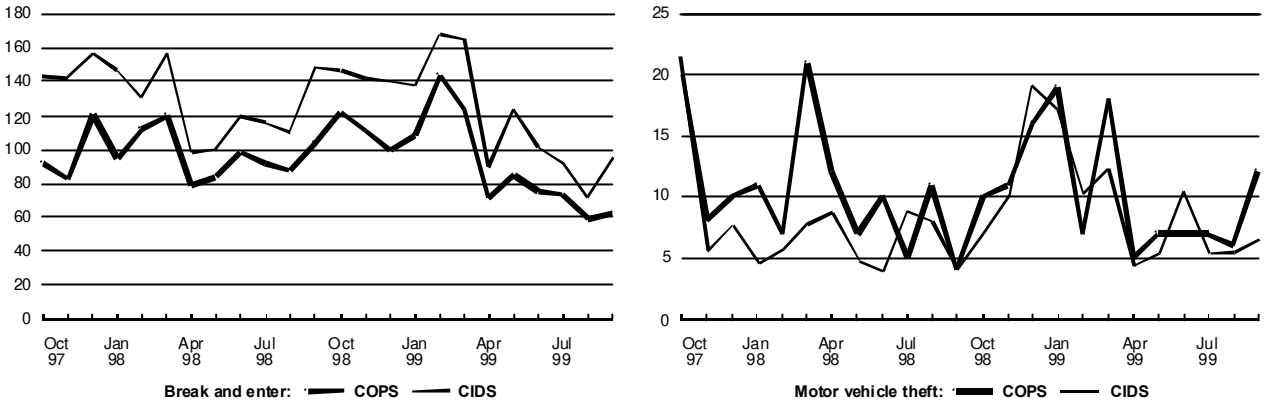


Figure A59 - NORTHERN REGION: Richmond LAC

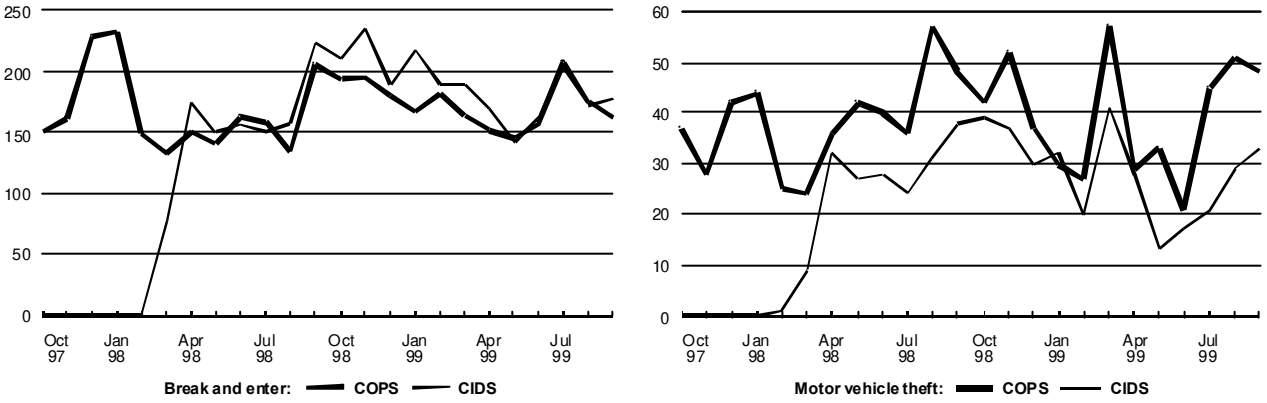


Figure A60 - NORTHERN REGION: Tweed/Byron LAC

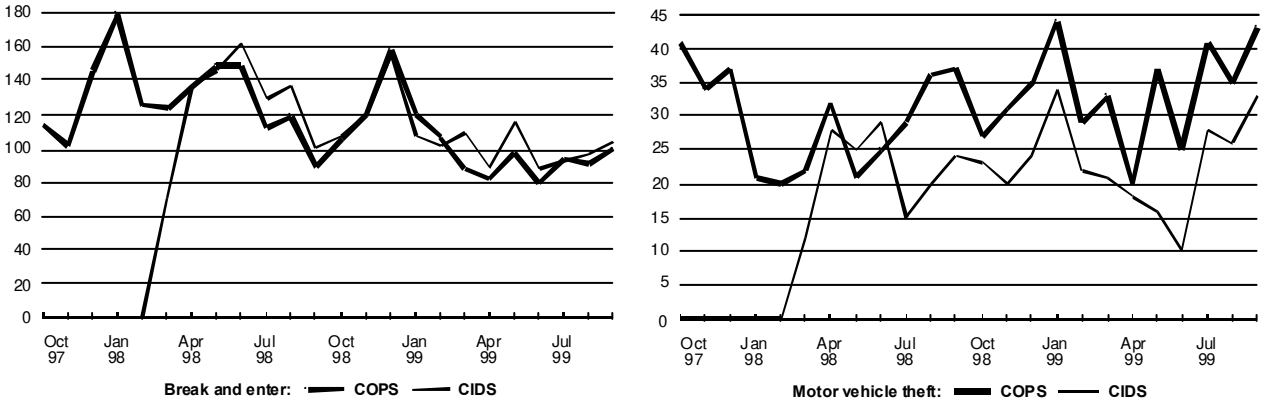
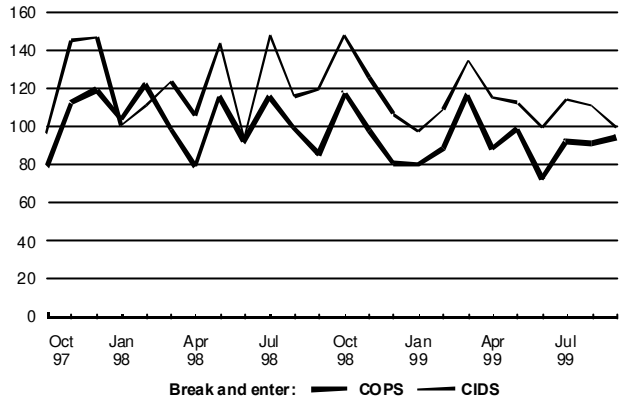


Figure A61 - SOUTH EASTERN REGION: Far South Coast LAC



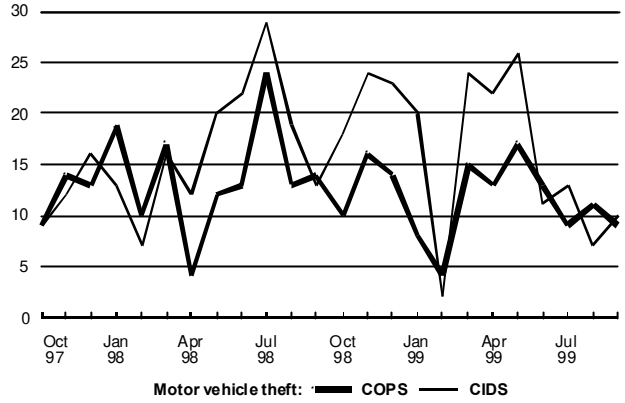
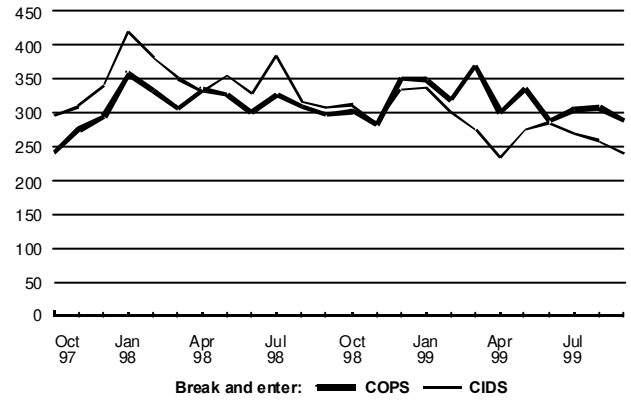


Figure A62 - SOUTH EASTERN REGION: Lake Illawarra LAC



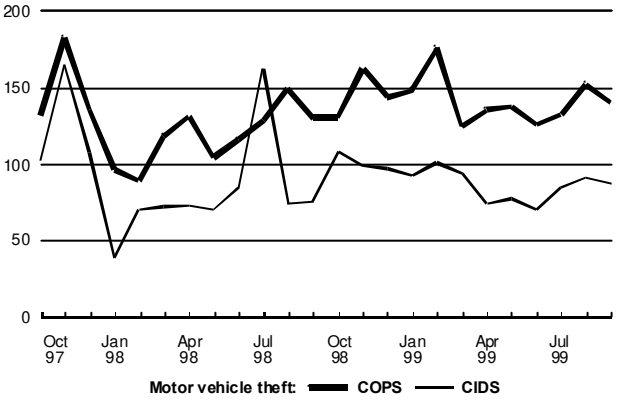
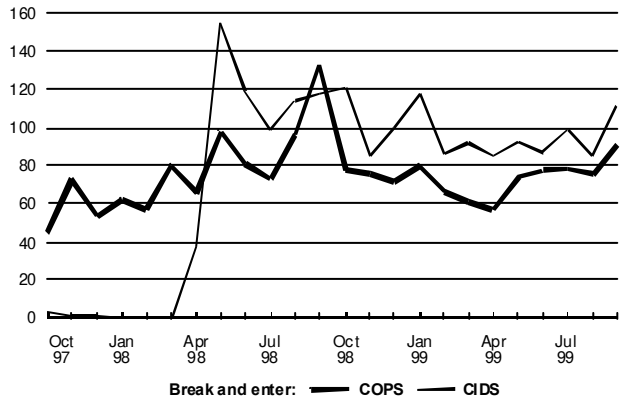


Figure A63 - SOUTH EASTERN REGION: Monaro LAC



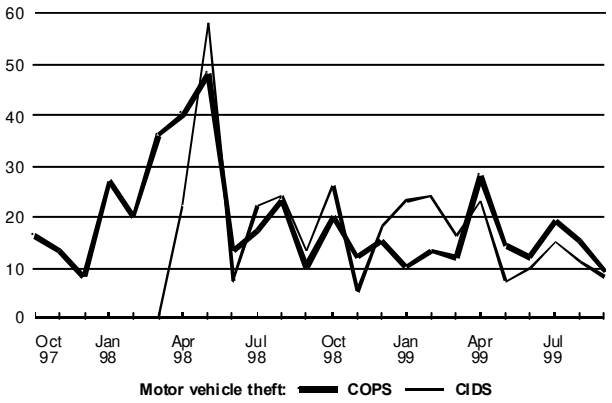


Figure A64 - SOUTH EASTERN REGION: Shoalhaven LAC

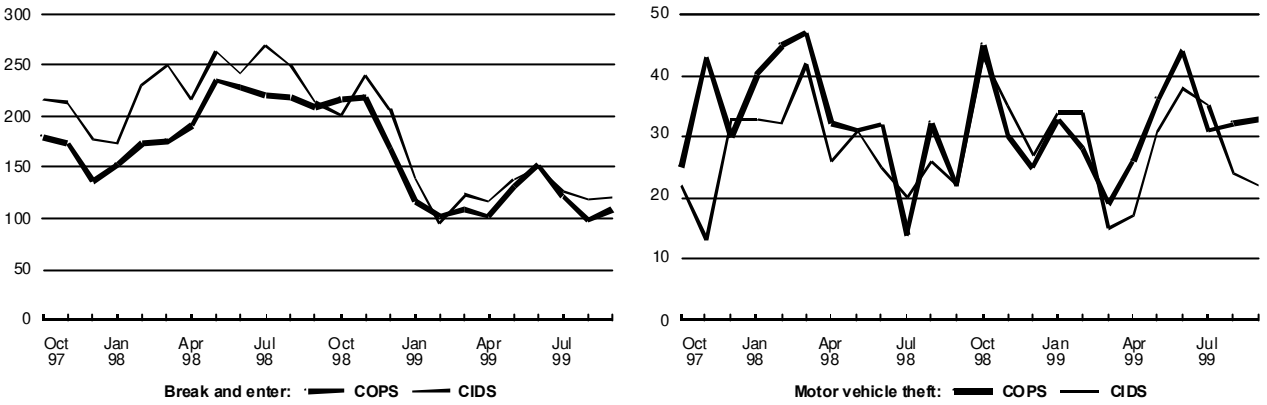


Figure A65 - SOUTH EASTERN REGION: Wollongong LAC

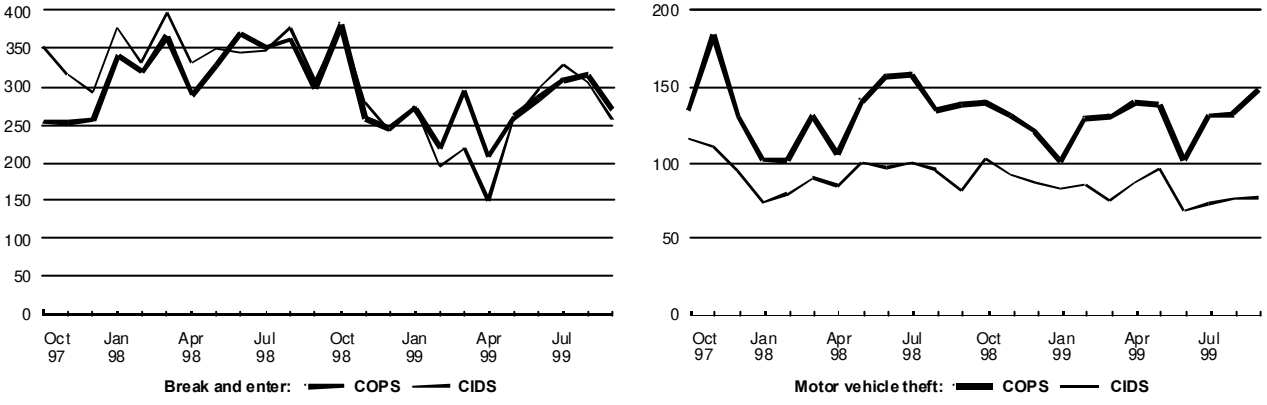


Figure A66 - SOUTHERN RIVERS REGION: Albury LAC

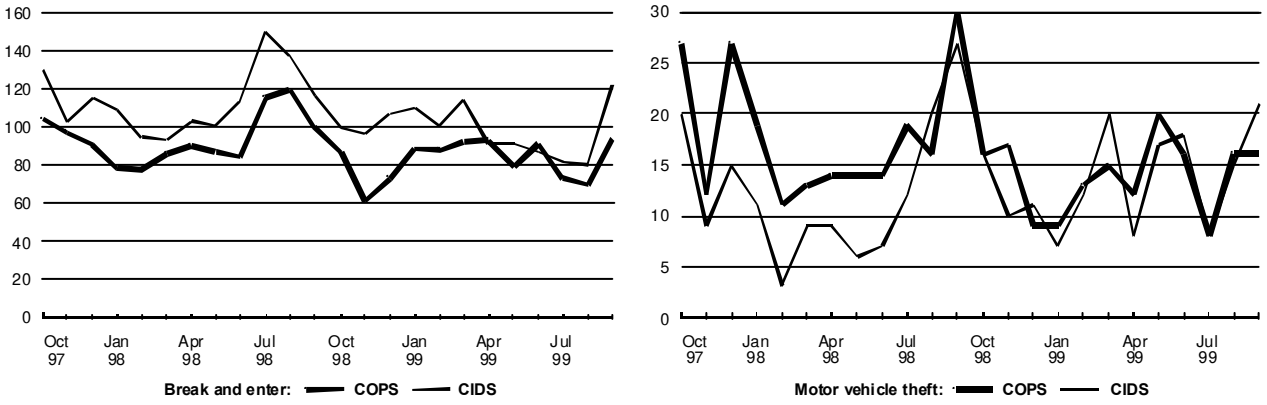


Figure A67 - SOUTHERN RIVERS REGION: Cootamundra LAC

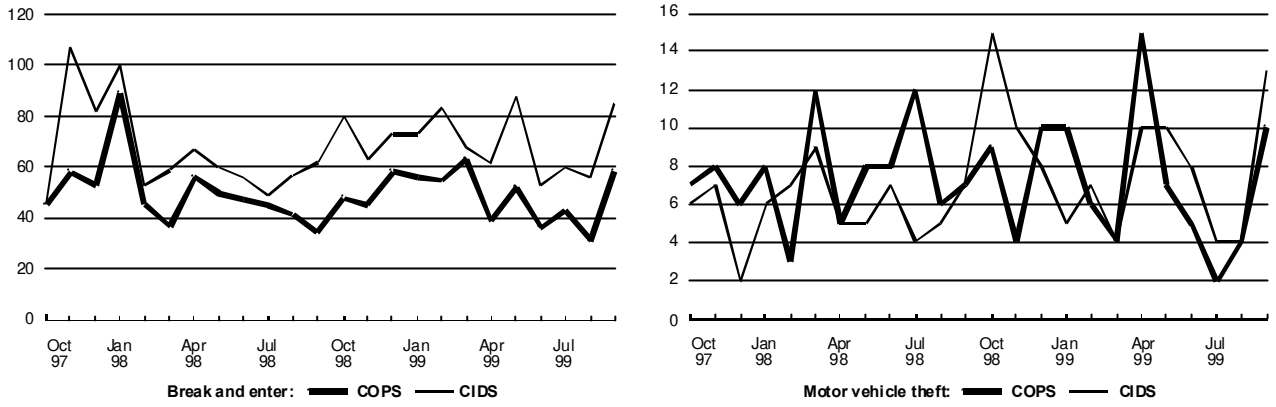


Figure A68 - SOUTHERN RIVERS REGION: Deniliquin LAC

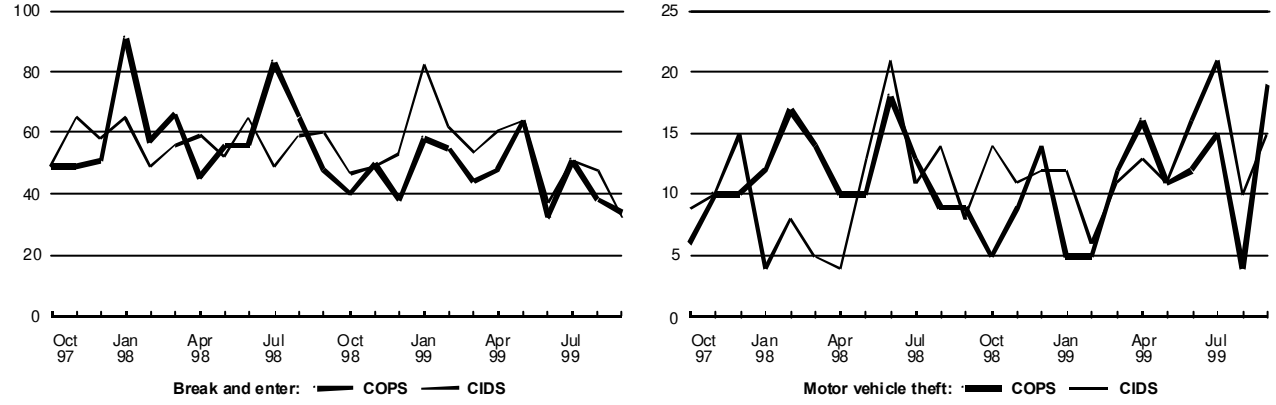


Figure A69 - SOUTHERN RIVERS REGION: Goulburn LAC

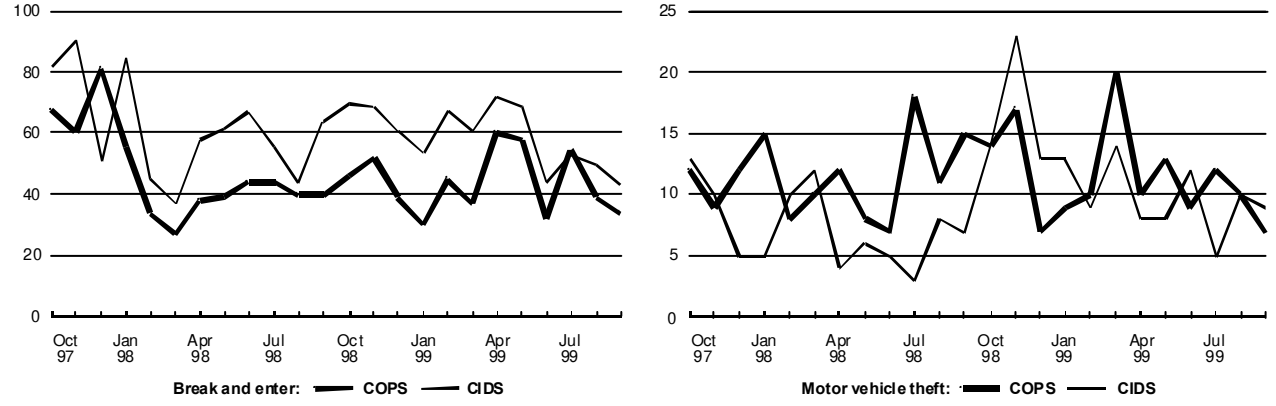


Figure A70 - SOUTHERN RIVERS REGION: Griffith LAC

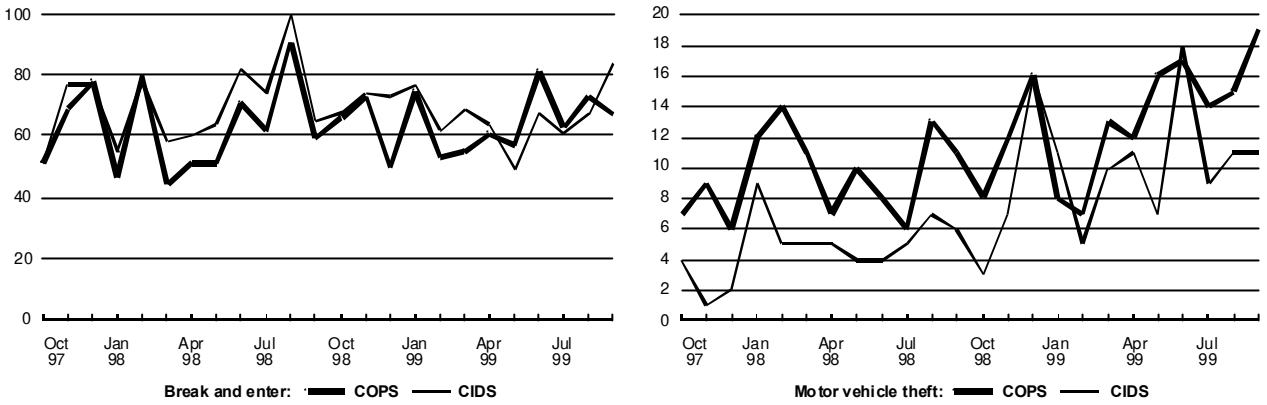


Figure A71 - SOUTHERN RIVERS REGION: Wagga Wagga LAC

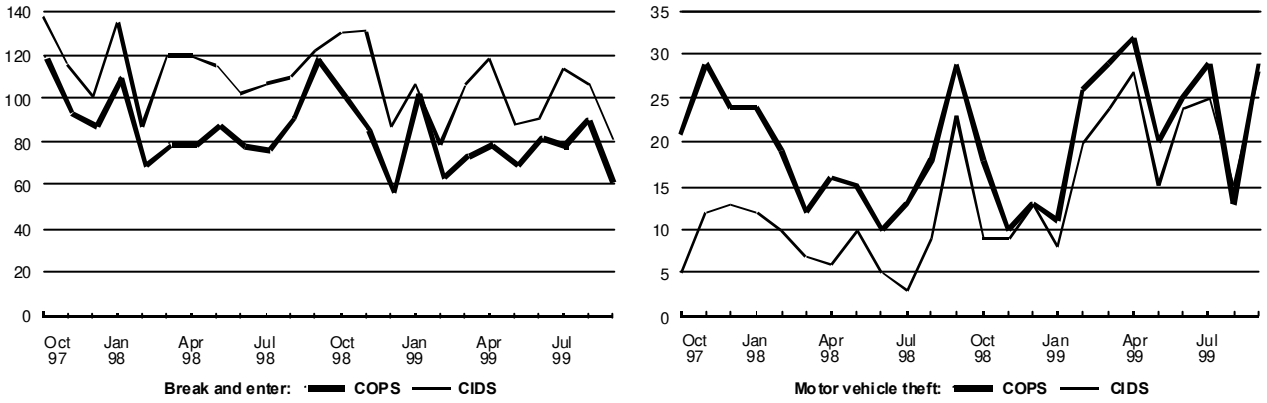


Figure A72 - WESTERN REGION: Barrier LAC

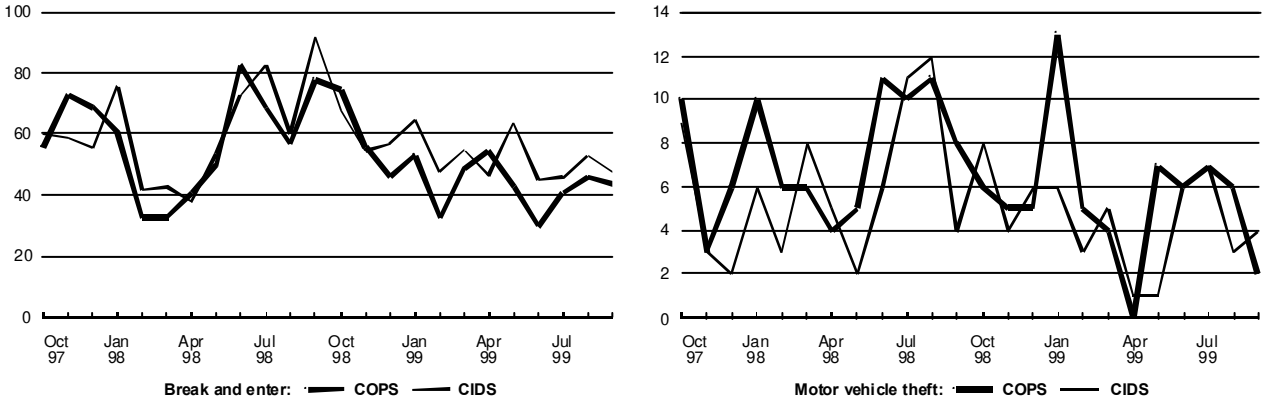


Figure A73 - WESTERN REGION: Barwon LAC

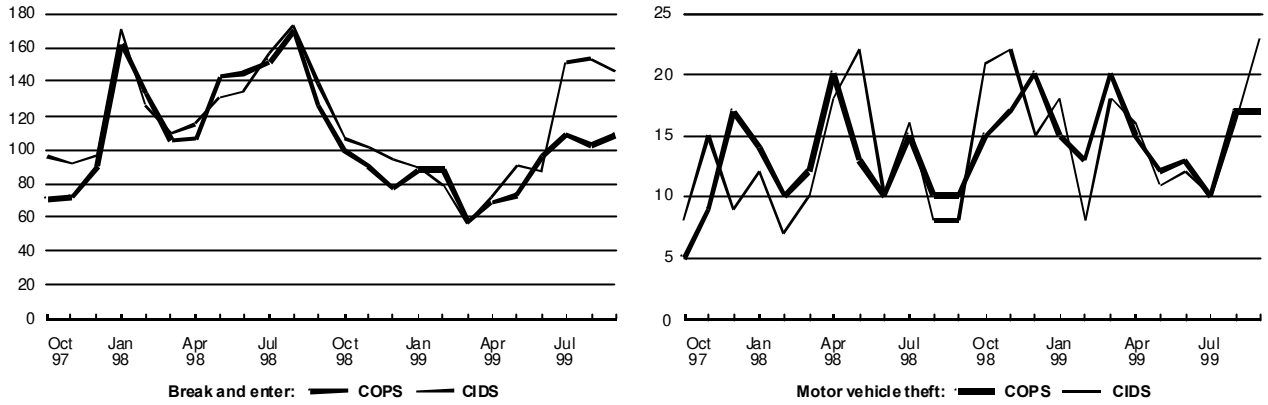


Figure A74 - WESTERN REGION: Canobolas LAC

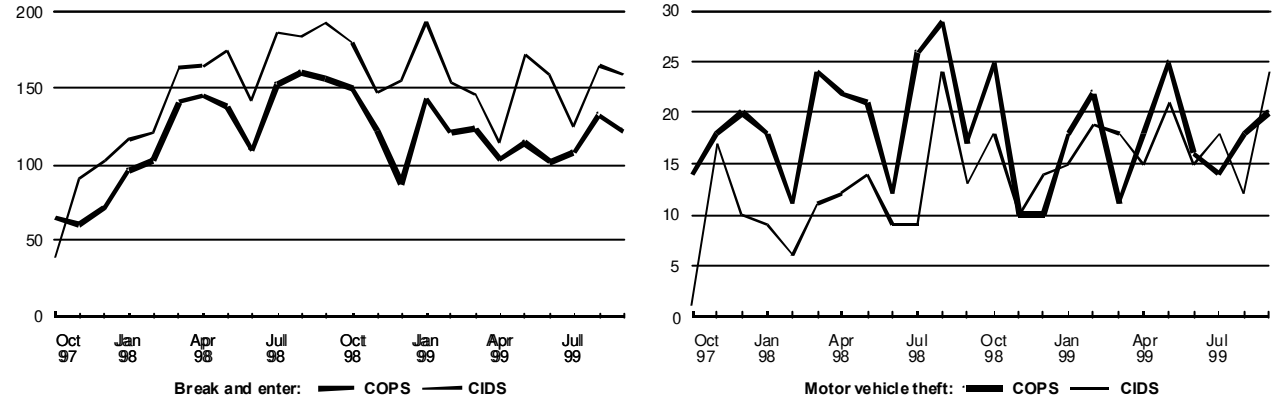


Figure A75 - WESTERN REGION: Castlereagh LAC

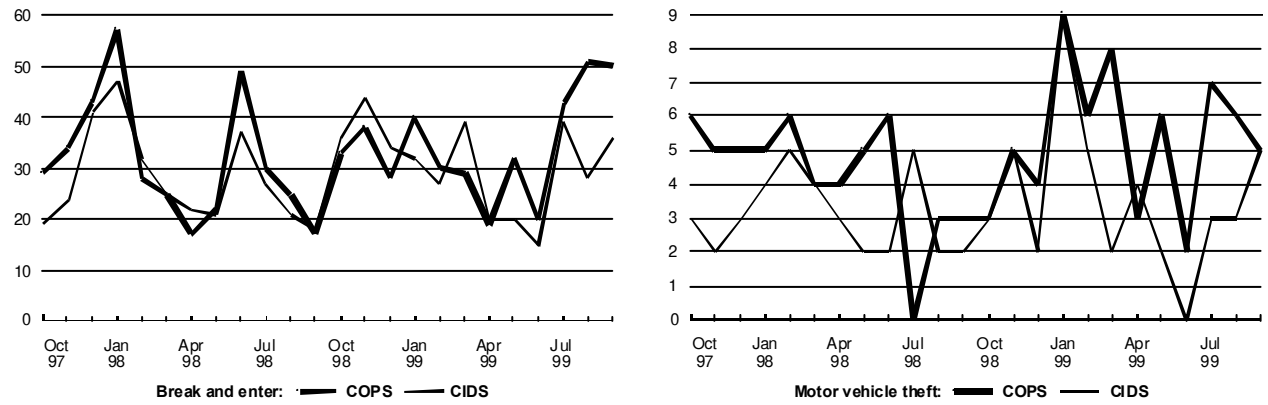


Figure A76- WESTERN REGION: Chifley LAC

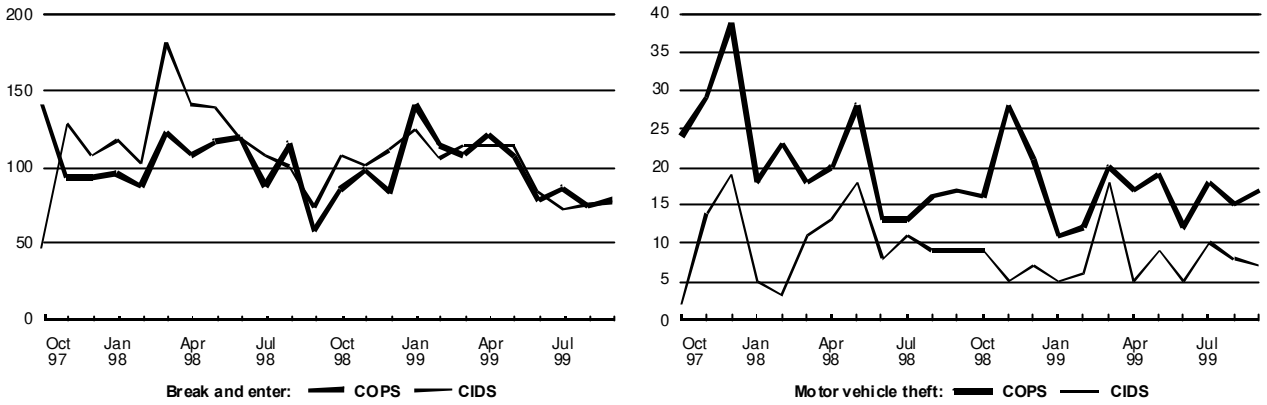


Figure A77- WESTERN REGION: Darling River LAC

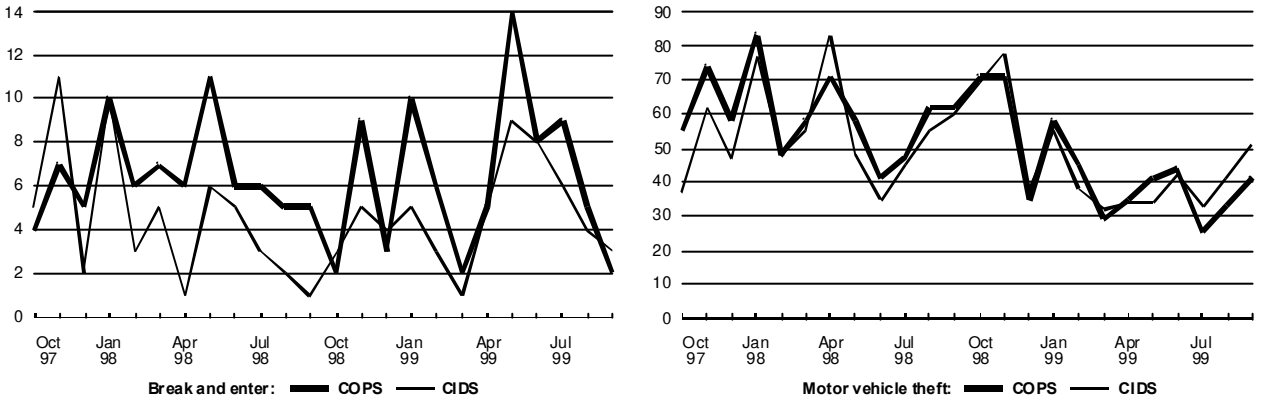


Figure A78 - WESTERN REGION: Lachlan LAC

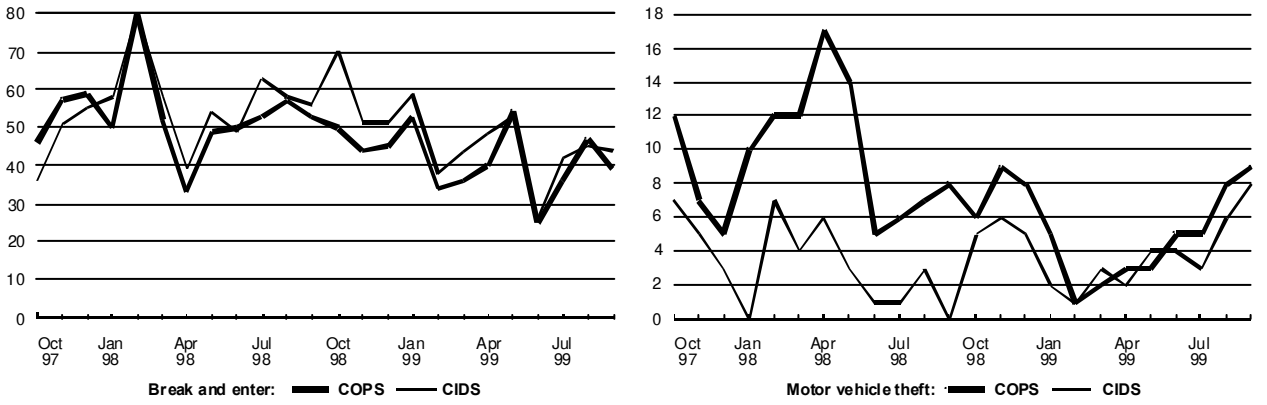
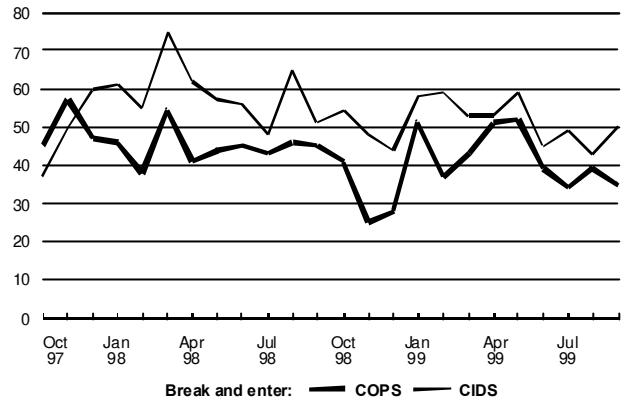


Figure A79 - WESTERN REGION: Mudgee LAC



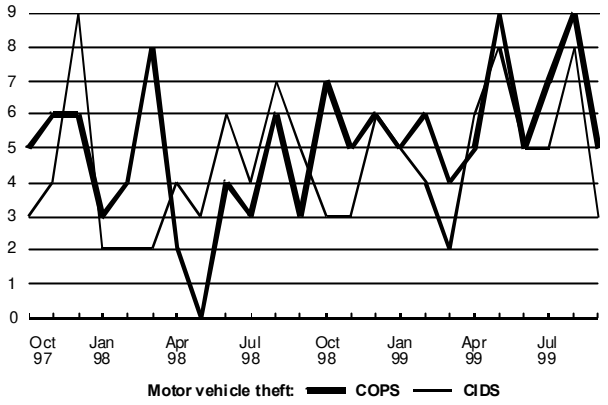


Figure A80 - WESTERN REGION: Orana LAC