Acknowledgements

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Executive Summary

In October of 1998, the Mayor's Office in the City of Chicago and the Department of Streets and Sanitation began a multi-stage plan to reduce crime through improved street and alley lighting. The first part of the plan sought to upgrade and improve the city's 175,000 streetlights, which illuminate the arterial and residential streets. The second part of the plan involves repairing and upgrading the lighting in and around viaducts and Chicago Transit Authority stations. The final part of the plan has been to boost lighting levels in alleys across the city as a tool for public safety and fighting crime. In the past, 90-watt lights illuminated most city alleys and the Department of Streets and Sanitation have increased alley lighting levels by installing new fixtures that can accommodate 250-watt bulbs. The intent of the City's program was to increase feelings of safety and decrease crime in the alleys surrounding Chicago's residential and arterial streets by increasing the wattage and number of alley lamps.

The Illinois Criminal Justice Information Authority was directed by the General Assembly to undertake an evaluation to assess the impact of increased alley lighting on crime. Specifically, this evaluation attempted to measure the effect of increased alley lighting on crime rates in two eight square block areas, with particular emphasis on crimes that were most likely to have occurred in alleys. The 28th political ward (Police District 11), the area of West Garfield Park, served as the experimental area and received increased alley lighting beginning in August 1998. The 16th political ward (Police District 7), the area of Englewood, served as the control area and did not receive increased alley lighting during the study period, but did receive some improvements

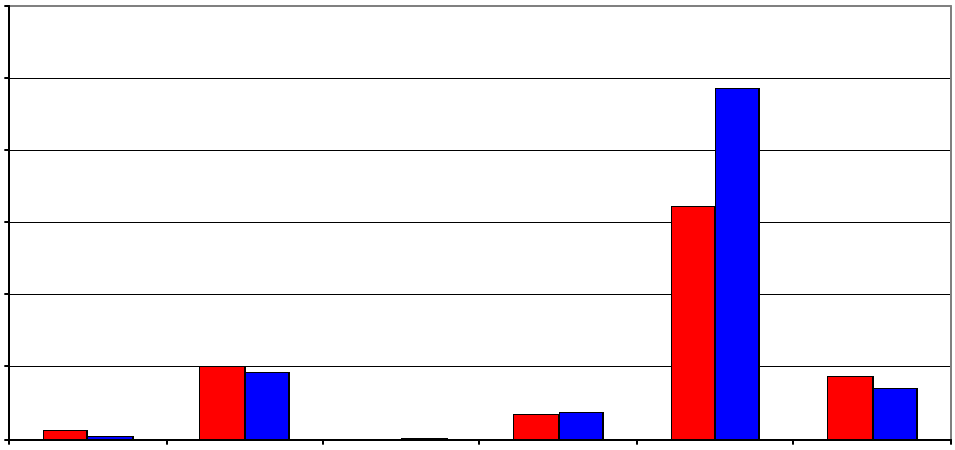
receive the increased lighting to determine differences between the two areas. Regardless of whether the one year analysis revealed a localized impact on crime in the experimental area, it is possible that improved alley lighting has an effect on the experimental area when compared to another area of the city that did not receive the lighting. Finally, variations in offenses that occurred during the day versus those that occurred at night were examined, based on the reported time that the incident occurred.

The top figure on the next page shows the total number of incidents, as well as the specific violent, property and non-Index crimes in the experimental area of West Garfield Park for one year before and after alley lighting installation. The numbers and percentage increases for this area are based on data that only represented those reported incidents that took place at night and in alleys.

When the number of reported incidents for this one year analysis are examined, the data indicated that there were 428 total incidents reported in the pre- 29475

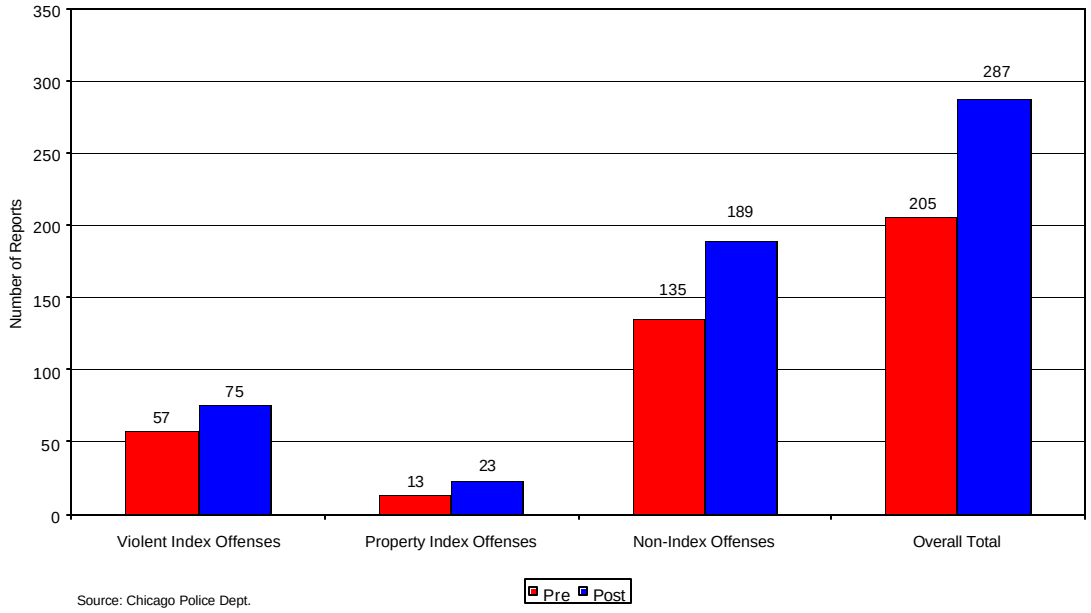
Since a majority of the alley offenses were non-Index crimes, a separate analysis was conducted to examine which offenses contributed most to the 24 percent increase. The figure below shows this breakdown.

Change in Reported Incidents in Experimental Area:



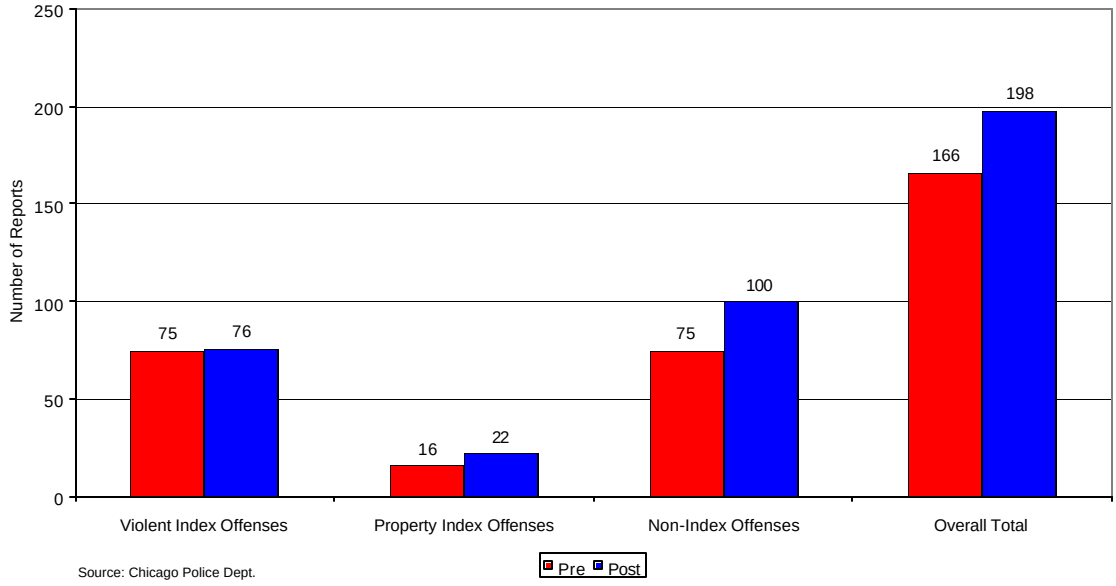
The greatest increase in non-

Change in Reported Incidents in Experimental Area:
Six Months Pre- and Post-Installation of Alley Lights
All Offenses



Source: Chicago Police Dept.

Change in Reported Incidents in Control Area:
Six Months Pre- and Post-Installation of Alley Lights
All Offenses



Source: Chicago Police Dept.

and in particular reported substance abuse violations, in the experimental area increased between the time prior to alley lighting improvements and after

The following table compares the experimental and controls areas in regard to demographics and crime totals before and after the installation of alley lights.

Comparison Between the Experimental Area and Control Area

	Experimental Area (District 11 – West Garfield Park)		Control Area (District 7 - Englewood)	
Crime Rate	11,014 per 100,000 pop.		11,696 per 100,000 pop.	
Resident Population	24,095		48,434	
Demographics	99 percent African-American 53 percent age 21-64 46 percent male $17,170 median income		99 percent African-American 49 percent age 21-64 45 percent male $15,615 median income	
	Pre-Installation	Post-Installation	Pre-Installation	Post-Installation
Total Crime Incidents Reported to Police (one-year prior and one-year after)	428	519 21% increase	N/A	N/A
Total Crime Incidents Reported to Police (six months prior to experimental area installation and six months after)	205	287 40% increase	166	198 19% increase

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lighting on crime rates in two eight-square block areas. Using the 28th ward (Chicago Police Department District 11) as a pilot area, the Authority compared Index and non-Index crime rates for a six-month period prior to lighting installation with a six-month period after lighting installation. The results of this post-installation period were then compared to a similarly sized area in the 16th ward (Chicago Police Department District 7) that did not have improved alley lighting and is similar to the pilot area with regards to socio-economic, demographic, and crime data. Researchers also compared changes in the crime rate during the day to changes in the crime rate at night in the pilot area.

The effort to improve the quality of alley lamps in Chicago began on October 20, 1998. The Authority acquired address-level data for all reported Index and non-Index crimes for both the 11th and 7th Districts from the Chicago Police Department in November 1999. This data covered the time periods of August 1, 1997 to July 31, 1999.

Literature Review

The idea of improving street lighting is not only favored by many law enforcement officials and government officials, it is also one of the most common suggestions made by people fearful in their use of public spaces (Clarke and Mayhew 1980). Increasing the amount of street lighting in a neighborhood serves residents as a means of both individual fear reduction and overall crime prevention through deterrence. But, does empirical research support the idea that increasing street and alley light wattage leads to a reduction in the number of criminal offenses that occur in a community?

Improving street and alley lighting has been suggested frequently as a measure that would both increase the risks of detection and reduce fear. Using a rational choice model, Siegel (1995) claimed that increased lighting should make areas more visible and

thus less attractive to potential offenders. The key issue is the assumption that potential offenders will attempt to minimize their risks of apprehension and avoid areas that increase the likelihood of their identification. At the same time, given that fear is greatest after dark, it is also assumed that by reducing darkness, fear will also be reduced (Clark and Mayhew 1980).

On the opposite end of the spectrum, if these same potential offenders are not afraid of apprehension or identification by either residents or police, then there will be little deterrent impact of increased lighting on crime. This does not, however, mean that perceptions of safety or use of public space is not impacted; rather increased lighting may very well have a positive effect on the fear of crime (Quinet and Nunn 1998).

While this idea is attractive in theory, evidence confirming it has had mixed results in practice. Fleming and Burrows (1986) have reported that the evidence from the large number of rather poorly done studies in the United States is far from conclusive and they emphasize the conflicting results of these studies.

Some of the effects of increased lighting may be crime specific. An analysis done by Hartley (1974) of four high-crime areas in the District of Columbia found a marked reduction in all crimes following lighting improvements. In Kansas City, Wright and Heilweil (1974) found that lighting improvements led to a reduction in the levels of robbery and assault, but not property crimes.

In Atlanta, city installed streetlights led to a reduction in the number of burglaries (City of Atlanta, 1975) while no other crime was significantly affected. In a study similar to the one reported here, Painter (1994) examined incidences of assault, automobile crimes, and personal threats and found that street lighting appeared to reduce the

incidence of all crimes. Non-Index crimes (e.g. prostitution, vandalism, gambling) appear particularly susceptible to increased lighting. In another study conducted by Challinger (1991), telephone booths were examined for incidences of vandalism. Challinger found that when the booth was moved to an area that was well lit by streetlights, incidences of vandalism diminished.

Other studies conducted on the effect of increased lighting appear to have had mixed or no impact. For example, the findings of Quinet and Nunn (1998) indicate mixed results. Their study reported that enhanced street lighting in some neighborhoods might sometimes be associated with a reduction in reported crime. However, the authors also caution that contextual effects (e.g. social disorganization of the neighborhood, police initiatives, displacement issues, and offender behavior patterns) could not be controlled for. In the Kansas City study, Wright and Heilweil (1974) found that violent crime was significantly reduced while property crime was not.

In a meta-analysis done by Tien, O'Donnell, Barnet, Mirchandani, and Pitu (1977), 40 studies and 17 street lighting programs were reviewed and the results of these reviews were mixed. Seven studies appeared to report increases in certain crime categories, three reported increased overall crime levels, and seven found no change in crime. The only consistent, solid finding was that residents appeared to feel safer as a result of more street lighting.

Other studies have also indicated no impact on crime from increased lighting. In a study of 39 sections of London, Atkins, Husain, and Storey (1991) indicated that they found no evidence that improved lighting reduced crime or even the fear of crime.

As this review indicates, studies of the effects of increased lighting on crime generally focus on street lighting rather than alley lighting. There do exist, however, some studies that may have direct relevance to the effect of increased alley lighting. These studies attempted to measure the positive effects of street lighting through a multi-variable approach. This is similar to the situation surrounding this report, as the researchers are attempting to measure a variable (alley lighting) that cannot be isolated because of the possible interaction of other factors, such as district-level police initiatives on the nearby streets or other intangible factors.

For example, Griswold (1984) attempted to examine commercial burglary through lighting alone but finally concluded that the rates of burglary in his study were reduced by a combination of security surveys and increased street lighting. Therefore, both the improved security measures and the increased lighting may be needed to reproduce the same success in future crime reduction and separating out any individual contributions of the lighting may be impossible.

Likewise, Poyner and Webb (1987) examined shopping bag thefts in a city center market but were unable to determine how significant the reduction in overall theft was due to an intervening variable. Their study focused on increased lighting by a newly installed lighting system, but at the same time, their research was also subjected to a simultaneous widening of the spaces between market stalls in the markets. Hence, the authors were unable to assess the impact of the lighting change on theft alone.

These contradictory research results of evaluative studies are not surprising. Many factors influence the level of actual crime and perceived risk, of which lighting is only one. The relative importance of these multiple factors is likely to vary between areas

so that while increased lighting is a major influence on crime in one location, its significance elsewhere may be minimal (Ramsay 1989). In fact, it has been suggested that in some circumstances, increased lighting may actually lead to an increase in the level of certain property offenses (Fleming and Burrows 1986).

These contrasting findings may also be explained by variations in the temporal and spatial coverage of individual studies. Painter (1994) has indicated that improved illumination can bring very localized benefits over a short time, but should eventually taper off. In addition to this finding, each of Painter's small study areas included a narrow walkway or railway tunnel, locations that are widely regarded as potential trouble spots or where increased illumination would most likely be beneficial. The results, therefore, indicate an area where crime incidences should go down substantially quicker and to a greater degree than less well-targeted or larger areas.

The final possible influence on the outcome of these studies is their research methodology. Various authors (Tien et al. 1979; Fleming and Burrows 1986) have drawn attention to the practical difficulties that arise with this type of impact evaluation. When large-scale, long-term evaluations are conducted, they often fall victim to imperfect data or control of extraneous variables. Conversely, small-scale, short-term studies also appear to suffer from inadequate sample sizes. Also, evaluations that are based on legal definitions of crimes or reported offenses may generate different findings from those based on unreported incidents or even nuisance violations that are not actual offenses.

As this review indicates, previous literature that focused on street lighting finds mixed results concerning the impact of lighting on actual crime incidences, in part due to the number of potential contaminating effects on the impact of lighting. The situation

appears even more complex when the effect of increased lighting in alleys is considered. Thus, any evaluation of the impact of alley lighting should be sensitive to issues that may be peripheral to street lighting studies. In other words, it is difficult to isolate the effects of increased l

number of alley lights by placing one on every telephone pole in every alley of the city. This served to increase the overall number of alley lamps from 46,000 in 1989 to the 63,000 today. The total effect is that the alley lamps are brighter than the residential streetlights (which are 150 watts) and there are more of them. The arterial lights, however, are still stronger than either alley or residential lights.

Methodology

The goal of this research was to test whether the additional alley lighting would reduce crimes that occurred in an alley. However, it was not anticipated that alley lighting would deter all types of crimes. Some crimes may be more susceptible to the unique

area referred to West Garfield Park, for purposes of this report, the study area itself will be referred to as West Garfield Park.

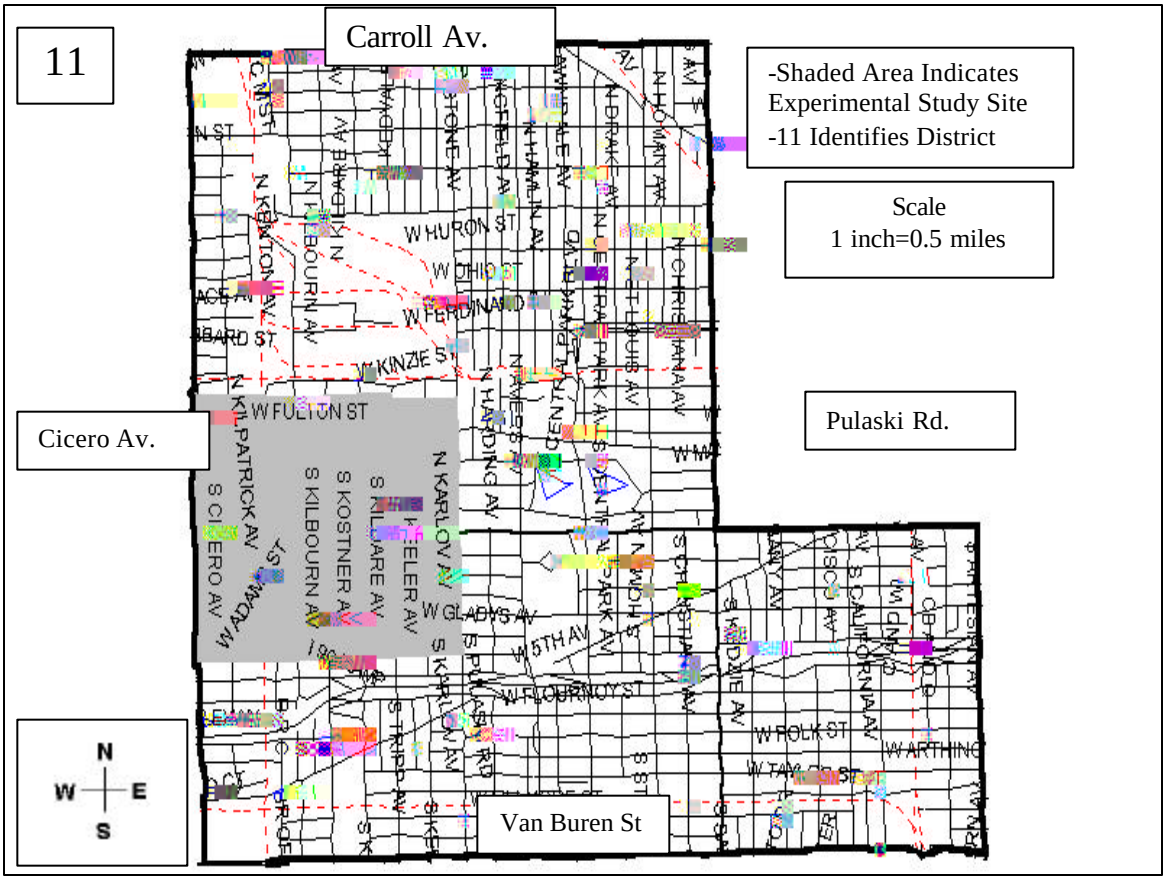
West Garfield Park is a suitable experimental area in that it appears to reflect signs of social disorganization. According to Wilson (1987), neighborhoods that are characterized as socially disorganized exhibit such features of decay as vacant lots, empty buildings, street-corner drug peddling, and high violent crime rates. Residents of the area and business owners complain that drugs are ubiquitous in the neighborhood and the landscape of West Garfield Park is littered with trash, empty land and decaying structures. As an example, West Garfield Park typically reports the highest murder rate in the city. In August of 1996, the 11th police District reported a total of 10 murders that month and 72 in the first eight months of 1996, more than any other police District in the city (Chicago Police Department Annual Report).

Utilizing census data specific to West Garfield Park as a Chicago community area (within which the study area is located), for 1990, the overall resident population was 24,095 residents. Forty-six percent of the residents were male and almost all (99 percent) were African-American. The age distribution of the neighborhood favored adults aged 21-64 years (53 percent) and the very young (27 percent under age 13).

More than half of the families in the neighborhood were headed by a female (55 percent) and more than one-third had an annual income below the poverty line. In fact, the unemployment rate in the neighborhood was approximately three times (28 percent) that of the whole Chicagoland area (the Chicago-land area is made up of Cook, Lake, McHenry, Kane, DuPage, Kendall, Will, and Grundy Counties). The median family income in West Garfield Park was $17,170. Most of the residences that existed in the

neighborhood were older, as 92 percent were built before 1980, and the median monthly rent was low ($405 dollars a month). The average unit had six rooms and a median value of $47,500 dollars. Figure 2 shows the geographic location of the study area.

Figure 2 - District 11 Experimental Study Site



West Garfield Park appeared to have one of the highest crime rates in Chicago. In 1997, the 11th District, of which West Garfield Park (the experimental study area) is a part, reported a total of 69 murders, 191 criminal sexual assaults, 1,924 robberies, and 2,900 aggravated assaults. Property crimes were also high. Again in 1997, the 11th District reported 1,099 burglaries, 3,310 thefts, 1,294 motor vehicle thefts, and 68 arsons.

Overall, the 11th District reported 10,855 Index crimes. Given a total population of 98,554 people in 1997, this translates into a crime rate of 11,014 crimes per 100,000 population.

Table 1 – District 11 Experimental Area 1997 Crime Totals

Murder	69
Criminal Sexual Assault	191
Robbery	1,924

the east, and South Laflin Street to the west. Again, although the control area lies *within* the entire area referred to as Englewood, the name given to the control area itself will be referred to as West Englewood during this analysis.

In almost every way, Englewood (within which the control area is located) appeared identical to West Garfield Park. When the demographic statistics were examined, the data indicate that the population in 1990 was 48,434 individuals. Almost half (45 percent) of the residents were male and again almost all (99 percent) were African-American. The age distribution of the neighborhood also favored adults aged 21-64 years (49 percent) and the very young (27 percent under age 13).

More than half of the families in the neighborhood were headed by a female (59 percent), and 40 percent had an annual income below the poverty line. Similar to the West Garfield Park statistics, the unemployment rate in the neighborhood was three times (27 percent) that of the whole Chicago-land area (see previous definition) with a median family income of $15,615. Almost 31 percent of the residents owned their residence and the majority of those residences were built before 1980 (92 percent). The median monthly rent was very low, at $384 dollars and the average residential unit had six rooms and a median value of $41,363. Figure 3 shows the geographic location of the control area.

Figure 3 - District 7 Control Study Site

When the crime statistics for 1997 were examined in West Englewood, it appears that the control District also had one of the higher crime rates in Chicago. In 1997 alone, the 7th District, of which West Englewood is a part, reported a total of 55 murders, 188 criminal sexual assaults, 1,628 robberies, and 3,250 aggravated assaults. Property crimes were also very high. In 1997, the 7th District reported 1,919 burglaries, 3,778 thefts, 1,566 motor vehicle thefts, and 78 arsons. Overall, the 7th District reported 12,462 Index crimes. Given a total population of 106,542 people in 1997, this translates into a crime

Table 2 – District 7 Control Area 1997 Crime Totals

Murder	55
Criminal Sexual Assault	188
Robbery	1,628
Assault	3,250
Burglary	1,919
Theft	3,778
Motor Vehicle Theft	1,566
Arson	78
Total	*12,462*

Again, according to a police sergeant in District 7, no new initiatives were taken during the study time period that would have an affect on the crime rate in that area.

Data Acquisition

The city's alley lighting project began on October 20, 1998. The acquisition of crime data by the Authority from the Chicago Police Department took place in November 1999. The Authority received address-level data for all reported violent and property Index and non-Index crimes for both the 11th and 7th police Districts. These data cover time periods from August 1, 1997 through July 31, 1999, which ensured that both the one-year experimental comparison and the six-month experimental and control comparisons were possible.

These dates were determined by the manner in which the alley lamp wattage was increased and new alley lamps were installed within city wards. As mentioned earlier, the difference between the very first pilot ward improvement and the final ward improvement was only 311 days. Based on these time differences, the researchers designed the pre-post study to be broken into two six-month periods for each District. The time periods under examination are shown in Table 3.

Table 3: Alley Light Study Time Periods

District	Testing Status	Study Pre-Period	Study Post-Period	Installation Period
One Year Study Period				
11th	*Experimental*	8/97-7/98	8/98-7/99	8/98
Six Month Study Period				
11th	*Experimental*	2/98-7/98	8/98-1/99	8/98
7th	*Control*	2/98-7/98	8/98-1/99	---- 7/98

service data because reported crimes do not completely rely on citizen complaints for action and are more numerous than other types of recorded crime (i.e. arrest data) because they do not require suspect apprehension.

Some studies (Weisburg and Green 1995) have touted the benefits of calls for service data in studies associated with public safety initiatives, the logic being that calls for service data offers a reasonable and effective measure of citizen's demand for police assistance. Calls for service (CFS) data has been employed with mixed results in a number of street lighting studies. The overall effect seems to be that CFS data are of variable importance because they do not measure actual crimes, but rather the effect of police deployment. Thus, some police initiatives may not result in a decline in the number of crimes but instead show an increase in the number of calls for police assistance.

Arrest data, however, is the end result of a process involving a call for service, an incident form being reported and completed, and then the final apprehension of a suspect by the police. Arrest data, however, may not completely represent the total effect of a

Crime Types

Reported offenses to the Chicago Police Department are categorized by crime type using an extensive and detailed classification system. The Chicago Police Department uses 290 crime types to cover all aspects of every potential offense.

For the purposes of this research these 290 categories were first reduced to only 142 offenses that were theoretically likely to occur in alleys. These 142 offenses were then aggregated into four violent Index, four property Index, and 13 non-Index crime types (See appendix A for complete list of offenses included in analysis).

These crime categories were selected for inclusion in this analysis for several reasons. First, those crimes that were thought likely to occur in alleys were examined. These criminal offenses were determined based on frequencies indicating what crimes are most likely to take place in Chicago alleys. Second, those crimes that were possibly influenced by changes in alley lighting were included, but condensed into broad categories. Those crimes that were thought to be unaffected by alley lighting were not included and thus excluded from examination. Overall, 46 percent of the 142 offenses obtained from CPD were excluded. While this sounds like a great deal, these offenses included such crimes as embezzlement, theft of labor services, sexual relations within families, neglect of child, telephone threats, and driver's license violations. Thus, many offenses are those that had a negligible impact on alley or street crime.

Further, selecting the groups for inclusion was based on several additional factors. First, it was necessary that a sufficient number of offenses occurred during nighttime. If a particular type of crime occurred mostly during daylight hours, for example fraud or embezzlement, then increasing the alley lamp wattage would contribute little to crime

prevention. Next, was the crime likely to happen outdoors? Those crime types that are primarily indoor events (e.g. employee thefts, neglect of child) are also unlikely to be affected by improved alley lighting, although the issue of access to the building under cover of darkness may be necessary and its affect minimized. Finally, was the motivation for the crime type likely to be affected by better lighting? Major crimes such as robbery and personal violence are potentially motivated by the environmental conditions surrounding the act. Improving the alley lighting could be expected to have a stronger influence on this type of personal crime in comparison to any other single category of crime type.

Study Time Periods-Hours

One of the primary control factors for this research was the necessity to classify

such as auto theft and criminal damage to property. In these situations the exact time of the offense is less likely to be known precisely and a real possibility exists that the crime began in darkness and carried over into daylight or vice versa.

Using only crimes that could be precisely determined by the amount of daylight and darkness is a difficult task. As will be examined later, the use of alley lighting (rather than traditional street lighting) as the dependent variable means that far fewer crime types could be included in all analyses. Combined with the aggregated categories of violent Index, property Index, and non-Index, the impact of actual temporal designations of light and darkness was likely to be minimal.

Study Design

This study utilized a research design for contrasted groups in which two or more groups are compared before and after the introduction of a treatment variable. This design, a nonequivalent control group design, uses statistical techniques to test for comparability between the contrasted groups before any causal inferences are drawn. In this study, a measurement of the number of reported criminal incidents that took place in alleys was taken prior to the alley lighting improvement in both districts. Then, using the date of the experimental area lighting improvement as the dividing point, a measurement of the number of reported alley crime incidents was taken. This measurement constituted a posttest.

Researchers also included another comparison control area (West Englewood) that was as similar as possible to the experimental area, in terms of crime and demographic area characteristics.

Finally, an analysis was conducted to compare changes in the number of reported incidents occurring during the day to those occurring at night in the experimental study area.

Geographic Data Selection

Initially, the geographical experimental and control areas were selected based on the time order in which their alley lighting was improved. Researchers were provided with an accurate timetable of alley light improvements by ward. The experimental area dictated the initial experimental time frame and the basis of the subsequent alley lighting installation dates. Thus, the selection of the control District was determined by the initial time selection of the experimental lighting area and that area's matching characteristics.

Defining the eight by eight-square blocks under study required more methodological care to ensure that the study areas only encompassed the selected block areas. As police districts are large, unevenly shaped areas that do not match up with wards, the areas under study would not be easily defined by the databases from which either the alley lighting or the police data came. Instead, offense, or incident data for the study areas would be included in a larger mass of all reported district offense data. The information requested from the Chicago Police Department was geographically filtered to select out only those specific areas selected for inclusion in this study.

The process of geographically matching numeric or tabular address data to locations along a map is called geo-coding. Geo-coding is a useful tool for locating individual crime positions according to street address, mapping geographical areas for study, pinpointing specific crime locations, or analyzing crime changes on a street-level map. In order to geo-code specific information the user must first have a street-level map

on computer file (the reference theme) and the exact street address for the item under study (the area of interest) listed in a separate data file. These components are necessary to make up a geo-coded data file. Therefore, the reported offense data requested from the Chicago Police Department were to contain specific street addresses for every criminal offense from 1997-1998 in both Districts 11 and 7.

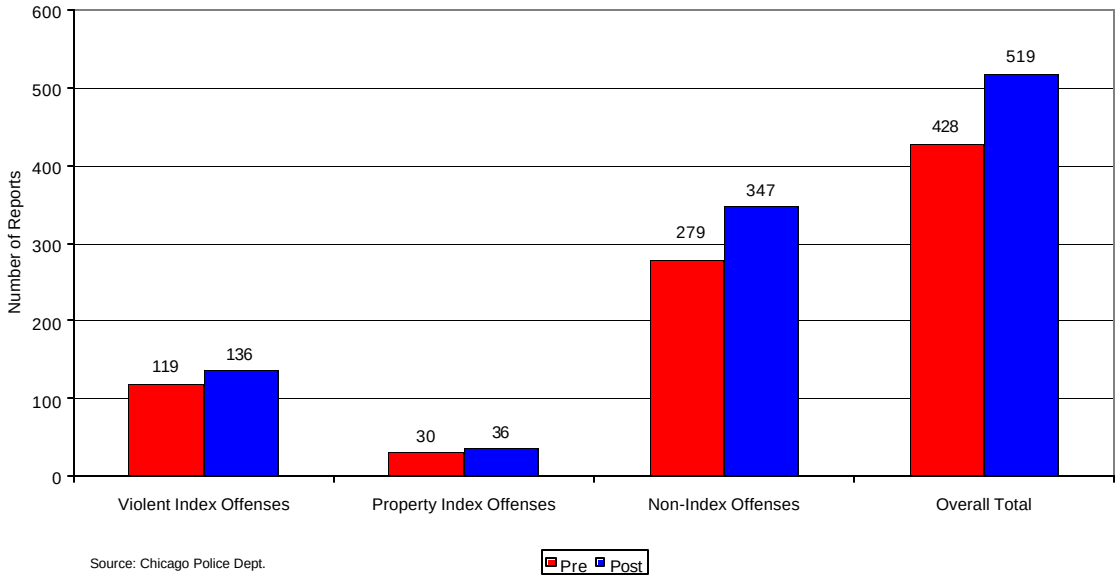
These specific street addresses for all reported offenses in Districts 11 and 7 were first geo-coded by batch matching (a process the computer uses to geo-code addresses in the area of interest by matching them to the address data in the reference theme). The batch matching process is the quickest method of geo-coding. The computer generally manages to only match up those addresses that are both perfect in the reference theme and the area of interest file. The overall average matching (or "hit") rate for the batch matching process in District 11 was 97 percent, and in District 7, the rate was 98 percent.

In order to increase this matching rate, the data was geo-coded by the interactive process. This process is done to attempt to locate those addresses that for some reason did not geo-code in the batch matching process. Generally, these unmatched locations are the result of a spelling error in the street name, or an out-c

within the selected study areas and contained information on the time the actual offense

Finally, a third analysis was conducted, the findings of which are among the results of the two previous analyses. In order to identify any reporting patterns that may occur due to the increase in the alley light wattage, a day versus night comparison was conducted. This analysis basically treated all reported offenses that did not fall into the previously defined nighttime control category as daytime offenses. The daytime offenses

Figure 4 - Change in Reported Incidents in Experimental Area:
One Year Pre-and Post-Installation of Alley Lights
All Offenses



When the raw counts for this one-year analysis of the experimental area were examined, the data indicate that there were 428 total incidents reported in the pre-installation period and 519 total incidents in the post-installation period - an increase of 21 percent in reported offenses between the pre- and post-period test.

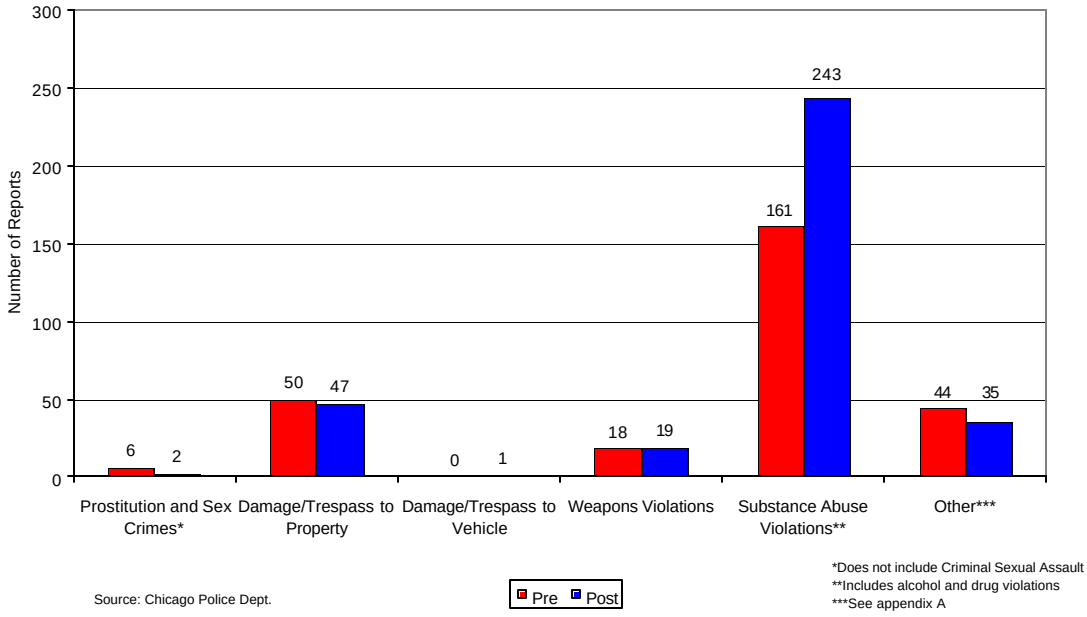
Each of the three crime categories experienced an increase in the number of reported incidents between the pre-and post-installation period. The number of violent Index offenses went up 14 percent (from 119 to 136) between the pre- and post-lighting installation period, while property offenses reported increased by 20 percent (from 30 to 36) and the non-Index offenses reported to police increased by 24 percent (from 279 to 347).

The violent Index crime increases were predominately the result of more reported criminal sexual assaults (up 55 percent, from 11 to 17), aggravated assaults (up 34

percent, from 62 to 83), and homicides (from 2 to 4). The only violent Index crime to decline was robbery (down 27 percent, from 44 to 32). The greatest property crime increase was in motor vehicle theft (from 7 to 15, up 114 percent), while the greatest decline was in arson (from 4 to 0).

Since a majority of the alley offenses were non-Index crimes, a separate analysis was conducted to examine which offenses created the 24 percent overall increase in reported offenses. Figure 5 shows the results of this analysis.

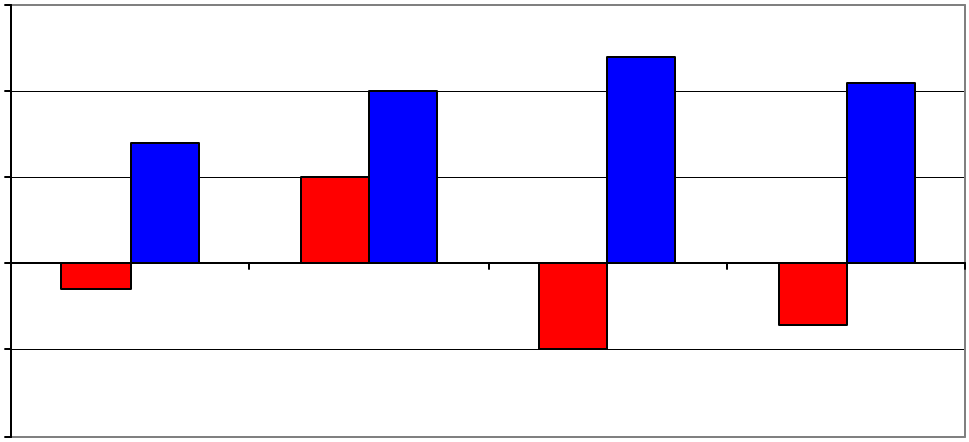
Figure 5 - Change in Reported Incidents in Experimental Area:
One Year Pre- and Post-Installation of Alley Lights
Non-Index Offenses



The raw counts of non-Index offenses indicate that there appeared to be an even split between the number of reported incidents that rose and fell. The greatest increase in non-Index reported offenses were substance abuse violations (up 51 percent), while the greatest non-Index decline was in prostitution and other sex crimes (down 67 percent).

Figure 6 illustrates a comparison in the number of reported incidents during the day to the number of reported incidents at night in the experimental area.

Figure 6 - Change in Reported Incidents in Experimental Area:



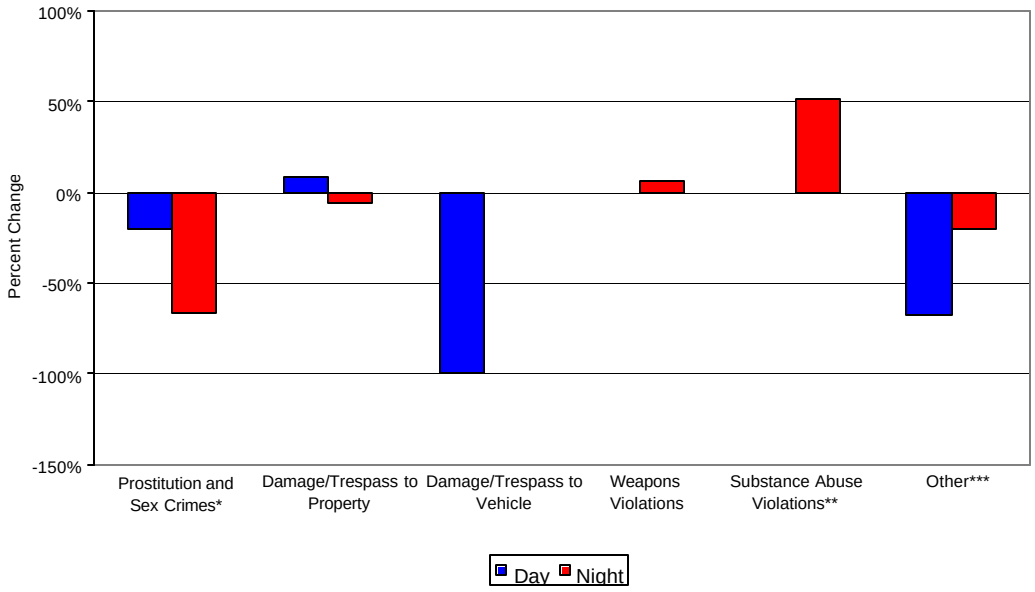
As indicated in Figure 6, the one year nighttime analysis reported experimental area incidents increasing by an overall average of 21 percent compared to a 7 percent decrease in daytime reports. The only daytime increase in reported incidents was in property Index offenses (10 percent). In comparison, nighttime reported incidents showed increases of 24 percent (non-Index offenses), 20 percent (property Index offenses), and 14 percent (violent Index offenses). These findings may suggest an increase in the reporting of offenses created by better alley lighting.

With regard to violent Index offenses, criminal sexual assault and assault/battery reports increased at night (up from 11 to 17, and up from 62 to 83, respectively), while reports of robbery declined from 44 to 32. Property Index offenses also showed changes at night. Theft reports increased from 19 to 21 at night, while motor vehicle theft reports

went up from 7 to 15 reported incidents. The greatest overall increase in reported incidents however came from the non-Index offenses.

Figure 7 shows a breakdown of the non-Index offense day versus night reported incident changes. The greatest increase in nighttime reports was substance abuse violations (50 percent, from 162 to 243). Weapons violation reports also increased slightly (from 18 to 19). Again, increases in reported incidents may indicate that community residents or police are more likely to witness these offenses at night and are now reporting them more than before the alley lighting was improved.

Figure 7 - Change in Reported Incidents in Experimental Area:
One Year Pre- and Post-Installation of Alley Lights
Day Versus Night Comparison -Non Index Offenses



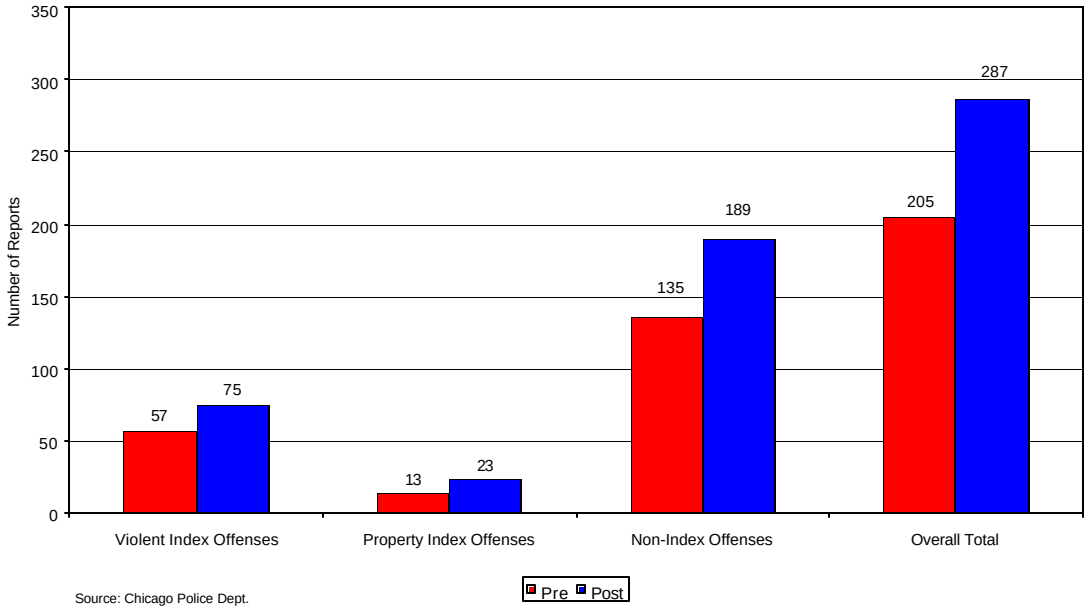
The data indicate a 21 percent increase in the number of total reported incidents at night in the experimental district following the improvement of the alley lights. It appears that improved alley lighting resulted in an increase in the number of incident reports to the Chicago Police Department. Therefore, the findings indicate that there did

category also increased by an average of 50 percent, with the property Index crimes increasing by 77 percent.

The control district crime counts also increased. The control area experienced 166 reported incidents in the pre-installation period, and 198 reported incidents in the post-installation period. This represented a 19 percent increase in the number of reported incidents. The individual crime categories in the control area also increased by an average of 23 percent, with property Index crimes increasing by 38 percent.

Figure 8 shows the total number of incidents, as well as the specific violent Index, property Index and non-Index crimes in the experimental area for a six-month period pre- and six month period post-alley lighting installation. The raw counts and percentages for

Figure 8 - Change in Reported Incidents in Experimental Area:
Six Months Pre- and Post-Installation of Alley Lights
All Offenses



When the raw counts for this six-month analysis of the experimental area are examined, the data indicate that there were 205 total incidents reported in the pre-installation period and 287 total incidents in the post-installation period - an increase of 40 percent in reported offenses between the pre- and post-period test. In the control area, the increase in reported incidents was 19 percent. This finding may further support the hypothesis that lighting leads to resident and/or police observing more crime and reporting it.

A review of the individual crime categories indicates that each of the three crime categories experienced a double-digit increase in the number of reported incidents between the pre-and post-installation period. The number of violent Index offenses went up 32 percent (from 57 to 75) between the pre- and post-lighting installation period,

while property offenses increased by 77 percent (from 13 to 23) and the non-Index offenses reported to police increased by 40 percent (from 135 to 189).

The violent Index crime increases were predominately the result of more reported criminal sexual assaults (up 22 percent, from 9 to 11) and aggravated assaults (up 47 percent, from 30 to 44). The greatest property crime increase was in motor vehicle theft (up 350 percent, from 2 to 9), while the greatest decline was in arson (down from 2 to 0).

Figure 9 shows the change in reported incidents of all offenses in the control area after a six-month pre- and post-period analysis was completed.

The number of reported incidents in the control area also increased across the board. However, the increases were not as high as those found in the experimental area. The increase in the number of reported incidents ranged from a 1 percent increase for

(from 135 to 189) for non-Index offenses, and 32 percent (from 57 to 75) for violent Index offenses.

reported incidents) involved property Index offenses. Reported incidents involving non-Index offenses decreased 32 percent during the day (from 115 to 78) and increased 33 percent at night (from 75 to 100). The number of reported criminal sexual assault incidents decreased both during the day (from 4 to 1) and at night (from 6 to 5). Reported robberies increased during the day (from 20 to 26) and decreased at night (from 18 to 17). There was a decrease during the day in the number of reported thefts (from 31 to 21), and a 50 percent increase in the number of thefts reported at night (from 10 to 15). The number of reported incidents concerning motor vehicle theft decreased 56 percent (from 9 to 4) during the day, but did not change at all at night (5 reported incidents during each time period). Overall, there was a 21 percent decrease in the number of reported incidents during the day (from 240 to 190) and a 19 percent increase at night (from 166 to 198).

Results of Analysis for Non-Index Offenses

Since a majority of the alley offenses were non-Index crimes, a separate analysis was conducted to examine which offenses created the 40 percent overall increase in reported offenses. The gmes, s involving non

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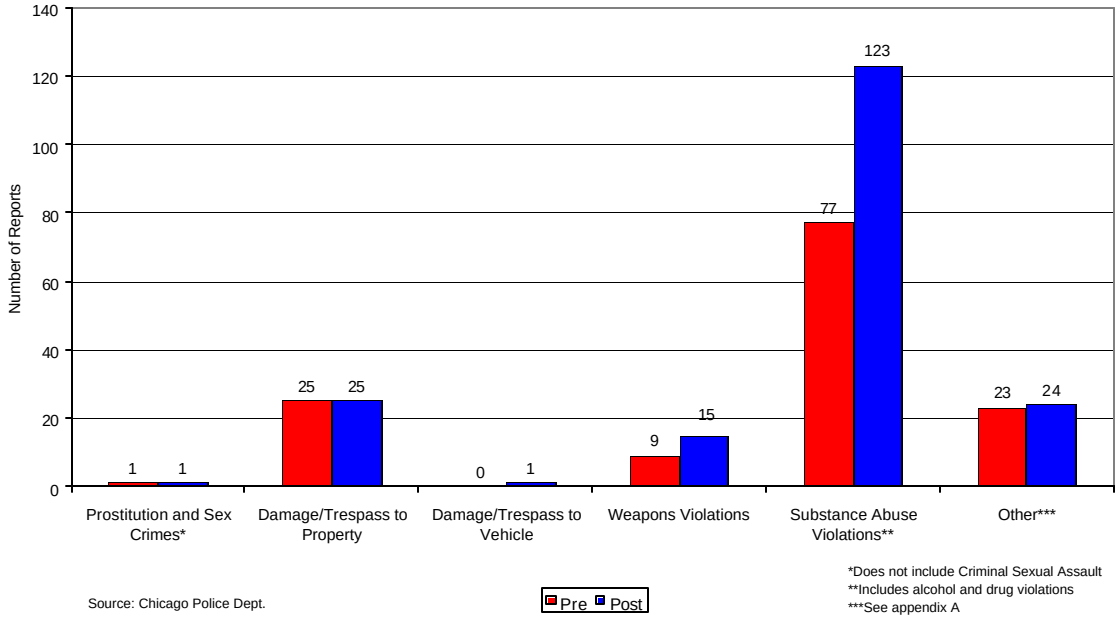
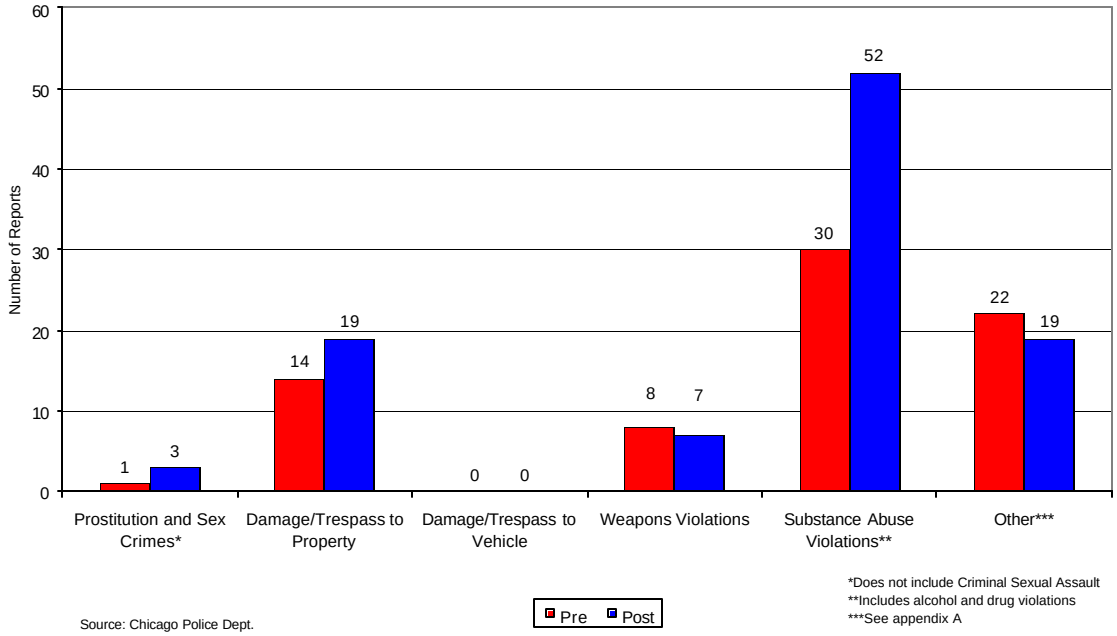
Figure 12 - Change in Reported Incidents in Experimental Area:
Six Months Pre- and Post-Installation of Alley Lights
Non-Index Offenses



A similar analysis as above was used to find the difference in the number of non-Index offenses reported to police during the same time period (Figure 13).

Figure 13 - Change in Reported Incidents in Control Area:
Six Months Pre-and Post-Installation of Alley Lights
Non-Index Offenses

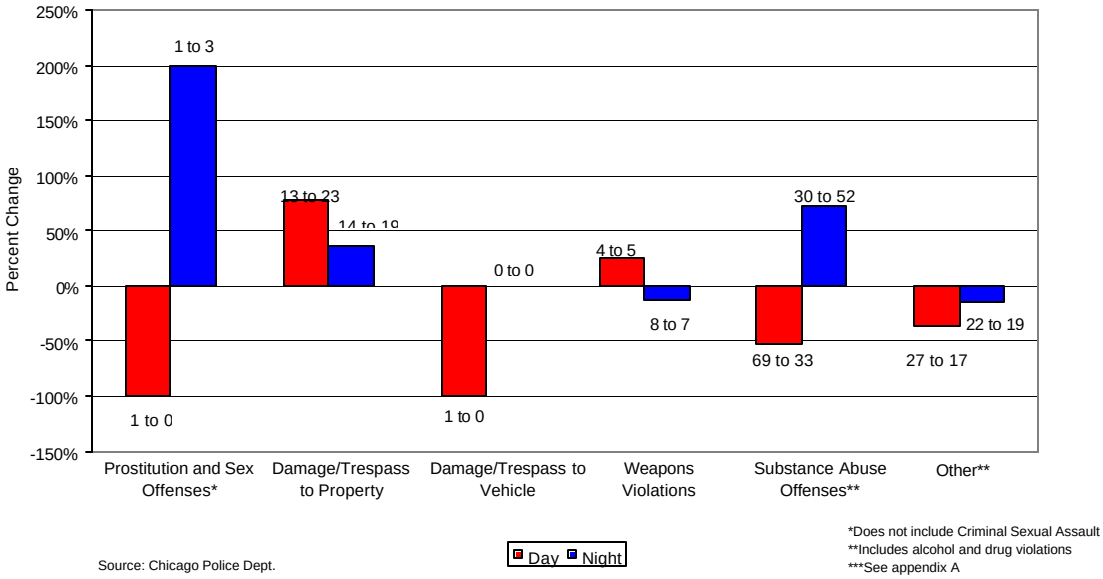


When the number of reported incidents of non-Index offenses was analyzed for change, both increases and decreases were found. The largest increase was in the incident of prostitution or other sex crimes (not including criminal sexual assault), although it is important to note that the number of incidents only increased from 1 to 3. Drug violations increased 73 percent (from 30 to 52 reported incidents) while weapons violations decreased 13 percent (from 8 to 7).

Figure 14 shows a breakdown of the non-

A final analysis was conducted to determine the change in reported incidents during the day versus the change found at night looking at non-Index offenses in the control district (Figure 15).

Figure 15 - Change in Reported Incidents in Control Area:
Six Months Pre- and Post-Installation of Alley Lights
Day Versus Night Comparison - Non Index Offenses



The reported number of damage/trespass to property incidents increased 77 percent during the day, from 13 to 23. The number of reported weapon violation incidents increased slightly during the day (from 4 to 5), but decreased slightly at night (from 8 to 7). Finally, substance abuse violation incidents decreased 52 percent during the day (from 69 to 33) and increased 73 percent at night (from 30 to 52).

Summary

This evaluation found that reported incidents (offenses) increased between the one-year pre- and one-year post-installation study periods in the experimental area of West Garfield Park where alley lighting was improved. The evaluation also found that the experimental area experienced more notable increases in reported incidents over a six-month pre-installation and six--

Appendix A

Offense Code Aggregation Codes

Reported Incident Crime Categories	*Chicago Police Department Offense Codes*
Violent Index Crimes	
1. Homicide	0110, 0130, 0141
2. Criminal Sexual Assault	0261, 0263, 0264, 0265, 0271, 0273, 0274, 0275, 0281, 0291
3. Robbery	0312, 0313, 031A/B, 0320, 0325, 0326, 0330, 0334, 0337, 033A/B, 0340
4. Assault and Battery	041A/B, 0420, 0430, 0440, 0460, 0470, 051A/B, 0520, 0530, 0560
Property Index Crimes	
1. Burglary	0610, 0620, 0630
2. Theft	0810, 0820, 0850
3. Motor Vehicle Theft	0910, 0915, 0917, 0920, 0925, 0930, 0935, 0940
4. Arson	1010, 1020, 1025, 1030, 1090, 5003
Non-Index Crimes	
1. Damage and Trespass to Property	1310, 1330, 1340, 1350, 1370, 5001
2. Damage and Trespass to Vehicle	1320, 1360, 5002
3. Weapons Violations	141A/B/C, 142A/B, 143A/B/C
4. Prostitution and Related Sex Crimes	1506, 1507, 1512, 1513, 1525, 1530, 1562, 1563, 1565, 1570, 5004, 5005
5. Gambling Violations	1620, 1621, 1626, 1651, 1661, 1680
6. Drug Violations	1811, 1812, 1821, 1822, 2010, 2012, 2013, 2014, 2016, 2017, 2019, 2110 2111
7. Liquor Violations	2210, 2230, 2250
8. Others	3100, 3710, 3730, 3750, 3760, 3800, 3910, 3960, 4210, 4220, 4230, 4240, 4255, 5070, 5071, 5080, 5081, 5084, 5085, 5086, 5089, 5090, 5091

Appendix B

	Month	Median sunrise	Median Sunset
1997			
	August	6:00 a.m.	7:51 p.m.
	September	6:32 a.m.	7:00 p.m.
	October	7:04 a.m.	6:09 p.m.
	November	6:41 a.m.	4:30 p.m.
	December	7:12 a.m.	4:21 p.m.
1998			
	January	7:16 a.m.	4:45 p.m.
	February	6:47 a.m.	5:24 p.m.
	March	6:03 a.m.	5:57 p.m.
	April	6:11 a.m.	7:32 p.m.
	May	5:31 a.m.	8:04 p.m.
	June	5:15 a.m.	8:27 p.m.
	July	5:29 a.m.	8:24 p.m.
	August	5:59 a.m.	7:51 p.m.
	September	6:31 a.m.	7:00 p.m.
	October	7:03 a.m.	6:09 p.m.
	November	6:40 a.m.	4:30 p.m.
	December	7:11 a.m.	4:21 p.m.
1999			
	January	7:16 a.m.	4:45 p.m.
	February	6:47 a.m.	5:23 p.m.
	March	6:03 a.m.	5:57 p.m.
	April	6:11 a.m.	7:31 p.m.
	May	5:31 a.m.	8:04 p.m.
	June	5:15 a.m.	8:27 p.m.
	July	5:30 a.m.	8:24 p.m.

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