

COMMUNITY CRIME PREVENTION

Does It Work?

Dennis P. Rosenbaum

Editor

Copyright © 1986 by Sage Publications, Inc.

All rights reserved. No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

For information address:

SAGE Publications, Inc.
275 South Beverly Drive
Beverly Hills, California 90212

SAGE Publications Inc.
2111 West Hillcrest Drive
Newbury Park
California 91320



SAGE Publications Ltd.
28 Banner Street
London EC1Y 8QE
England

SAGE PUBLICATIONS India Pvt. Ltd.
M-32 Market
Greater Kailash I
New Delhi 110 048 India

Printed in the United States of America

Library of Congress Cataloging-in-Publication Data

Main entry under title:

Community crime prevention.

(Sage criminal justice system annuals; v. 22)
Includes index.

1. Crime prevention—United States. 2. Crime prevention—United States—Citizen participation.

I. Rosenbaum, Dennis P. II. Series

HV7431.C66 1986 364.4 85-26057

ISBN 0-8039-2607-3

ISBN 0-8039-2608-1 (pbk.)

FIRST PRINTING



SAGE PUBLICATIONS

The Publishers of Professional Social Science
Beverly Hills Newbury Park London New Delhi

Chapter 10

EVALUATING CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN The Portland Commercial Demonstration Project

PAUL J. LAVRAKAS
JAMES W. KUSHMUK

This chapter discusses our respective evaluations of the Crime Prevention Through Environmental Design (CPTED) Commercial Demonstration Project, which was implemented in a commercial strip in Portland, Oregon, from 1974 through 1979. The first effort to evaluate this project was conducted in 1977 (Lavrakas, Normoyle, & Wagener, 1978), with a follow-up evaluation in 1979-1980 (Kushmuk & Whittemore, 1981). Both evaluations were funded by the National Institute of Justice (NIJ), and each was planned and conducted "post hoc"; that is, there was no opportunity to gather a broad range of pretest data prior to the implementation of the CPTED Demonstration Project. Furthermore implementation of CPTED strategies was "uncontrolled"; that is, the "treatment" was a *naturalistic process* depending in large part on the local political environment in Portland. As such, a "theory-based evaluation" (see Lavrakas, 1978) was conducted to maximize our ability to determine whether or not CPTED effort (input variables) led to the attainment of CPTED proximate goals (intervening variables), and, if so, whether or not this led to the attainment of CPTED ultimate goals (impact variables).

AUTHORS' NOTE: The 1977 evaluation reported here was supported by Contract J-LEAA-022-74, awarded to the Westinghouse Electric Corporation by the National Institute of Law Enforcement and Criminal Justice, U.S. Department of Justice. The reevaluation was supported by Grant 79-NI-AX-0061, awarded to the Office of Justice Planning and Evaluation, City of Portland, by the National Institute of Justice, U.S. Department of Justice. Both awards were made under the Omnibus Safe Streets Act of 1968, as amended. Points of view or opinions stated in this chapter are those of the authors, and do not necessarily represent the official position or policies of the U.S. Department of Justice or the authors' agencies of employment.

goals (intervening variables), and, if so, whether or not this led to the attainment of CPTED ultimate goals (impact variables).

CPTED THEORY AND PROJECT PLANNING

In 1974, a consortium of firms headed by the Westinghouse Electric Corporation received a contract from NIJ (then named the National Institute of Law Enforcement and Criminal Justice) to begin planning demonstration projects that would further develop and test the evolving theory of CPTED. This theory was based on earlier work (such as Jacobs, 1961; and Newman's, 1972, work on "defensible space") linking the design of the physical environment to the behavior of the users of that environment (including both the offender and non-offender populations). Westinghouse planned tests of CPTED in three different environments: a residential neighborhood, a public high school, and a commercial strip. The commercial demonstration project was implemented in the Union Avenue Corridor (UAC), a 3.5-mile long urban arterial commercial strip located in the northeast section of Portland, Oregon.

A commercial strip (UAC) was selected as one of the CPTED demonstration project sites because of its particular susceptibility to crime problems, due in part to its configuration, the types of enterprises located there, and the general changes in shopping trends that have had a negative impact upon the vitality of these commercial areas (Kaplan, O'Kane, Lavrakas, & Hoover, 1978). These strips include those business areas that have traditionally developed along major streets and highways and that provide services to the users of those thoroughfares as well as to nearby residents. In the UAC, portions of the streets that connected the strip with other shopping districts and with surrounding residential areas were also considered as part of the target area.

The UAC strip runs from Portland's central business district to near the city's northern boundary (the Columbia River). This strip was once a thriving business area along one of the city's four major north-south routes. By the early 1960s, however, UAC had passed its business "boom" period, and became marred by many vacant lots, boarded-over windows, derelict structures, and night spots of dubious repute. Potential investors were often reluctant to invest in the area due to the specter of crime and fear. This downturn in the viability of the UAC business community was exacerbated by Portland's civil (racial) disturbances in the late 1960s.

The CPTED funding that Westinghouse received from NIJ did not include the funding needed for project implementation at the demonstration sites. Rather, Westinghouse assistance to the city of Portland included grant development and other "funds-leveraging activities" to help the city secure implementation funding for UAC. At the time the idea of launching a CPTED demonstration project was presented to Portland officials (1974), there was no model to present as an example of what might be expected. CPTED was a new program based largely upon theories and narrowly focused case studies advanced by criminologists, behaviorists, and environmental specialists. The aim was to create a planning model that would take into account local problems, priorities, and resources, as well as to provide opportunities to evaluate the implementation of CPTED strategies. The overall approach received a favorable response from Portland officials, and the mayor authorized the Westinghouse consortium to develop a preliminary CPTED plan for local review.

Building upon the previous work (Jeffery, 1971; Newman, 1972; Scarr, 1973; Reppetto, 1974) the Westinghouse consortium developed a CPTED Commercial Demonstration Plan for Portland (Bell, Day, Tien, & Hanes, 1976). The primary emphasis of this plan was on strategies that were designed to reinforce desirable existing activities, eliminate undesirable ones, create new positive activities, and otherwise support desirable use patterns so that crime prevention theoretically would become an integral part of the UAC environment. There were four operating hypotheses that provided the underlying rationale for all CPTED implementation strategies: access control, surveillance, activity support, and motivation reinforcement (see Kaplan et al., 1978).

Access Control. These strategies focused on decreasing opportunity for crime by keeping potential offenders out of particular areas. In its physical form, access control is manifested through the deployment of target-hardening anticrime devices, such as locks, bars, and alarms. Access control can also be created by the deployment of psychological barriers to the would-be offender: for example, use of timers on indoor lighting at night, and "territorial markers" (signs, hedges, and parkways).

Surveillance. Surveillance strategies are meant to increase the ability of nonoffenders to view (notice) a suspicious person/event or the commission of a crime. In turn, this increased capacity for surveillance is assumed to increase the "risk" perceived by potential offenders, thus creating a deterrence effect. A distinction can be made between formal and natural (informal) surveillance strategies. Formal

surveillance is an organized effort carried out by police or citizen patrols to convey to potential offenders the impression that surveillance is routinely occurring and highly likely at any given location. Formal surveillance is also manifested through mechanical devices, such as closed-circuit television. Natural surveillance is theoretically achieved through design strategies, such as channeling the flow of pedestrian activity to put more observers near potential crime areas, or by creating a greater capacity for observation by, for example, installing more windows along the street sides of buildings, using bus shelters with see-through plastic walls, and trimming trees and shrubs around residential structures.

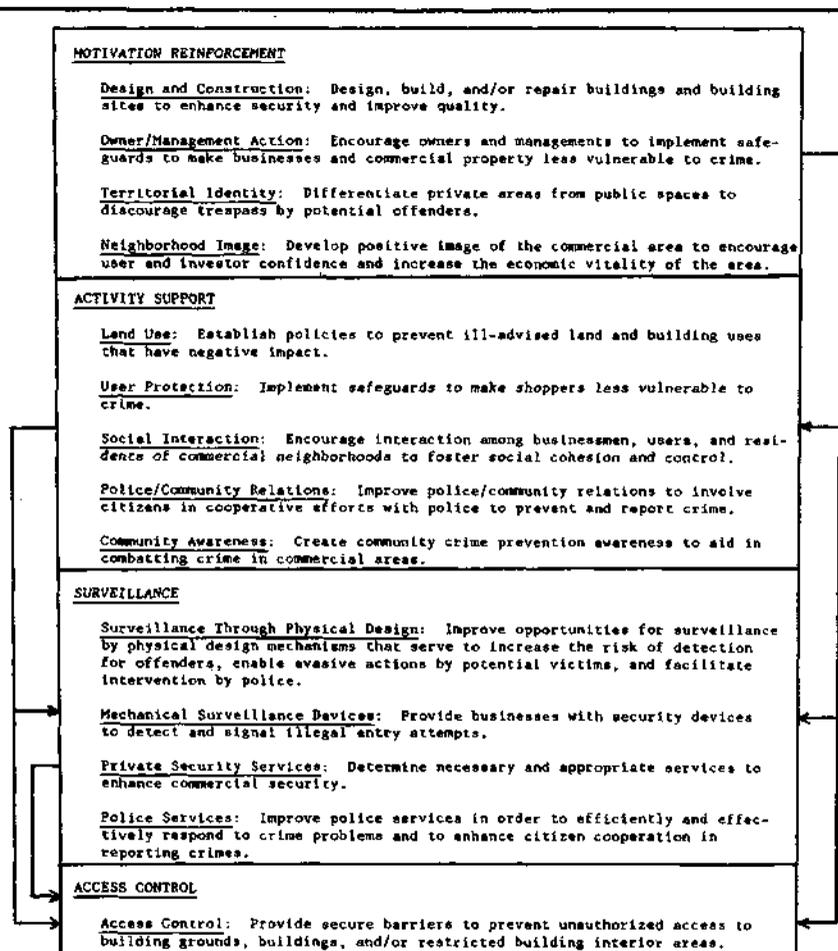
Activity Support. These strategies are aimed at reinforcing existing and new behavior patterns that make effective use of the built environment. This follows the reasoning that in every community there are resources and activities capable of sustaining constructive community crime prevention. Support of these activities is hypothesized to bring a vital and coalescing improvement to a given community and to result in a reduction of the vulnerable social and physical elements that permit criminal activity.

Motivation Reinforcement. In contrast to those anticrime strategies that aim to make offenders' operations more difficult, motivation reinforcement strategies strive to affect offender motivation and, hence, behavior relative to the designed environment by increasing the perceived risk of apprehension and by reducing the criminal payoff. These strategies also seek to positively reinforce the motivation of citizens in general to play a more active prevention role by enhancing the community's image and identity.

These four key operating hypotheses are not mutually exclusive; together they formed the basis upon which the Westinghouse consortium laid out a set of project objectives for the CPTED commercial demonstration in Portland (see Figure 10.1). In turn, these theory-based objectives provided the foundation upon which to build the interrelated anticrime strategies that were hypothesized to lead to a reduction of crime and fear, and a general improvement of the quality of life in UAC.

CPTED Commercial Demonstration: 1974-1977

After a year of working with Portland officials, the Westinghouse consortium developed a demonstration plan for UAC (Bell et al., 1976) that recommended seven CPTED strategies, with no assurances



SOURCE: Kaplan et al. (1978).

NOTE: The four key hypotheses are not mutually exclusive. Surveillance objectives also serve to control access; activity support involves surveillance; and motivation reinforcement provides support for the other three hypotheses.

Figure 10.1 Relationship of Commercial Environment Objectives to CPTED Operating Hypotheses

that all (or any) would be implemented or that the final demonstration would be limited to these activities alone. These seven strategies were as follows:

- (1) creation of a "Safe Streets for People" component
- (2) creation of a Residential Activity Center and miniplazas along Union Avenue

- (3) general promotion of UAC
- (4) improved transportation both into and out of UAC
- (5) security services provided by a UAC security adviser
- (6) increased law enforcement support throughout UAC
- (7) development of a "Cash Off the Streets" program

The first two strategies involved physical redesign of certain streets and intersections, improved street lighting, massive road improvements on Union Avenue, and social strategies intended to increase constructive use of the built environment. These changes were reasoned to improve UAC safety, make it more attractive, and provide activity nodes for residents and shoppers. Corridor promotion was concerned with planned community events (for example, ethnic market days), organization and support of the business and residential communities, and general economic development. In order to improve transportation services, plans were made to upgrade waiting areas at bus stops and provide special services for elderly and handicapped residents. A full-time security adviser was to be responsible for conducting security surveys of UAC business establishments and residences. This individual would also make crime prevention presentations throughout the target area, and would provide technical assistance to the city's redevelopment plan for Union Avenue. As a means of increasing law enforcement support, improved police patrols, revision of patrol districts, and creation of a UAC storefront police precinct were proposed. The final strategy was "Cash Off the Streets," which was intended to motivate citizens (especially older residents) not to carry any substantial amount of currency in UAC, while simultaneously advertising the program so that the all residents, including the local offender population, could not help but be aware of it.

The successful implementation of these strategies depended on a number of city agencies working together toward common goals. As it came to be implemented, the UAC CPTED demonstration was closely tied in with the Portland Planning Bureau's decision to deploy a Union Avenue Redevelopment Program (along the entire thoroughfare, not just in the target area), and the Portland Police Department's decision to create an active Crime Prevention Bureau serving the entire city. A Westinghouse on-site coordinator was hired in March 1975 to facilitate the interworkings of the various local agencies in UAC. A new coordinator was hired in mid-1976 and worked through 1977, which marked the end of the Westinghouse consortium's assistance to the UAC CPTED demonstration.

In early 1978, the first evaluation study was completed (Lavrakas et al., 1978). As of that date, the following anticrime strategies had been implemented, and constituted the CPTED "treatment" received by UAC:

- (1) The Crime Prevention Bureau of the Portland Police performed security surveys of all UAC business establishments (approximately 210) and of approximately 160 target area residences, with a sergeant serving informally as UAC's security adviser.
- (2) The city had received a \$440,000 LEAA grant to install high-intensity lights along Union Avenue and in-fill lighting along residential side streets, with the work completed in early 1977.
- (3) A "Safe Street for People" was constructed along a cross street that was to link a planned senior citizens' housing complex with Union Avenue. The existing street was repaved, curbs were redesigned to necessitate slow vehicular speeds, sidewalks were repaved with walk-up ramps at curbs, and physical amenities and landscaping were provided. A second "Safe Street" was constructed along another cross street that linked Union Avenue with Woodlawn Park, and recreational facilities at the park were improved, including increased lighting.
- (4) New bus shelters, designed to enhance natural surveillance, were installed throughout UAC.
- (5) A business proprietors' organization, the Northeast Business Boosters, was organized and nurtured through the efforts of the various local CPTED actors.
- (6) A "Clean-Up Day" and "Sunday Market" were organized to improve the physical appearance of UAC and to promote community spirit.

In addition, technical assistance was provided by the consortium's on-site coordinator and the police sergeant in developing other planned improvements that had not been implemented as of early 1978. These included an 80-unit housing project for the elderly, a \$4.5 million road improvement program, and efforts to attract new businesses to locate in the target area.

CPTED Commercial Demonstration: 1978-1981

The reevaluation of the commercial CPTED demonstration (Kushmuk & Whittemore, 1981) documented significant activities and

changes occurring on Union Avenue for a three-year period following the facilitative support of the Westinghouse consortium. This study focuses on the progress of activities initiated during the Westinghouse phase, the maintenance of favorable environmental changes reported in the first evaluation, and new and spin-off activities.

The most significant and visible change that occurred during this follow-up period was the start of the UAC street redesign at an increased cost of \$9.5 million in state highway funds. Construction was nearly completed by the end of 1981. The physical appearance of the corridor was improved by way of this renovation, which included landscaped median strips, left-turn-only lanes, and the prohibition of on-street parking on Union Avenue, a change that was meant to increase traffic flow.

The new street was an important symbol of resurgence for Union Avenue, yet it stood in contrast to the strip itself, which was still marred by abandoned businesses and many vacant lots, most certainly signs of economic hard times for small businesses in general. One design criticism of the new street configuration was raised. The median strip and faster traffic tended to create a psychological barrier, if not a physical one, between the east and west sides of Union Avenue, rather than emphasizing the natural "territorial" boundaries of the distinct neighborhoods which ran north to south. For example, there were no physical markers installed to set off the ethnically rich middle section of the corridor from the north and south ends. Furthermore, the miniplazas, residential activity nodes, or other design features recommended by the Westinghouse consortium to increase pedestrian traffic, identification, and feelings of safety, were not realized in the final reconstruction of Union Avenue.

The reevaluation in tracking the maintenance of other CPTED activities and environmental changes found a general pattern of stabilization after the Westinghouse presence ended. Business proprietors and residents judged by the appearance of Union Avenue to have stayed the same or improved slightly, but almost half of the businesspeople believed that the somewhat derelict appearance of Union Avenue was still a factor negatively affecting their businesses. Some small, but important, businesses were convinced to locate on Union Avenue as economic development efforts continued by the city's Portland Development Commission.

Two large concerns, a Veterans Administration hospital and a senior citizens' housing project, that had been courted by Westinghouse failed to materialize. Instead, site selection for the V.A. hospital was made in another, more prominent, area of the city. And

unfortunately, the "Safe Street for People" that had been constructed to link Union Avenue to these proposed facilities now led to nothing more than vacant lots. This well-lighted but infrequently used "Safe Street" stood as a reminder of how difficult it was to maneuver the large-scale CPTED physical design strategies fully into place; that is, those that required interagency cooperation and considerable long-term political support.

There were no new promotional events aside from the two that occurred in 1977. The new street lights and bus shelters were well maintained during the follow-up. Some new businesses opened, but others closed. In general, those with knowledge of Union Avenue's past and present judged the commercial area to be in a stabilization phase, trying to hold its own. There were still some concerns about crime and safety, but now of equal or greater concern was the poor state of the economy in general. There were, too, some feelings of disillusionment—a belief that more had been promised than delivered by Westinghouse and the city government. Some business proprietors and leaders perceived the city's energies to be shifted away from Union Avenue and toward a newly gentrified area closer to downtown.

In contrast, there was some evidence of new activities and program spin-offs. A lower-income housing project was built near UAC that employed the CPTED concepts of target hardening, lighting, natural surveillance, and outdoor activity nodes for residents within the bounds of a high open-bar iron fence. The design appeared to be secure against crime, yet without an overly fortified look. A condominium project was built near Woodlawn Park, which was connected to Union Avenue by the second "Safe Street." Although attractive in appearance and a positive influence on the neighborhood, this project seemingly did not employ CPTED design features.

THE 1977 EVALUATION

Evaluation Planning

The first evaluation of the UAC CPTED demonstration was conducted by Lavrakas et al. (1978), at a time when the demonstration strategies were mostly implemented, and thus by necessity required "post hoc" evaluative techniques. The methods chosen were designed to determine (a) the extent to which the Commercial Demonstration was a valid implementation of CPTED theory, and (b) the extent to

which any measurable attainment of CPTED's ultimate goals could be linked to the UAC demonstration.

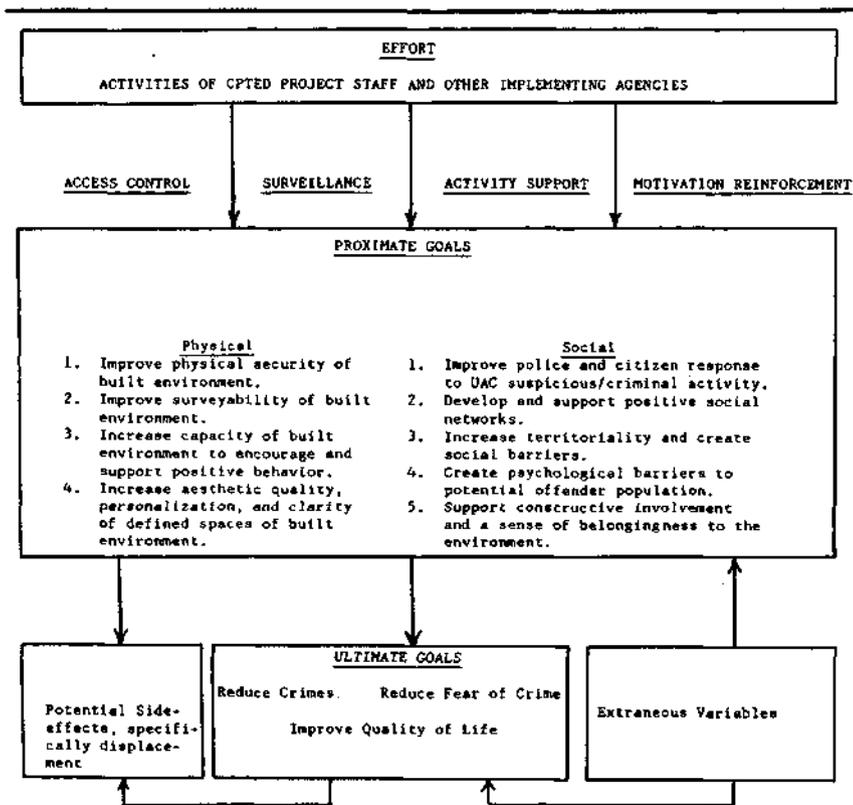
In the absence of control over "when" and "where" CPTED strategies were implemented, the use of one overall quasi-experimental evaluation design was not possible. Rather, a "theory-based" evaluation plan was developed. To develop this type of evaluation plan, it was first necessary to identify clearly the "hypothesized CPTED process" for UAC in an evaluation framework (see Figure 10.2). This framework delineated the *measurement points* associated with CPTED theory. These measurement points are the constructs/variables related to (a) the effort that was expended, (b) the proximate goals the effort tried to bring about, and (c) the ultimate goals that were eventually to be attained.

Effort Measurement Points included a description (number, type, quality) of project activities, a documentation of the costs associated with these activities, and an assessment of the quantity and quality of the immediate changes in UAC's environment. As shown in Figure 10.2, Proximate Goal Measurement Points are manifestations of the four CPTED operating hypotheses: access control, surveillance, activity support, and motivation reinforcement. An assessment of these measurement points is central to the evaluation of the CPTED process, because proximate goals are the bridges that link CPTED effort (that is, demonstration activity) to ultimate goals. Unless it can be shown that CPTED proximate goals were attained, it would not be possible with this type of an evaluation to attribute any attainment of ultimate goals to the CPTED demonstration. This reasoning follows from Weiss's (1972) distinction between *program* failure or success and *theory* failure or success: that is, unless it was found that the UAC demonstration was a valid implementation of CPTED theory, there could be no valid test of the theory.

Once the measurement points for the evaluation were identified, the approach of "multiple operationalization" (see Crano & Brewer, 1973) was taken in determining the specific types of data to gather. In this way, the findings of the evaluation would not rest on any one method of data collection. Instead, a number of data collection techniques were employed to gather data elements for each of the measurement points.¹

Data Collection Methodology

Retrieval of UAC Crime Reports. Crime reports from the crime analysis files of the police department were retrieved, by month, for



SOURCE: Lavrakas et al. (1978).

Figure 10.2 CPTED Evaluation Framework

the period October 1974 through September 1977. This had to be done by hand screening all reported crimes in northeast Portland to find those that occurred within the target area boundaries. This was done for commercial burglary, commercial robbery, purse-snatching, street robbery, street assault, rape, and residential burglary.

Interviews with UAC Business Proprietors. Three independent samples of randomly chosen UAC business proprietors were interviewed in person, in the spring ($n = 49$), summer ($n = 37$), and fall ($n = 48$) of 1977, to determine their crime-related experiences, perceptions, and reactions. The questionnaire took approximately 30 minutes to complete.

Interviews with UAC Residents. Two randomly chosen independent samples of residents of the UAC target areas (that is, living within three blocks of Union Avenue) were interviewed via telephone in the spring ($n = 97$) and fall ($n = 80$) of 1977. Residents were asked

similar, though fewer, questions as those asked of the business proprietors. The questionnaire took about 15 minutes to complete.

Interviews with Key Persons. In December 1977, in-person interviews were conducted with 16 individuals with special knowledge about UAC, including business and community leaders, and patrol officers from the Northeast Police District. The interviews lasted 30-60 minutes and these key persons were asked to make a number of "expert" judgments about UAC's past, present, and future conditions.

UAC Observations. A series of evening observations (lasting about 30 minutes each) were conducted in UAC to record the pedestrian activity level from April 1977 through November 1977. For each evening observation, the same fixed route was traveled by an observer who was a passenger in an automobile. Throughout the observation run, most of which traveled along Union Avenue, the observer recorded (via tape recorder) the gender, race, age grouping, and activity of all visible pedestrians. A total of 73 evening observations were performed, with time of observation randomly scheduled between 6:00 p.m. and 12:00 a.m. Temperature and precipitation data for each evening were later merged with the recorded data for each observation run.

Retrieval of Economic Data. Access was granted to tax files in Portland's Business License Division, to allow for the retrieval of data about net and gross annual sales of UAC businesses. Files for 350 existing or once-existing UAC businesses were reviewed.

Results and Conclusions

Proximate Goals. Based on a synthesis of the various data that were gathered to measure the attainment of the proximate goals (see Figure 10.2), the authors of the first evaluation report assessed the extent to which each of the goals were attained as a direct result of the CPTED project activities. These judgments are shown in Table 10.1.

Due primarily to the comprehensive security surveys and follow-up surveys performed by the Portland Police at all UAC businesses, it was concluded that the levels of physical security reported by the business proprietors who were interviewed represented a very significant increase in the physical security of the UAC business community. On the other hand, findings indicated that despite the 160 security surveys provided to residences in the UAC target area, the overall physical security of residential structures did not improve significantly.

With the addition of high-intensity street lighting along Union Avenue and the addition of in-fill lighting on residential streets, and

TABLE 10.1 Degree of Attainment of CPTED Proximate Goals

<i>Proximate Goals</i>	<i>Degree of Attainment</i>
Physical environment	
increased physical security	high (business); low (residential)
increased surveillability	moderate
increased potential for usability	low
Improvement in psychological dimensions	low
Social environment	
improved crime prevention behavior	moderate (business); low (residential)
improved law enforcement response	no change necessary
increased community cohesiveness and social networks	high (business); low (residential)
increased psychological barriers	low-moderate
increased usage of built environment	low
increased identification with UAC	low-moderate

SOURCE: Lavrakas et al. (1978).

based on the results of the various interviews, the evaluators concluded that there was a moderately significant improvement in the surveillability of the UAC built environment.

Despite the intentions of the original demonstration plan (Bell et al., 1976), little was accomplished to make the overall physical environment more usable by the nonoffender population. There were some locations in which improvements were made (for example, the two Safe Streets for People), but considering the target area in its entirety, one could, at best, conclude that a low level of increased potential usability of the built environment had been achieved. Similarly, there was little evidence that psychological dimensions of the physical environment (such as aesthetics, personalization, and clarity of defined spaces) had changed in any measurable way. Findings from the various interviews and from the observational data supported this conclusion.

Similar to the findings regarding a meaningful increase in the physical security of the UAC environment, survey results indicated that at businesses a significant increase in crime prevention measures was realized. In contrast, interviews with residents did not indicate much change related to any CPTED project activities. In terms of the Portland police, and despite the recommendations in the demonstration plan, the authors concluded that no change was necessary, that is, law enforcement response in UAC was well organized and as effective as could be expected within the inherent limits of policing.

One of the most significant proximate goal attainments was the greatly increased level of "social cohesiveness" in the UAC business

community, as manifested by the revitalization of the Northeast Business Boosters. On the other hand, there was little evidence of any notable increase in "cohesion" within the residential community. In fact, there was some suggestive evidence that the black and white communities were becoming more polarized—an issue that none of the CPTED strategies addressed.

Some evidence was found to suggest possible improvement in the sociopsychological dimensions, such as increased identification with the area as reflected by greater feelings of territoriality. But the observational data did not indicate any overall increase in the actual usage of the UAC environment by pedestrians. There was evidence, though, that blacks were a greater proportion of pedestrians compared to whites, even though the percentage of UAC residents who were black remained basically unchanged.

Based on this assessment of proximate goal attainment, the authors of the first evaluation concluded that the implementation of CPTED design strategies in UAC should be regarded as a moderate program success in the business environment and a lesser success in the residential environment. They went on to say:

It is beyond the scope and resources of this evaluation to carefully document whether more should have been accomplished, [but] there are many reasons to state that a good start has been made to implement the CPTED concept in UAC. (Lavrakas et al., 1978, p. 55)

Ultimate Goals. Given that the demonstration was judged to be a moderate "program success," it was reasoned that there was enough attainment of proximate goals to justify an investigation of the attainment of CPTED ultimate goals (that is, a test for success or failure of CPTED theory). Data gathered via the various methods provided multiple ways of testing for CPTED's effects on UAC's crime rates, levels of fear of crime, the business community's viability, and the general quality of life in UAC.

Using the 36 months of reported crime data retrieved from the police department files, a set of time-series analyses (Bower, Padia, & Glass, 1974) were performed to determine whether or not there was any change in reported crime rates. Linked to the security surveys of businesses, there was a significant 48% decrease in commercial burglaries following the start of the security surveys. For this same time period, there were far smaller decreases in residential burglary (14% drop) and commercial robbery (17% drop). Similarly, the

citywide rate for burglary dropped slightly (about 10%). Because the security surveys of UAC businesses should have shown an impact primarily on commercial burglary, it was concluded that this pattern of results showed a significant reduction in crime (commercial burglary) directly related to CPTED activities. Interviews with businesspersons, key persons, and residents supported this conclusion.

The observational data that were collected showed no significant change (increase or decrease) in pedestrian usage of the UAC environment. Since usage of the environment is so closely linked to fear of crime (see Lavrakas, 1982), these observational data did not suggest any decrease in fear levels. Results from the various surveys, however, suggested that there had been a small decrease in fear of crime throughout UAC since the early 1970s, but one that had not been large enough to rid the community of its reputation as a "high-crime" area.

Information that was retrieved from the Business License Division files suggested possible improvements in the general viability of UAC's business community, but there was no certainty after adjusting for the effects of inflation that there was any "real" growth. In contrast, through survey data there was a consistent finding that businesspersons and key persons believed the viability of UAC had improved significantly since the early 1970s and at least some of this improvement was attributable to the CPTED demonstration. Similarly, data from the various types of interviews led to the conclusion that the overall quality of life in UAC had improved in the past few years compared to before 1974, and that at least some of this improvement, especially a renewed confidence in community, should be claimed as a CPTED success.

In sum, the first evaluation judged the CPTED Commercial Demonstration (1974-1977) a qualified "theory success." From a criminal justice research standpoint, it was suggested that the CPTED concept merited further testing, and from the standpoint of the city of Portland, it was suggested that the UAC CPTED program be continued.

THE 1980 REEVALUATION

The second evaluation of the CPTED Commercial Demonstration (Kushmuk & Whittemore, 1981) was performed by Portland's criminal justice planning office with funds provided by the National Institute of Justice. The federal government's renewed interest in

CPTED stemmed from a major review of "urban reactions to crime" programs (R. Rau, personal communication, 1979).² Given the focus of CPTED theory on enduring and institutional changes, a follow-up study was a welcomed and rare opportunity to study the longer-term effects of anticrime strategies.

The evaluation design and methods of the earlier Lavrakas et al. (1978) study were essentially replicated, that is, the focus of the reevaluation was on the CPTED proximate and ultimate goals at the levels of "program" and "theory" success. A major theme of the reevaluation was the "institutionalization" of CPTED, a hypothesized long-term outcome of the Westinghouse CPTED effort (Kaplan et al., 1978). CPTED goals were studied as enduring environmental conditions by looking at the sustained effects beyond the facilitative efforts of the Westinghouse consortium. Given the opportunity for a retrospective study, the investigators were also highly interested in judging which commercial strategies and combinations of strategies were the most successful in the long run, and in drawing some lessons from the Portland experience for future programs and policies.

DATA COLLECTION METHODOLOGY

Monthly reported crime rates were collected by hand for a full 60 months (1975-1979) from the Records Division of the Portland Police Department. This covered a period before, during, and after the major CPTED initiatives. Using standard UCR crime definitions, data were collected for commercial and residential burglary, commercial robbery, and "street" crimes (noncommercial robbery, assault, purse-snatching, and rape).³ Crime figures for UAC (the commercial strip plus adjacent residential neighborhoods) and citywide minus UAC were collected, the latter serving as a "control group."

The reevaluation also replicated the 1977 surveys of business proprietors ($n = 78$, interviewed in person in late 1979) and residents ($n = 101$, interviewed via telephone in mid-1980). These more recent attitudes and perceptions were compared to the 1977 results in the areas of environmental conditions, social cohesion, fear of crime, and quality of life. Unfortunately, the business proprietors and residents surveyed in 1977 could not be identified and reinterviewed, thereby employing a panel survey design; instead, new random samples of business proprietors and residents were selected. Information on business openings and closings and commercial property values was also collected.

The final types of information used in the reevaluation included the Westinghouse source documents previously cited in this chapter, and, more important, interviews with city officials, police officials, community and business leaders, those who implemented CPTED strategies, and others with knowledge of or involvement in Union Avenue's recent past and present. These perceptions were very important in understanding the mechanisms of CPTED as a major commercial redevelopment effort. Of particular interest was the type of leadership and sustained effort required to actualize CPTED improvements fully.

Results

The physical improvements that followed the years of the Westinghouse consortium's efforts have been discussed above. Discussion here is limited to the nature of the enduring attainment of one CPTED proximate goal, social cohesion, and the three ultimate goals of reduced crime, reduced fear of crime, and improved quality of life.

Social Cohesion. Social cohesion as it was manifested within the UAC business community took the form of two highly successful CPTED strategies: organization of concerned UAC business proprietors into a group called the Northeast Business Boosters (NEBB) in 1976, and Union Avenue security adviser services. These two strategies were highly interrelated; that is, the police sergeant serving as security adviser was, in fact, the same individual who brought NEBB to life. These two strategies coalesced the business community around the common concerns of safety and business vitality. During the follow-up period, it was found that both of these activities had become highly institutionalized. NEBB continued to meet monthly, with attendance averaging 20-25 UAC and other northeast Portland businesspersons. Their primary focus had shifted somewhat from crime concerns to economic development. The security adviser position, abolished in 1977 because of a lack of federal funds, was not renewed, but the police department continued to provide the same services through its Community Crime Prevention Division. This sustained the positive and cooperative relationship that had been established between businesspeople and the police.

Reinforcing this conclusion was the finding from the 1979 survey of UAC business proprietors that they had maintained their target-hardening anticrime behaviors since 1977. The commercial environ-

ment was judged to be as secure as it was following the 1976-1977 security survey and street lighting programs. Furthermore, the business community's general attitudes toward the police were still quite favorable in 1979.

As stated before, the CPTED Commercial Demonstration was not primarily intended to bring about major changes in residential neighborhoods, yet the adjacent neighborhoods were defined as part of UAC. Thus, included in the original planning were strategies such as activity centers, "Safe Streets," and ethnic pride events: Residents were not only potential users of UAC businesses but also an important part of the "eyes on the street" of a community mobilized against crime. As was found by the 1977 evaluation, the reevaluation found little evidence of any attainment of increased residential cohesiveness. No further efforts were made to organize existing neighborhood groups against crime in a way that was accomplished through NEBB for the business community. The 1980 residential survey also documented racial polarization in attitudes toward the police. In 1977, similar proportions of white and black UAC residents expressed unfavorable attitudes toward the way the police were doing their job (about one in five). In 1980, however, perceptions had changed along racial lines, with unfavorable attitudes held by merely 7% of whites compared to 36% of blacks. Both during and after the reevaluation some significant events occurred regarding complaints of police harassment and excessive use of force that confirmed that blacks' dissatisfaction with the police was dividing the community.

In sum, coalescing the UAC residential community was a far more difficult task than for the business community, given the historical events that were unfolding in northeast Portland. The importance of accommodating racial differences and defusing racial tensions while trying to mobilize a community against crime has also been noted in other community anticrime evaluations (see Lavrakas & Maier, 1984). Unlike a business community that often shares a common, and thus a unifying, interest in "profits" regardless of the racial makeup of its members, racial differences among residents seem to constitute a major obstacle that anticrime programs must overcome in an effort to attain the CPTED proximate goal of community cohesion.

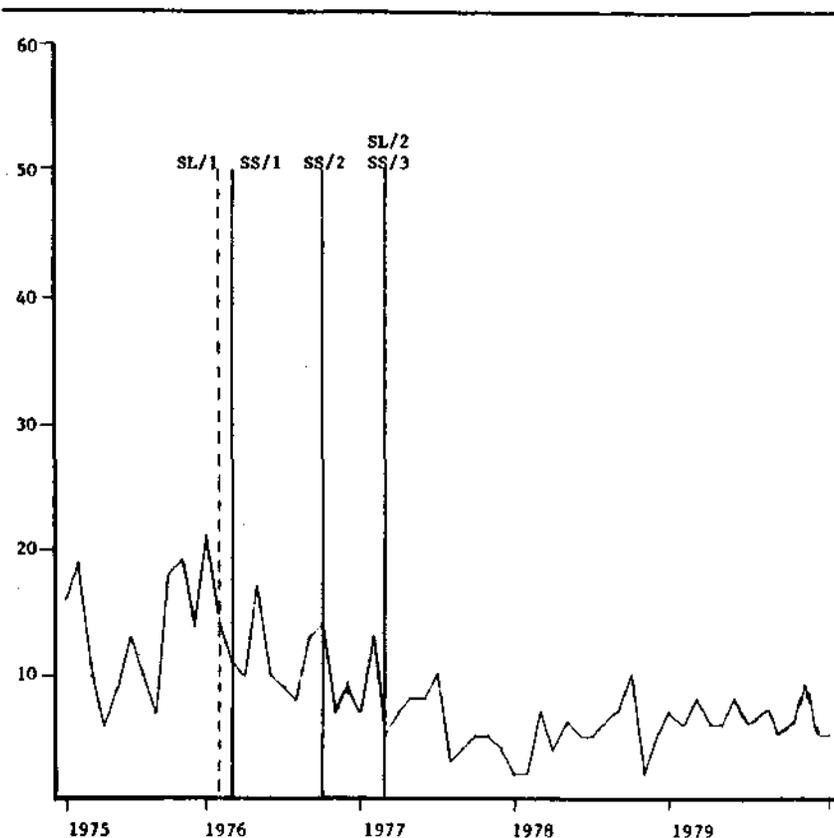
Level of Crime. Two of the CPTED strategies implemented in 1976-1977 were amenable to a test of CPTED's potential to reduce crime. Unfortunately, the two interventions, commercial security surveys and UAC street lighting, had occurred during overlapping time periods, and thus for the purposes of the reevaluation it was concluded that their relative effects could not be effectively partialled out.

Using a broader set of monthly crime statistics than had been available to the 1977 evaluation, time-series analyses (Box & Jenkins, 1976) were performed testing for the joint effects of these interventions (Griswold, Eagle, & Schneider, 1980).

Traditional ordinary least squares (OLS) regression was performed, testing for each intervention month at a time, but the more conclusive test was ARIMA modeling for the 60-month time series. For commercial robbery, an abrupt intervention effect of the initial security surveys was hypothesized and tested. For both commercial and residential burglary, it was hypothesized that crime reductions would result from both the security surveys and street lighting (implemented over a 14-month period) so that a gradual effect through completion of the street lighting project was tested. Since no information was available on the schedule of street light installation, a linear effect was assumed. UAC street crime reductions were also tested as a gradual effect beginning the first month of street light installation through completion. Time-series analyses were performed for UAC crime, non-UAC crime (citywide minus UAC), the ratio of UAC/non-UAC crime, and, in the case of street crimes, additional analyses for central UAC (the busy street life area), north-south UAC, and nighttime UAC. The most parsimonious ARIMA models were selected and tested for, using procedures recommended by McCleary and Hay (1979).

The most important finding from the analyses was a reduction in commercial burglaries attributable to the combined commercial security survey and street lighting interventions, a conclusion supported by both the OLS regression and the 60-month time-series analyses. Commercial burglaries in UAC were reduced (ARIMA [0,1,1]; $t = 3.35, p < .01$) and commercial burglaries in the rest of the city showed a nonsignificant change (see Figure 10.3). The test on the ratio of UAC/non-UAC commercial burglaries also indicated a significant reduction (ARIMA [2, 1,1]; $t = 2.23, p < .05$), providing further evidence that the commercial burglary reduction was unique to UAC businesses. The comparative monthly percentages of UAC/non-UAC crime were 3.9% for the preintervention data compared to 2.5% for the remaining months (see Figure 10.4)

The analyses for street crimes did not yield a UAC crime-reduction effect attributable to the street lighting. A significant reduction for central UAC street crimes was found (ARIMA [0, 0, 0]; $t = 2.29, p < .05$), along with marginal effects for nighttime UAC and total UAC. However, the most important test of a UAC/non-UAC reduction did not yield a significant effect.

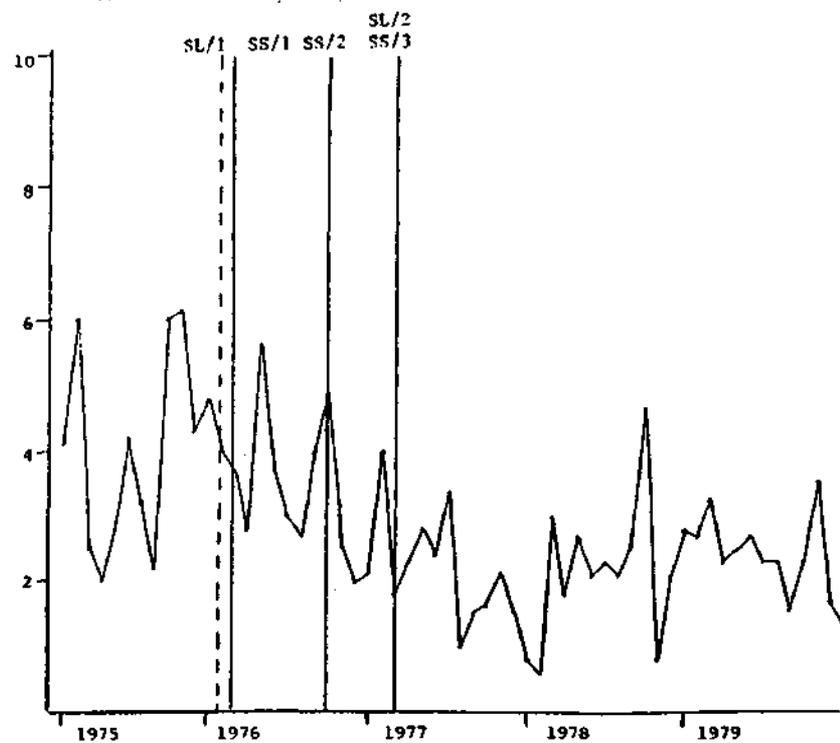


NOTE: SL/1 = beginning of street lighting installation; SL/2 = completion of street lighting installation; SS/1 = first security surveys (initial survey); SS/2 = second security surveys (first follow-up); SS/3 = third security surveys (second follow-up).

Figure 10.3 Monthly UAC Commercial Burglaries

For the remaining two crimes, residential burglary and commercial robbery, no significant changes were found, which could be attributed to the lack of CPTED interventions specifically targeted to have an impact on these crimes. Furthermore, there was no evidence of a displacement effect (increased residential burglary) or a diffusion effect (decreased residential burglary), unlike the suggestive findings of the 1977 evaluation. Finally, there was no effect of the security survey program on commercial robbery.

Fear of Crime. Fear of crime was studied through the data gathered in interviews with business proprietors and residents that reflected self-reported fear in UAC during the daytime and nighttime, and



NOTE: SL/1 = beginning of street lighting installation; SL/2 = completion of street lighting installation; SS/1 = first security surveys (initial survey); SS/2 = second security surveys (first follow-up); SS/3 = third security surveys (second follow-up).

Figure 10.4 Monthly UAC/Portland Percentages of Commercial Burglaries

whether or not any concerns or fears of being victimized affected use of the Union Avenue area. In general, there was little change between these fear measures and those found in the 1977 evaluation. Residents and business proprietors were still somewhat fearful, especially during the night hours. (The reader is reminded that both the evaluations gathered business and residential interviews *after* the security survey and street lighting interventions were completed.) The only group to show a change in fear of crime was the elderly, who expressed increased levels of fear in 1980 compared with 1977.

Quality of Life. The CPTED goal of improving the UAC quality of life was most directly addressed in the reevaluation via measures of the UAC's economic vitality. Although new businesses opened and others closed, the net effect since the early 1970s was a slow, but steady, in-

crease and stabilization in the number of operating retail and commercial establishments in UAC. Supporting this trend of economic stabilization were the findings of an independent market and economic analysis of the Union Avenue commercial district performed in 1980 (Pacific Economica, 1980). It was found that recent land prices for Union Avenue commercial property were comparable to other commercial areas of Portland, areas that traditionally had more positive reputations than the UAC. Union Avenue appeared to be catching up in its commercial real estate values.

Conclusions

Based on their reevaluation, Kushmuk and Whittimore (1981) concluded that the most successful CPTED strategies were (a) security services (including the security survey programs), (b) organization and support of the business community (Northeast Business Boosters), and (c) the street lighting program. These strategies were well implemented, became institutionalized, and had demonstrated long-term effects on reducing commercial burglaries. Of moderate success were the economic development activities. Large-scale and comprehensive improvements in the physical environment (with the exception of the redesign of Union Avenue, itself, which was accomplished independent of CPTED), promotional events, and residential social cohesion were judged to have achieved, at best, low levels of success.

Several important lessons were learned from the Portland CPTED experience. First, a realistic time line and strong political support are essential for ensuring the implementation of a design program as comprehensive in nature as CPTED tried to be. The experience in UAC suggests that at least five years of strong, consistent leadership from the inception of a CPTED program is a realistic timetable for large-scale environmental changes to be achieved. Westinghouse, as a facilitator and advocate for CPTED concepts in Union Avenue's redevelopment, and despite some disillusionment due to unfulfilled expectations, was judged to be an important catalyst for what did actually happen—this was the almost unanimous perception of UAC community leaders and local people involved in the redevelopment efforts.

Linked to this basic conclusion was the observation of the potential danger in underestimating the time and effort needed to implement large-scale CPTED-type improvements when "selling" such a program to a city. Unrealistic expectations not realized can turn into

disillusionment among business leaders and jeopardize redevelopment, which is likely to escalate the crime/fear/urban decay process further.

A second major lesson was that anticrime strategies involving complicated and concerted efforts among various government, community, and private agencies are extremely difficult to maneuver into place, regardless of the effort and leadership provided by a coordinating organization. By contrast, those that involved only a few groups with harmonious interests, and that grafted onto what was naturally present in the community (for example, the security adviser building on the Northeast Business Boosters) experienced more success within a short period of time.

A third important lesson was that changes in the social environment, in particular the residential sector, are often more difficult to accomplish than visible changes in the physical environment. In UAC, business proprietors were more easily coalesced around common crime and economic concerns than was the residential community, which was diverse and, in a racially heterogeneous area with underlying tensions, far more difficult to bring together.

THE PORTLAND CPTED EXPERIENCE IN PERSPECTIVE

More than a decade after the beginning of the Westinghouse work in Portland, we can look back on our respective evaluations of the UAC CPTED Commercial Demonstration and make some additional observations, beyond the conclusions from our 1978 and 1981 evaluation reports. As with many comprehensive anticrime programs, the UAC CPTED effort was difficult to evaluate for two basic reasons. First, the target area, the Union Avenue Corridor, had a unique combination of crime patterns, economic conditions and racial composition that precluded collecting comparable data in an "equivalent" comparison area elsewhere in Portland. Thus, the use of a traditional quasi-experimental evaluation design (see Cook & Campbell, 1976), with "treatment" and "control" commercial strips, was not a realistic option. Furthermore, had such a comparison site existed in Portland, there is little reason to believe that it could have been kept from implementing its own redevelopment efforts, perhaps even ones that employed CPTED-like concepts.

A second problem for the evaluations was the diffuse nature of the many CPTED strategies, which often had hard-to-define starting

points and ending dates. In addition to the obvious problem this caused for analyses such as the time series, it contributed to a different type of threat to the *internal validity* (see Campbell & Stanley, 1963) of the conclusions: Were the observed changes in UAC due primarily to the Westinghouse/CPTED effort, or would they have happened in due course anyway, as part of the city's urban renewal efforts?

These methodological limitations were addressed as thoroughly as possible, through the use of a comprehensive "theory-based" evaluation. This evaluation framework tried to gather the best available information to document effects at various stages of the hypothesized CPTED model (as shown in Figure 10.2). For example, the time-series tests of changes in UAC crime rates related to CPTED interventions represented the most powerful (that is, methodologically rigorous) set of data that the evaluations were able to employ. In contrast, the question of the importance of a "facilitator" (in this case Westinghouse) could be answered only with very soft data gathered from key-person interviews. In sum, however, and considering the validity of the various types of data that were available, we still are confident that the evaluations reached basically accurate (that is, internally valid) conclusions.

In addition to these considerations, the issue of the external validity of the findings is important to consider. Is the UAC CPTED experience, which occurred within a specific political and social context, generalizable to other cities, other commercial sites, and/or other climates of government support? The Union Avenue Corridor was selected as "theoretically" representative of other urban cities with pockets of decline. Since there are many such areas within other cities, the UAC experience in one sense might hold up in other settings. On the other hand, the Portland demonstration occurred at a time when there was available rather generous federal spending on anticrime programming (that is, the 1970s).

Could such a comprehensive anticrime effort succeed in these days of reduced federal support? Possibly not, but some of the Portland findings suggest that much can be accomplished by nurturing and building upon existing community resources. Businesspersons have a stake in creating an environment that is economically viable *and* free of high levels of crime and fear of crime. In Portland, the successful combination of the security adviser services (already included in the Portland Police Department's annual budget) and the Northeast Business Boosters (supported via the *voluntary* efforts of the business community) demonstrated that police agencies can work effectively with citizens in addressing common concerns *without* large additional

public expenditures. Business proprietors were more willing, and probably more able, than residents to incur the cost of target-hardening measures (for example, better locks and alarms). Although the cost savings to the UAC businesses associated with the reduction in commercial burglaries were not documented by our evaluations, there seems little doubt that the business community received a considerable payoff from investment in crime prevention measures.

Joint local public/private sector initiatives stressing the interrelationships among crime, fear of crime, and economic viability appear feasible, and are probably preferable to reliance on extensive outside (federal) funding. Such ventures are being tried in other cities since the Portland experience (see Curtis, 1985), not always under the rubric of "CPTED," but with a CPTED-like approach. We will await an assessment of these programs before further judging the validity and feasibility of CPTED in other contexts.

NOTES

1. A listing of all the data elements used in this evaluation is presented in Lavrakas et al. (1978), but is much too lengthy for presentation here.
2. Dr. Richard Rau was project monitor of the reevaluation grant for the National Institute of Justice.
3. Regarding "street" crimes, it was not possible to distinguish between stranger-to-stranger and nonstranger assaults, nor between assaults that occurred indoors versus outdoors. Hence, this category as a measure of the amount of stranger-to-stranger crime that occurred on the street in UAC is a somewhat imprecise measure.

REFERENCES

- Bell, L., Day, D., Tien, J., & Hanes, L. (1976). *CPTED Commercial Demonstration Plan* (mimeo). Arlington, VA: Westinghouse Electric Corporation.
- Bower, C. P., Padia, W. L., & Glass, G. V. (1974). *TMS: Two Fortran IV programs for analysis of time-series experiments* (mimeo). Boulder: University of Colorado.
- Box, G. & Jenkins, G. (1976). *Time series analysis: Forecasting and control*. San Francisco: Holden-Day.
- Campbell, D., & Stanley, J. (1963). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.
- Cook, T., & Campbell, D. (1976). *Quasi-experimentation: Design and analysis issues for field settings*. Chicago: Rand McNally.
- Crano, W., & Brewer, M. (1973). *Principles of research in social psychology*. New York: McGraw-Hill.

- Curtis, L. (1985). *American violence and public policy*. New Haven, CT: Yale University Press.
- Griswold, D., Eagle, J., & Schneider, A. (1980). *CPTED time series analysis of the impact of street lighting and commercial security surveys on Union Avenue crime* (mimeo). Eugene, OR: Institute for Policy Analysis.
- Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House.
- Jeffery, C. R. (1971). *Crime prevention through environmental design*. Beverly Hills, CA: Sage.
- Kaplan, H., O'Kane, K., Lavrakas, P. J., & Hoover, S. (1978). *CPTED final report on commercial demonstration in Portland, Oregon* (mimeo). Arlington, VA: Westinghouse Electric Corporation.
- Kushmuk, J., & Whittemore, S. (1981). *A re-evaluation of crime prevention through environmental design in Portland, Oregon: Executive summary*. Washington, DC: Government Printing Office.
- Lavrakas, P. J. (1978) Theory-based evaluation planning: A CPTED example. *Bellringer: A Periodic Review of Criminal Justice Evaluation*, 9/JO, 15-18.
- Lavrakas, P. J. (1982). Fear of crime and behavioral restrictions in urban and suburban neighborhoods. *Population and Environment*, 5(4), 242-264.
- Lavrakas, P. J., & Maier, R. A., Jr. (1984) Racial differences as barriers to effective community crime prevention. Paper presented at the meeting of the American Psychological Association, Toronto.
- Lavrakas, P. J., Normoyle, J., & Wagener, J. (1978). *CPTED commercial demonstration evaluation report* (mimeo). Evanston, IL: Westinghouse Electric Corporation.
- McCleary, R., & Hay, R. (1979). *Applied time series for social sciences*. Beverly Hills, CA: Sage.
- Newman, O. (1972). *Defensible space*. New York: Macmillan.
- Pacific Economica. (1980). *Inner northeast Portland: An income and market analysis*. Portland: Author.
- Repetto, T. (1974). *Residential crime*. Cambridge, MA: Ballinger.
- Scarr, H. A. (1973). *Patterns of burglary*. Washington, DC: Government Printing Office.
- Weiss, C. (1972). *Evaluation research*. Englewood Cliffs, NJ: Prentice-Hall.