

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

FINAL REPORT ON COMMERCIAL DEMONSTRATION

PORTLAND, OREGON

Prepared by:

Howard M. Kaplan
Kenneth C. O'Kane
Paul J. Lavrakas
Edward J. Pesce

May 1978

This project was supported by Contract No. J-LEAA-022-74 awarded by the Law Enforcement Assistance Administration, U. S. Department of Justice, under the Omnibus Crime Control and Safe Streets Act of 1968, as amended. Points of view or opinions stated in this document are those of the author(s) and do not necessarily represent the official position or policies of the U. S. Department of Justice.

Westinghouse Electric Corporation
Arlington, Virginia 22202

49206

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PREFACE

This report, Crime Prevention Through Environmental Design Final Report on Commercial Demonstration, Portland, Oregon, describes the process by which a CPTED demonstration project was carried out in an urban commercial-strip environment in Portland, Oregon. The results of that project, along with conclusions based on the process and the results, also are presented.

A number of CPTED documents previously prepared by Westinghouse provide the basis for much of the material in this report. Additional details can be found in those documents, namely:

- CPTED Commercial Demonstration Plan: Portland, Oregon (March 1976).
- Report on Implementation Status of CPTED Commercial Demonstration: Portland, Oregon (November 1976).
- CPTED Process Case Studies Report (March 1977) -- This report analyzed the relationships among the events, participants, and the planning process in each demonstration site, and formulated a theoretical framework of the process.
- CPTED Program Manual (May 1978) -- This multi-volume document was prepared to assist urban designers and criminal justice planners in determining

the applicability and feasibility of the CPTED concept to the solution of crime or fear-of-crime problems in various environments. The three-volume Manual also provides detailed guidance for the planning *and* implementation of a CPTED project. Volume I, the Planning and Implementation Manual, describes the planning framework and related project management activities. Volume II, the Strategies and Directives Manual, presents a catalog of strategies (or solutions to identified problems), together with examples of specific design directives to implement those strategies in a given environment. Appended to Volume II is an annotated bibliography of CPTED-related materials than can be referenced by the Manual user in search of greater detail on the historical and theoretical aspects of the CPTED concept. Volume III, the Analytic Methods Handbook, provides a catalog of analytical techniques covering such topics as the use of police crime data and CPTED project evaluation.

- CPTED Technical Guidelines in Support of the Analytic Methods Handbook (May 1978) -- This document deals with such areas of investigation and analysis as victimization

survey methods, behavioral observation methods, quantitative analytical and decisionmaking techniques, and environmental assessment methods.

The Portland demonstration was supported, in part, by a contract from the Law Enforcement Assistance Administration to a consortium of firms headed by the Westinghouse Electric Corporation. The consortium organizations represented a broad range of public and private interests, and contributed an equally broad range of skills and experience to the effort. A partial organizational list includes:

- Barton-Aschman Associates, Inc.
- Urban Systems Research and Engineering, Inc.
- Mathematica, Inc.
- Linton and Company, Inc.
- Carnegie-Mellon University.
- American Institutes for Research.
- Public Systems Evaluation, Inc.
- Richard A. Gardiner and Associates, Inc.
- Augsburg College.
- National Association of Home Builders/NAHB Research Foundation, Inc.
- Nero and Associates, Inc.
- Public Technology, Inc.
- Council of Educational Facility Planners, International.
- National League of Cities.
- National Association of Counties.

In addition, a number of key consultants were involved almost continuously in the first 2 years' CPTED activities (May 1974 through July 1976) and periodically thereafter. A partial list, with disciplines represented in parentheses, includes:

- Thomas Reppetto (Police Science, Sociology, Public Administration).
- James Tien (Systems Analysis).
- Larry Bell (Architecture, Industrial Design, Urban Planning).
- John Zeisel (Sociology, School Security Design).
- Richard Gardiner (Architecture, Urban Design).
- W. Anthony Wiles (Urban Planning).
- Charles Wellford (Criminology, Sociology).
- W. Victor Rouse (Urban Planning).
- George Rand (Psychology, Urban Planning).

The support of the Law Enforcement Assistance Administration has been a factor throughout and is greatly appreciated. Blair Ewing and Fred Heinzelmann of the National Institute of Law Enforcement and Criminal Justice provided essential support for the CPTED Program. Efforts of Lois F. Mock and other Institute staff are appreciated. Richard M. Rau and Richard M. Titus, initial and current monitors of the Program for LEAA, have contributed substantially to the effort by resolving problems and providing proper perspective between this program and other research activities.

Many members of the Westinghouse CPTED Consortium contributed to the initiation, development, and implementation of the demonstration.

Particularly important roles were played by the following Westinghouse staff: Robert A. Carlston, Phase I Project Manager; Larry S. Bell; Lewis F. Hanes; and W. Anthony Wiles. In addition, special acknowledgment is given to W. Victor Rouse (Barton-Aschman Associates and American Institutes for Research), Annemarie Riemer (Barton-Aschman Associates), and Stephanie Gould (Urban Systems Research & Engineering, Inc.).

Appreciation is expressed to the many people in the City of Portland who provided valuable assistance in developing the demonstration concept and in moving the demonstration from concept to reality. While a complete list of these people would be sizable, special thanks is offered to the following individuals who have generously provided their time and support:

- Mayor Neil Goldschmidt
- Commissioner Charles Jordan
- Chief B. R. Baker - Portland Police Department
- Betsy Welch - Director, Office of Justice Programs
- Dennis Wilde - Neighborhood Planning Chief, Portland Planning Bureau
- Gary E. Stout - Former Administrator, Portland Office of Planning and Development
- David Hunt - Executive Director, Portland Development Commission
- Warren Chung - Northeast Business Boosters
- Sergeant Gerald Blair - Portland Police Department

- Thomas Kennedy, Jr. - Portland Development Commission
- Michael Lyons - Portland Development Commission
- Joani Azzone - Portland Crime Prevention Bureau

The following special acknowledgements are noted: Imre R. Kohn (Westinghouse) prepared Appendix A. Lynne Helfer Palkovitz (Westinghouse) contributed to Appendix B and helped revise the entire draft. Stephanie S. Hoover (Westinghouse) helped prepare an earlier draft.

The evaluation report -- see Chapters 4, 6, and 7, along with Appendices C through K -- was prepared by Paul J. Lavrakas (Westinghouse), Janice Normoyle (Loyola University of Chicago), and J. J. Wagener (Clark University); assisted by James Kushmuk (Portland, Oregon), Ken O'Kane (Westinghouse), Michael D. Maltz (University of Illinois Chicago Circle), Leonard Bickman (Westinghouse), and Ron Szoc (Westinghouse). Leslie J. McCain (Northwestern University) provided guidance in conducting the time-series analyses that were incorporated in Chapter 7.

CHAPTER 1. INTRODUCTION

In May 1974, the National Institute of Law Enforcement and Criminal Justice (NILECJ), the research center of the Law Enforcement Assistance Administration (LEAA), announced the award of a contract to a consortium of firms headed by the Westinghouse Electric Corporation to launch a program known as Crime Prevention Through Environmental Design (CPTED).

From its inception, a major thrust of the Program was the development of real-world projects. Efforts to demonstrate the viability and utility of a wide variety of physical and social strategies for reducing crime and the fear of crime were undertaken. Three sites were selected for the environment-specific demonstration projects:

- A commercial strip corridor in Portland, Oregon, for a CPTED Commercial Environment Demonstration.
- Four public high schools in Broward County, Florida, for a CPTED Schools Environment Demonstration.
- An inner-ring suburban neighborhood in Minneapolis, Minnesota, for a CPTED Residential Environment Demonstration.

This report describes the process by which the commercial environment demonstration project was carried out. The results of that project,

along with a discussion of the project's implications and some conclusions based on that discussion, are also presented. Many of the demonstration's activities were intended to be replicable for similar urban commercial environments throughout the country; others were specially tailored for implementation in the specific Portland commercial area known as the Union Avenue Corridor." Consequently, the overall effort was influenced by special requirements and constraints that were imposed by the site, as well as the national Program objectives.

1.1 Background of NILECJ/Westinghouse Program

The mandate for the 2-year, \$2-million effort was to demonstrate the usefulness of defensible space concepts (discussed in the next section) in several areas through large-scale demonstration and evaluation projects in schools, residential, commercial, and transportation environments.* Research and dissemination activities were to play major roles throughout.

The principal objectives for the first 2 years of the Program were:

- To modify and expand the concept of defensible space, tailoring it for the unique characteristics of each demonstration.
- To select appropriate and cooperative local demonstration sites for each environment (the NILECJ man-

*The transportation environment was later dropped from consideration as a separate demonstration site, although strategies focused on that environment were incorporated in the plans for the other demonstration projects.

date deliberately precluded the involvement of Federally assisted housing developments as CPTED demonstrations since Oscar Newman and others had focused on these environments).

- To develop general strategies for each environment and specific plans for each demonstration.
- To support the implementation of demonstrations and initiate an evaluation process for each.

The CPTED Program did not include the funding needed for implementation at the demonstration sites. Rather, Westinghouse assistance to the demonstration sites included grant development and other funds leveraging activities to help the sites secure implementation funding.

The Program concentrated upon predatory offenses against persons (criminal homicide, forcible rape, robbery, and assault) and property (burglary, auto theft, larceny, and vandalism).

The expectations for the CPTED Program during its first 2 years were overly optimistic. Early in the effort, it became obvious that the amount of scientific knowledge upon which the Program could be based was inadequate. Indeed, similar conclusions were being drawn at about the same time by others working in the field (e.g., T. Reppetto, R. Gardiner, and C.R. Jeffery).

The Westinghouse project team found the concept of defensible space, as defined in Oscar Newman's early work, to be too limited in scope for direct application in the Program environments. (Newman

himself was beginning to seek ways to go beyond the narrow focus of his earlier work.) The degree to which physical design alone could be expected to generate strong proprietary attitudes in users of public environments was very questionable. For example, no design directives existed that could be used to develop territorial feelings in the thousands of individuals briefly passing through a subway station.

When the limitations of the defensible space concept became clear, NILECJ directed the project team to develop an expanded and more comprehensive approach that would be more responsive and useful in a variety of environments. Through this effort, the CPTED concept of crime/environment analysis, comprehensive planning, and community involvement evolved.

There now was a more realistic assessment of what could be accomplished during the 2-year program. As a result of that assessment and a recognition of the merit of the work that had been accomplished in the period 1974-1976, NILECJ awarded Westinghouse a second 2-year, \$2-million contract to carry the CPTED Program through July 1978. A final report will be produced that will build on the first phase's efforts and products but will focus on the policy, research, and programmatic implications of the activities since July 1, 1976. The report will be available in August 1978.

1.2 Background of CPTED

The CPTED concept highlights the interaction between human behavior and the physical environment in the battle against crime. The two basic

aims of CPTED are, first, to reduce opportunities for crime that often are inherent in the structure of buildings and the layout of neighborhoods and, second, to promote changes in attitudes among the population at risk. By reducing the apparent opportunity for crime, people should be less fearful of moving freely about their environment. The assumption underlying these aims is that physical changes can have their maximum impact on crime and the fear of crime only when the user population actively supports and maintains the changes and aids in the detection and reporting of crimes.

The elements that comprise the CPTED concept are not new. They are perhaps as old as the discovery that the environment influences human behavior and perceptions. However, contemporary interest in the role of the manmade environment in creating or reducing opportunities for crime has been stimulated by research and social action policies developed during the past 20 years. In the 1960's, concern about the detrimental effect of urban renewal programs led many to study the psychic and social costs of rebuilding environments, particularly with respect to a diminished sense of security among residents. Elizabeth Wood studied public housing projects and emphasized the importance of physical design in allowing residents to exercise control over their environment. She supported designing for natural surveillance by residents through visible identification of a family and its home, and through enhanced visibility of public spaces.

Oscar Newman supported Wood's ideas by showing that physical design features of public housing affect the rates of resident victimization.

These design features included building heights, number of apartments sharing a common hallway, lobby visibility, entrance design, and site layout. His research also indicated that physical design can encourage citizens to assume behavior necessary for the protection of their rights and property. These concepts led, in Newman's terminology, to the development of defensible space design principles for housing complexes.

Jane Jacobs applied many of these same design principles to urban planning. In her view, the essentials for crime prevention were a sense of community cohesion, feelings of territoriality, and responsibility for one's "turf." Continuous street surveillance would be a natural byproduct of residents' and shopkeepers' desire to control the nature of use and treatment of their environment. She further contended that neighborhood land uses should be more diversified to create more opportunities for natural surveillance and encourage the development of stronger social control networks.

Since then, several people have focused on urban design and crime. Shlomo Angel, for example, developed the critical-intensity-zone hypothesis: Public areas become unsafe not when there are either few or many potential victims present but when there are just enough people on the scene to attract the attention of potential offenders, but not enough people for surveillance of the areas. He suggested alteration of physical configuration to concentrate pedestrian circulation and, thereby, eliminate critical intensity zones.

In 1969, the U. S. Senate Select Committee on Small Business

began the investigation of Crimes Against Small Business, which influenced the course of target hardening, crime insurance, and police patrol for the next 5 years. In 1970, NILECJ funded six major studies that began the integration of the CPTED-related areas of target hardening, architectural and city planning design, and community cohesion. At the same time, criminologists such as C. Ray Jeffery and Thomas Reppetto focused on the role of the physical environment in fostering or discouraging crime. Jeffery pointed to the need for more research on the relationship between crime and the environment, and Reppetto concluded in his study of residential crime that future research should be directed towards the development of a crime prevention model that would blend together the deterrent effects of the criminal justice system and citizens' anticrime efforts. He suggested that improved environmental design might be the most effective way.

In 1971, the ideas of Jacobs and Newman were expanded upon in the Rand reports, Public Safety in Urban Dwellings and Vertical Policing Programs for Highrise Housing. At the same time, HUD initiated its Federal Crime Insurance Program and NILECJ developed Minimum Building Security Guidelines. In 1972, significant publications and reports included Newman's Defensible Space, NILECJ's Architectural Design for Crime Prevention, Harry Scarr's Patterns of Burglary, and Rand Corporation's Private Police in the United States. The HUD/LEAA interagency committee on Security in Public Housing was also formed.

In 1973, the CPTED approach crystalized with the announcement of

NILECJ's intention to inaugurate comprehensive CPTED programs in residential, transportation, public schools, and commercial environments. Additional data and theory contributing to the CPTED framework came from five major NILECJ-supported reports concerning robbery (Feeney), Burglary (Part II, Scarr), street crime (Malt), urban housing (Reppetto), and residential security (Sagalyn). Related developments included HUD's conference on security in housing, and Newman's publication, Residential Security.

Finally, as the Westinghouse Consortium began the NILECJ CPTED Program in 1974, project evaluations of a Kansas City streetlighting program indicated successful results; a Hartford CPTED program was pushing forward; and Newman's Design Directives for Achieving Defensible Space was completed.

1.3 The CPTED Approach

The primary emphasis of the Westinghouse/CPTED Program is on strategies (or solutions) that are designed to reinforce desirable existing activities, eliminate undesirable activities, create new activities, or to otherwise support desirable use patterns so that crime prevention becomes an integral part of the specified environment. There are four operating hypotheses that provide the underlying rationale for all CPTED implementation strategies.* They are: Access control, surveillance, activity support, and motivation reinforcement.

Access control strategies focus on decreasing criminal opportunity by keeping unauthorized persons out of a particular locale. In its most

elementary form, access control can be achieved in individual dwelling units or commercial establishments by use of adequate locks, doors, and similar target-hardening installations. Access control can also be achieved by the creation of psychological barriers, such as signs, parkways, hedges -- in short, anything that announces the integrity and uniqueness of an area.

The primary aim of *surveillance* strategies is not to keep intruders out but to keep them under observation. Such strategies are hypothesized to increase the perceived risk to offenders, as well as the actual risk *if* the observers are willing to act when potentially threatening situations develop.

A distinction can be made between organized and natural surveillance. Organized surveillance is usually carried out by police patrols in an attempt to project a sense of omnipresence (i.e., to convey to potential offenders the impression that police surveillance is highly likely at any given location). In some instances, surveillance can be achieved by mechanical techniques such as closed-circuit television (CCTV) or alarms.

Natural surveillance can be achieved by a number of design strategies, such as channeling the flow of activity to put more observers near a potential crime area or creating greater observation capacity by installing windows along the street side of a building. This technique of defining spaces also is hypothesized to convey a sense of ownership and territorial concern to legitimate users.

*Appendix A outlines the overall theoretical framework.

Activity support involves strategies for reinforcing existing or new activities as a means of making effective use of the built environment. This is based on the observation that, in a given community, there are often 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 result in a reduction of the vulnerable social and physical elements that permit criminal intrusions.

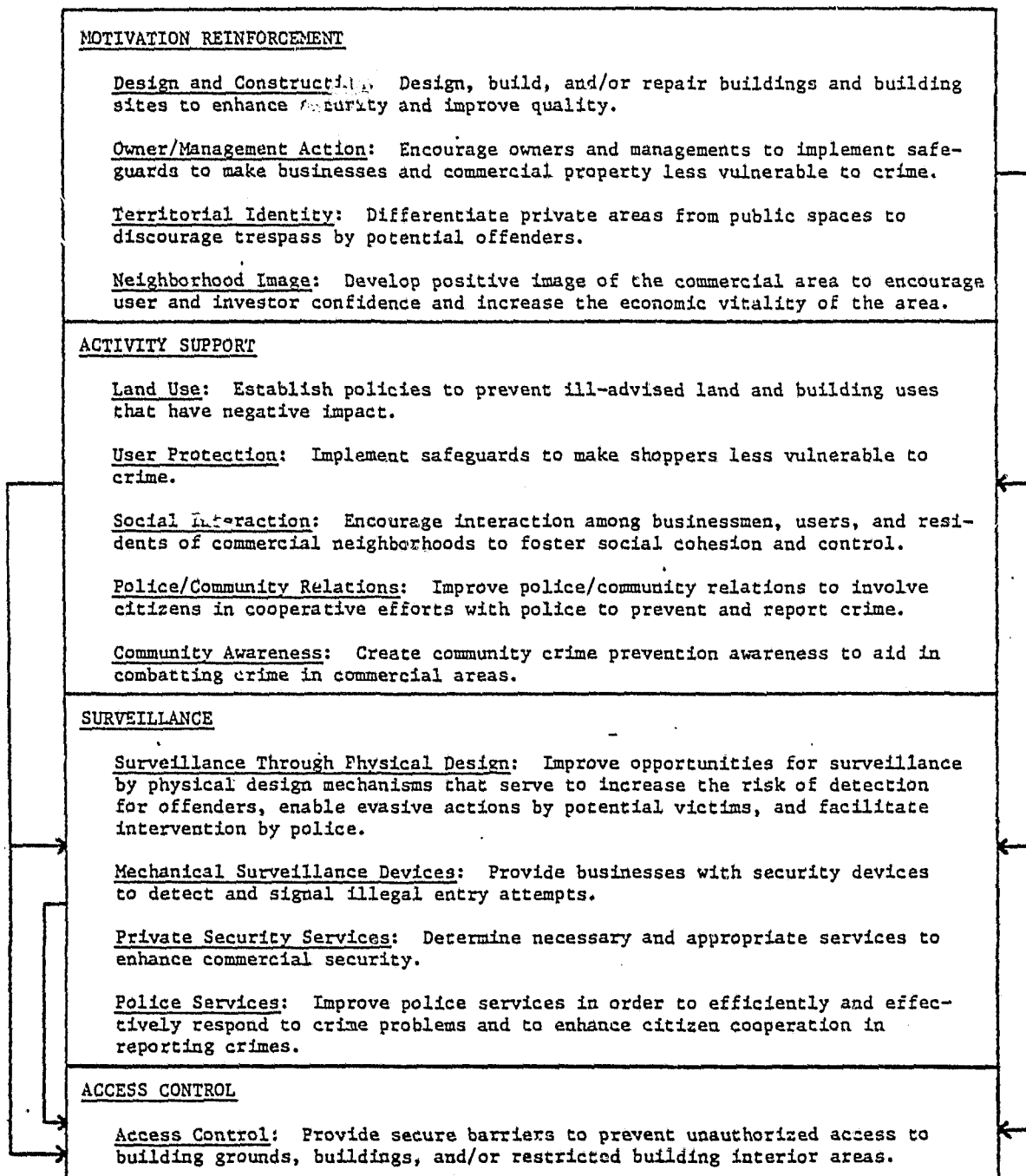
In contrast to access control and surveillance strategies, which concentrate on making offenders' operations more difficult, *motivation reinforcement* strategies seek to affect offender motivation and, hence, behavior relative to the designed environment by increasing the perceived risk of apprehension 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 identity and image.

Territorial concern, social cohesion, and a general sense of security can result from strategies that alter the scale of a large, impersonal environment to create one that is smaller and more personalized. They also can result from improvements in the quality of an environment by such measures as upgrading the housing stock, the school facilities, or the interiors of subway cars; organizing occupants; or changing management policy. These strategies can improve not only the image the population has of itself and its domain but also the projection of that image

to others. The definition and raising of standards and expectations are hypothesized to decrease social estrangement as well as the motivation for criminal behavior.

The four key operating hypotheses provided the basis for specifying project objectives for each of the demonstration environments. Figure 1-1 presents the objectives for a CPTED project that focuses on the commercial environment. In turn, the objectives provide the basis for the selection of strategies. Although they cannot be neatly categorized because many strategies include a combination of approaches, the strategy selection process draws upon the following types of proposed solutions:

- Physical Strategies -- Create, eliminate, or alter physical features that affect criminal actions, for example, by providing special barriers to impede undetected access. This could be achieved by installing grilles on ground floor windows, cutting down concealing shrubs, and erecting high fences.
- Social Strategies -- Create interactions among individuals. An example is to involve neighborhood residents in crime prevention programs. This could include establishing neighborhood watch activities, holding seminars on how to reduce individual vulnerability to crime, and



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 1-1. Relationship of Commercial Environment Objectives to CPTED Operating Hypotheses

increasing police/community cooperation programs.

- Management Strategies -- Have a policy and practice thrust. One management strategy is to amend zoning ordinances to reduce the vulnerability of structures to burglary by establishing minimum security standards. Management strategies also include those that affect the economy, with the assumption that improving income levels, employment rates, and the quality of the physical environment (via monetary inputs) will ameliorate crime problems.
- Law Enforcement Strategies -- Concern both public police support and private security forces. One strategy in this category is to increase police patrol in a high-crime-rate area, while another involves hiring private security guards to patrol particular blocks, building sites, or buildings.

1.4. The CPTED Project

Each CPTED project involves four distinct but interrelated phases: Site Selection or Policy Determination, Project Initiation and Organization, Project Planning, and Project Implementation (see Figure 1-2). Each phase can be viewed as a major decision point that affects decisions to be made during later phases. In actual practice, however, the decisions and activities associated with each phase do not follow

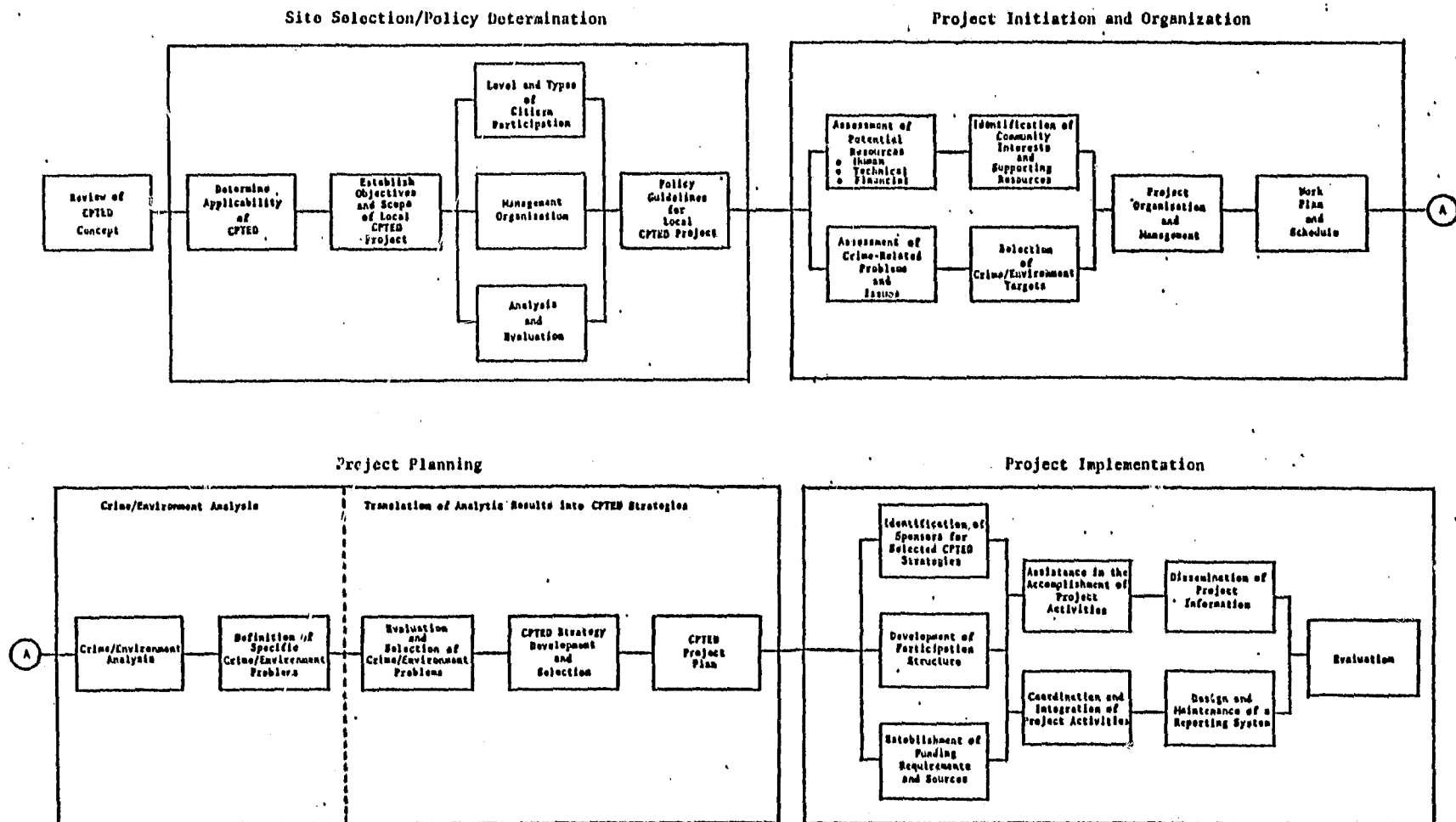


Figure 1-2. CPTED Planning and Implementation Process

any consistent sequence. For example, policies must be reanalyzed continually to take into account changing circumstances. The same holds true with respect to the need for continual reorganization, replanning, and reconsidering implementation strategies for the CPTED activities.

The *Site Selection/Policy Determination* phase determines the applicability of CPTED concepts to local issues and concerns. If CPTED is applicable, local planners and decisionmakers must specify the objectives and scope of the CPTED project, determine the location and size of the project site, and accomplish major organizational requirements (such as determining citizen participation and project management, evaluating available resources).

The *Project Initiation and Organization* phase defines key problems and issues for analysis, defines project objectives and requirements, organizes the project planning team and its operating procedures, identifies community interests, and develops the overall work program and schedule.

The *Project Planning* phase includes a series of analyses that define the crime and fear-inducing locations to a point where they can be treated by CPTED and provide insight into factors that contribute to the defined crime/environment problems. During this phase, a CPTED project plan is produced that specifies the strategies, directives (describe the means by which a given strategy can be fulfilled), methods of implementation, and funding for the alleviation of selected problems.

The *Implementation* phase involves the construction of the physical

portion of CPTED strategies and the carrying out of programmatic activities. Project evaluation is noted in this phase. However, for it to be adequate, evaluation considerations must be included in the earlier phases as well. The CPTED evaluation design addresses three general issues:

- Was the project initiated effectively?
- How well were the project plans implemented?
- Did the project meet its stated goals?

The Portland Commercial Demonstration project that is described in the following chapters gives real-world substance to the CPTED conceptual approach and project development*

* Appendix B presents a chronology of developmental activities and project highlights.

CHAPTER 2. SITE SELECTION

2.1 The Commercial Environment

The commercial environment was chosen as a general category for the CPTED Program in part because of the important roles that such areas play in distributing needed goods and services, providing jobs, and contributing to the economic and social vitality of urban areas. At the same time, commercial establishments and streets are places where crime takes a heavy toll in the form of assaults against the person, loss of property, and destruction of public confidence due to fear.

2.2 The Commercial Strip

The term *commercial environment* includes downtown central business districts, regional shopping centers, shopping malls, neighborhood convenience stores, and commercial strips. Commercial strips were selected for the demonstration project because of their particular susceptibility to crime problems, due in part to their configuration, the types of enterprises that locate there, and the general changes in shopping trends that have frequently had a negative impact upon the vitality of these areas. The strips (which are also known as commercial ribbons or string commercial areas) include those business activities that have traditionally developed along major streets and highways and that provide services for the users of those thoroughfares, as well as for nearby residents. The strips can connect with urban shopping districts or can be confined within noncommercial neighborhoods. For this program's site selection, portions

of the streets that connect the strip with other shopping districts or with residential and other neighborhood uses were considered to be part of the commercial-strip environment.

While the original development of commercial strips characteristically evolves around highway-oriented uses, their existence can have serious impacts upon nearby residential neighborhoods. Since people from the neighborhoods may be inclined to use the strips for much of their convenience shopping (provided that appropriate goods and services are available) these areas can sometimes offer positive benefits for local residents. On the other hand, some crime that has an origin in the commercial areas may be displaced into adjacent neighborhoods, in which case the strips can constitute serious liabilities to local residents.

Prior to construction of the interstate highway system and other recent superhighways, many urban-arterial streets were thriving areas of commercial activity. More recently, however, these commercial strips have become the less convenient roads into cities, and there has been a subsequent reduction in their use by through travelers. This, combined with the proliferation and increased popularity of shopping centers, has resulted in decreased use of many commercial-strip areas, causing neglect and general decline. This neglect and decline can contribute to creating an environment where crime and fear of crime are rampant. The problems are compounded by the fact that the clientele of many of these areas is transient and, consequently, the services offered frequently do not address the needs of the nearby neighborhoods.

When local residents cease to use the strips because of fear or lack of interest, the economic vitality further declines and the environment's quality suffers. Commercial strips are particularly difficult to defend against crime, since most of the stores are not located in clusters but are strung out along the avenue. This complicates problems of surveillance by police patrols and makes it easy for potential criminals to leave the scene of the crime. Moreover, because most of the users of this environment are strangers to each other and to the community, it is very difficult to ascertain who is a legitimate customer and who is not. Finally, since there are often large, poorly lit delivery areas at the backs of the stores, and since these areas are unsurveillable from the street, breaking and entering through the back is a common occurrence.

Elements of the commercial-strip environment that require special attention for the purpose of crime prevention generally include such external areas as accessory streets, alleys and service entrances, parking lots and structures, walks, and entrances. Internal areas include entryways and lobbies, stairwells, offices, restrooms, corridors, service spaces, kitchens, and the stores themselves.

2.2.1 Crime in the Commercial Strip Environment

Commercial target crimes are assault, street robbery, pursesnatch, and burglary (both residential and commercial). Pursesnatch, although a relatively minor crime, is included because of the large degree of fear it produces. This is particularly true for elderly women, who are generally the most frequent victims. The pattern of crime in the commercial strip

environment is also characterized by spillover from the commercial area to the surrounding residential areas. Thus, the decision to include residential burglary and street crimes is based on findings that residential offenses tend to cluster in areas adjacent to commercial strips.

2.3 Site Selection Criteria

In assessing the CPTED potential of commercial strips under consideration as demonstration sites, the consortium used three kinds of criteria: Crime-related, environment-related, and program-related. Table 2-1 lists the topics covered in each of these areas. The following points were considered to be particularly relevant:

- The target site should have a sufficient level of crime and fear to justify a CPTED effort and must be amenable to CPTED time and cost factors.
- The types of crime problems found within the target site should be those that can be alleviated by CPTED.
- There should be readily available crime and environment data. Generally, the delineation of crime/environment problems will involve analysis of the relationship between various aspects of crime problems and physical, social, and economic variables.

TABLE 2-1

Demonstration Site Selection Criteria

<u>Crime-Related</u>	Severity (Numerical Incidence, Incidence Rate or Calculated Risk, Dollar Loss)
	Fear (Attitude Surveys, Indirect Measures)
	Environmental Patterns (Temporal, Geographic, Specific Locale, Modus Operandi)
	Offender/Victim Profiles (Individual Background History, Offender/Victim Relationship)
	Displacement Potential (Temporal, Tactical, Target, Territorial, Functional)
<u>Environment- Related</u>	Number of Sites
	Population at Risk (Potential Victims)
	Social Dependency (Provides Essential Services)
	Value at Risk
<u>Program- Related</u>	Amenability (to CPTED Strategies)
	Implementability (within time and cost -- including leverage -- constraints)
	Evaluability (within time and cost constraints)
	Impactibility (with respect to institutionalization and to crime and fear reduction)

- The selected site should have strong support and interest from community decisionmakers. There should be an agreement-in-principle with a local government official (e.g., Mayor or councilperson) who is willing and able to be an advocate for the program. In addition, various public or private organizations and agencies should be committed to improvements in the site area.
- Supportive programs should be underway or planned for the target site. These programs could provide funding assistance and expand the scope of CPTED strategies.
- The site selected and the model designed for each CPTED target should facilitate evaluation.
- Lessons learned from the CPTED evaluation should be transferable to other communities, therefore the site selected should be to some extent physically and demographically typical.

2.4 Selection of Demonstration Site

2.4.1 Portland, Oregon

After the preliminary selection of commercial strip corridors had been approved by NILECJ and formal eligibility requirements for potential demonstration sites had been developed, consortium representatives made site visits to several of the candidate cities to discuss the Program

with local people, gather information, and assess and rank the potential sites. The two cities that appeared to offer the best potential for a successful CPTED demonstration were visited a second time, and Portland emerged as the final choice, best meeting the above criteria. There was a significant crime problem and local law enforcement agencies had maintained good records. In addition, Portland had been the site of an Impact Crime Reduction Program, conducted under the auspices of LEAA. This program had compiled extensive victimization data to enhance the baseline information that is necessary for planning and evaluating a CPTED project.

Portland also had existing supportive programs. An ambitious redevelopment plan for a major commercial strip was already underway that could incorporate CPTED strategies. There was also strong local interest and support for a crime prevention demonstration project, particularly from the city government and the Mayor. The commercial strip area was also the site of Portland's Model Cities' efforts, and community groups formed under this program continued to provide voices for area interests.

2.4.2 The Union Avenue Corridor

A 3-1/2-mile-long, urban arterial commercial strip, located in the northeastern section of Portland and running from the central business district to the Columbia River on the city's northern boundary, was selected by local representatives as well as by the consortium representatives as the most logical demonstration site. Referred to as

the Union Avenue Corridor, this strip once was a thriving commercial area along one of the city's four major north-south routes. Union Avenue connected traffic crossing the Willamette River on the Stark Street Ferry, originating from downtown Portland, to the Vancouver Ferry that crossed the Columbia River to Vancouver, Washington (see Figure 2-1).

The commercial boom, at its peak in the 1930's, was over by the 1960's, and the street since has been marred by many vacant lots, boarded-over store windows, derelict structures, and night spots of dubious reputation. A number of businesses had posted "For Sale" signs, but potential investors were often reluctant to invest in the area due to fear of crime.

Union Avenue's problems of social and economic decline and related crime followed familiar patterns: First, a major shopping center, the Lloyd Center, was built nearby in 1960, upstaging small neighborhood businesses. Later, in the mid-1960's, Interstate 5 drew much business away from the corridor. Union Avenue is a state highway whose business depends heavily upon automobile traffic.

In addition, many people who could afford to leave the neighborhood did so, taking their businesses with them to more affluent surroundings. Those who could not relocate their homes and businesses often were those most vulnerable to crime problems: The elderly, the poor, and small minority enterprises.

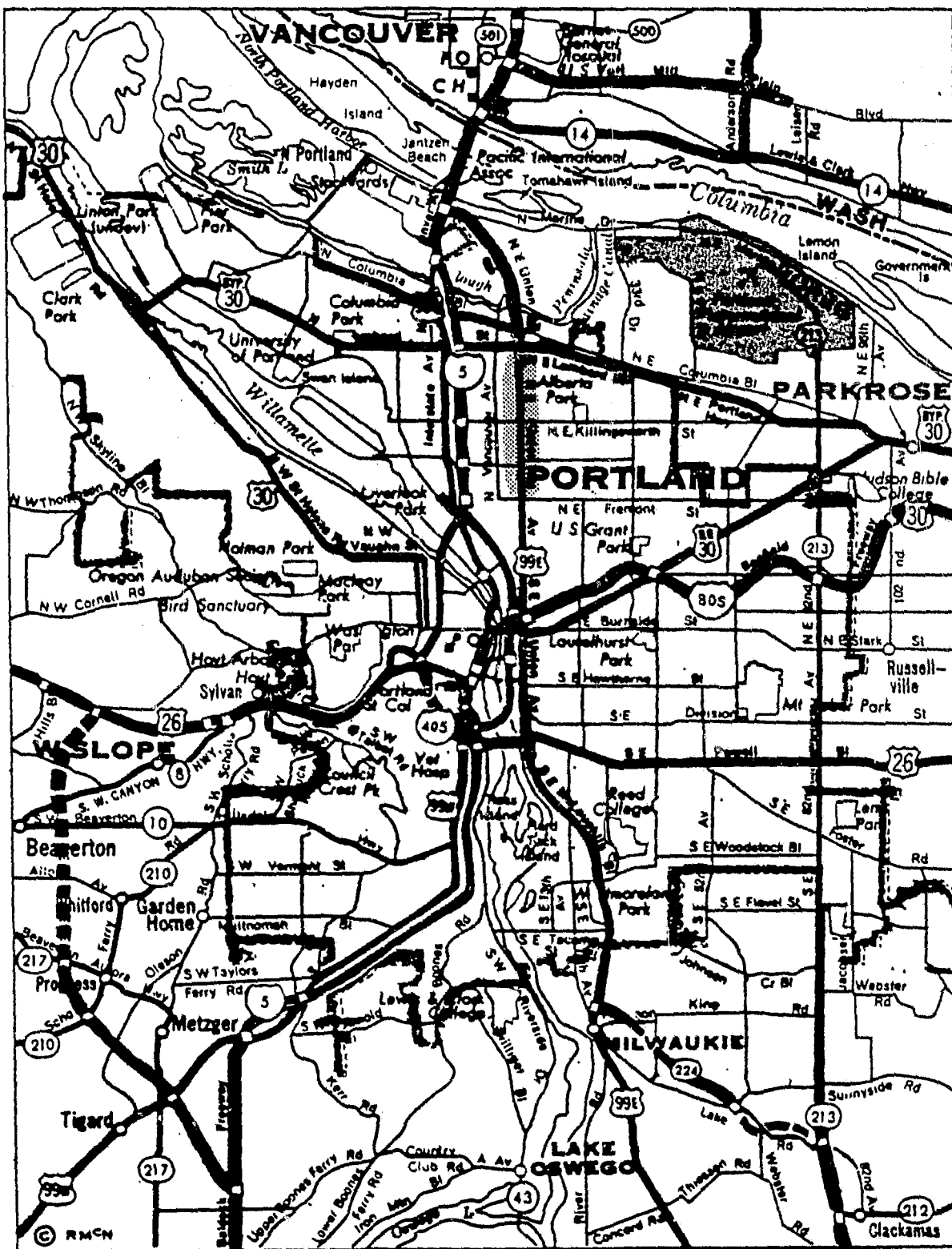


Figure 2-1. Portland, Oregon -- Union Avenue and Vicinity

Racial inequities led to significant damage to Union Avenue property during the civil disturbances of the late 1960's, and some distrust between black and white residents continues. About half the residents in the neighborhoods surrounding Union Avenue are black, and the business strip is the only area in the city that has an appreciable number of black-owned businesses. This distrust had impeded the cooperation needed to restore social and economic vitality.

The Union Avenue corridor carried a disproportionate share of the city's crime burden. While the area is approximately 2.5 percent of the City of Portland and contained only about 1.2 percent of the population, it sustained about 5 percent of the violent crimes, with more than 7 percent of the personal robberies and more than 5 percent of the pursesnatches. A 1973 survey of Union Avenue businessmen concluded that most identified crime as the single most important problem affecting business operations.

On the positive side, economic development appeared to have a solid base despite a business decline in the area. Some substantial business anchors remained, including a large department store, several clothing stores, a Safeway, drug stores, and several banks.

Many of the homes in the area were in good condition, too, owing in part to previous Model Cities and Neighborhood Development Program activities. The neighborhood had a relatively stable population of about 4,500 persons, of whom approximately 50 percent were black.

The major neighborhoods abutting Union Avenue are Woodlawn, Vernon,

King, Sabin, Irvington, Humboldt, Boise, and Eliot (see Figure 2-2). Some of these neighborhoods, notably Eliot, had had plans drawn up for them by the Planning Bureau to guide new development. The Model Cities program had recommended a "Policy Plan" that called for making the Model Cities area a cohesive entity and provided information needed by the residents and users of the area for implementation of the plan.

A number of organizations, including the Mayor's Office and the Portland Police Bureau, were concerned with finding effective solutions to the crime problems along Union Avenue. The Mayor served as Chairman of the Union Avenue Steering Committee, and the Police Bureau had sent its Strike Force to the Union Avenue Corridor on several occasions to reduce burglary and street robbery incidents. In addition, the Portland Crime Prevention Bureau had conducted numerous block meetings in the area to alert the community to techniques for reducing residential burglaries.

It was apparent that a very real and broadly based commitment to revive the Union Avenue Corridor existed within the city. Moreover, organizations and individuals in Portland were well prepared to take some necessary actions. Revitalization programs had already been planned, and it was believed that those plans were very compatible with the purposes and general approaches envisioned for the CPTED demonstration.

2.5 Local Agreement-in-Principle

The decision by the consortium to make Portland's Union Avenue Corridor its first choice for the Commercial Demonstration marked the

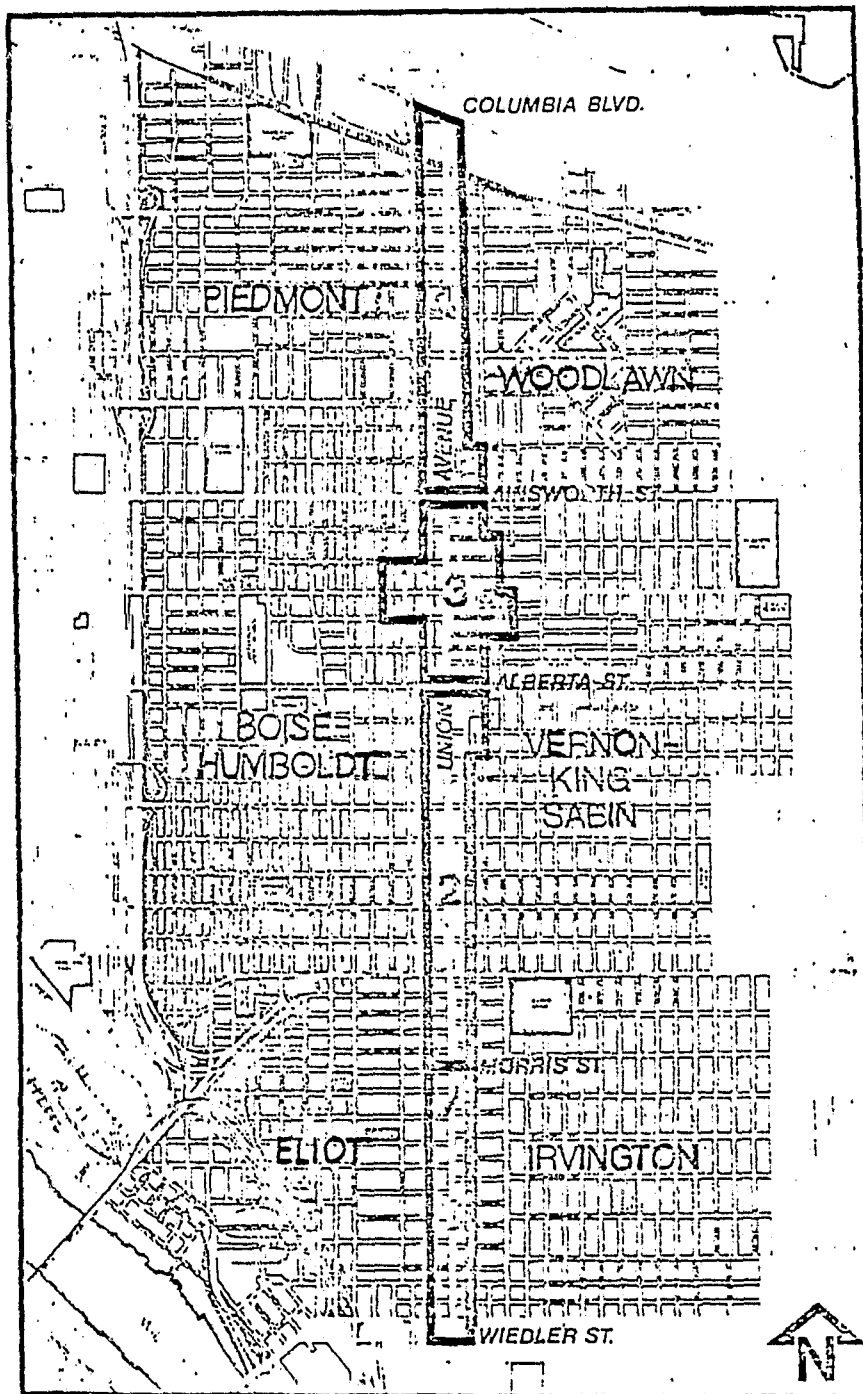


Figure 2-2. Union Avenue Corridor and Adjacent Neighborhoods

culmination of the first of the two major components in the site selection process. The other was the commitment made by Portland authorities, i.e., the local policy determination.

It is important to understand that, when the Westinghouse-CPTED consortium presented the idea of launching a demonstration program to the Portland representatives during initial meetings, 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 opportunities to evaluate the implementation of CPTED strategies. The consortium would provide expertise to put together a plan (reflecting local inputs and interests), supply technical assistance to operationalize the plan, and work to ensure competent and objective evaluation of the results. In other words, the demonstration was to be, in a very real sense, a locally financed and managed program, predicted on reasonable assumptions that CPTED was sound in principle.

To illustrate the general nature of the proposed approach to the City's representatives, hypothetical CPTED activity charts were prepared. Sample objectives and related strategies were set forth, based upon impressions gained during initial site visits. The strategies were then keyed to potential participating groups to show how activities of diverse private and public organizations could be focused and co-

ordinated to address common crime prevention and quality of life objectives. The charts proved to be useful instruments to reflect the fact that the CPTED approach could be very compatible with the existing plans and programs in Portland. The overall approach drew favorable responses during numerous meetings with City bureau officials, organization representatives, and other community leaders. Prompted by those responses, as well as by his personal commitment to assist the Union Avenue Corridor area, the Mayor authorized the consortium to develop a preliminary CPTED plan for local review. The Mayor also pledged his support in making crime data and all other necessary background information available to the consortium. This agreement-in-principle completed the site selection process.

CHAPTER 3. PROJECT INITIATION AND ORGANIZATION

3.1 Introduction

The Project Initiation phase of the Portland demonstration project was basically concerned with three major areas:

- Assessment of crime-related problems and issues.
- Assessment of potential resources and support programs.
- Organization of the CPTED planning team and effort, including initiation of community participation.

The results of these activities formed a basis for the establishment of project objectives and management. They also formed the basis for determining crime/environment targets, establishing the general scope and direction of the project, and suggesting the human, technical, and financial resources that might be tapped by the project.

In one sense, the Initiation phase got underway in mid-1974. Although the consortium did not announce that Portland was selected as a site until October, significant work was accomplished during the summer and fall that in a major way affected CPTED and the other activities related to Union Avenue.

The City's Five Year Union Avenue Redevelopment Plan was nearing completion at that time, and it detailed the local assessment of the activities necessary to improve the corridor. CPTED is integral to that

plan, which, after a delay in the hearing process, was finally approved by the Planning Commission in January 1976.

In so far as the CPTED consortium's involvement is concerned, two events which occurred in the interim more appropriately signify the Commercial Demonstration's initiation. In August 1974, a meeting was held between representatives of the consortium, officials of several City agencies, and local consultants. The discussion of mutual interests was augmented by an exchange of information describing the kinds of contributions each group could make to a CPTED effort that would be locally directed and consortium supported. A number of tentative agreements emerged. An October 1974 meeting attended by the Mayor provided the official approval to initiate a CPTED project.

During November, consortium members held several meetings to present the preliminary plans for organizing and implementing the project, along with the problem and resource assessments upon which the plans were based. The meetings included staff from the Office of Planning and Development, the Portland Bureau of Police, the IMPACT program, the regional LEAA office, the Model Cities Program, and the Mayor's Office, including the Mayor himself. The issuance, in January 1975, of the CPTED Concept Plan for the Commercial Environment documented the consortium's response to the October agreement. (Official LEAA approval of Portland's selection was announced in July 1975.) These early initiation and organization activities were reassessed and enhanced throughout the project.

3.2 Crime-Related Assessments

The collection of crime-related data was necessary both for the evaluation effort and to make decisions concerning crime problems and problem locations. Crime reports for the target area were retrieved from the Police Bureau's Crime Analysis files. Crime information of a more general nature was gathered through numerous conversations with police and community representatives, as well as during community meetings. This additional general information helped support the statistical data and aided in determining what police and local citizens considered to be the major crime problems of the area. Crime data also were obtained from the "Target Crime Report" prepared by the staff of the Portland IMPACT program. Early in the demonstration project, observations were also made to record pedestrian activity, particularly at night, primarily for the purposes of evaluation. Somewhat later, in 1976, security surveys of all of the commercial establishments in the Union Avenue Corridor and of a select number of residences were completed. By identifying deficiencies, the surveys augmented the initiation-and-organization data base.

As noted earlier, the Union Avenue Corridor was found to have a disproportionate share of the city's crime problem and businessmen felt that the crime problem was the single greatest obstacle to the successful operation of their businesses. Observational data revealed few people on the streets at any time. The presence of much vacant land and many derelict buildings added to the impression of a decaying area.

The analyses indicated that major crimes to be addressed in the CPTED project should be assaults, robberies, burglaries, and purse-snatches. One-half of the assaults were found to occur on the streets, usually after dark. Street robberies were also frequent after dark. Burglary was found to be more frequent in the surrounding residential area than in the commercial area. The Union Avenue area was found to be the most heavily victimized burglary area in Portland. Incidents of pursesnatch in the target area were found to be four times the citywide rate, generally occurring at night on the street. Thirty percent of pursesnatch victims were found to sustain some injury. Fear was a major issue.

3.3 Resource Assessments

During the early stages, a list of persons and organizations that represented different perspectives on resident and business issues and priorities was compiled. Existing programs that could offer support to demonstration efforts were also identified. Meetings had been held prior to site selection and continued with broader representation, particularly from local residents, after Portland was chosen. The meetings provided a forum for residents, businessmen, City officials, and representatives from neighborhood institutions to discuss problems and opportunities along Union Avenue. Specific groups were identified as potential resources -- for example, those formed during the late 1960's and early 1970's as part of the Model Cities Program. The Portland Development Commission later took the lead in organizing committees to support the

implementation of various CPTED strategies. These committees included not only corridor residents and merchants but also representatives of local banks, City offices (such as the Bureau of Planning), and public agencies (such as the Department of Welfare). One new group formed as a result of the CPTED activities became a major resource for the project's planning and implementation phases -- the Northeast Business Boosters (NEBB). This group was formally organized out of the old Union Avenue Boosters organization, which had become inactive.

Throughout the project, public and other meetings were held to report on CPTED plans and activities, to get input on CPTED priorities, to sustain and expand local support, and to identify potential Federal, State, and local sources of funding. In summary, resource assessment was a continuous process.

3.4 Proposed Activities and Participants

The assessment of crime/environment problems, City and community resources, and potential funding sources was a joint activity. The inputs of City officials, law enforcement personnel, and representatives of the Union Avenue business and residential communities were pulled together by the consortium. The result was a Concept Plan that formalized the project's Initiation and Organization phase. The plan proposed CPTED strategies, project participants, and potential funding sources to support implementation. Released in January 1975, the Concept Plan, along with its reviews and comments on it, became the foundation for the formal Demonstration Plan that was released in March 1976. Some of the Concept Plan's highlights are noted below.

3.4.1 Proposed CPTED Strategies

By the October announcement that Portland's Union Avenue Corridor was to be a Commercial Demonstration site, the following physical design activities already were proposed:

- Streetlighting, pending approval of a grant application revised with consortium assistance, was scheduled to be installed in the area, together with fill-in lighting on Union Avenue and in other poorly lit areas.
- Bus shelters were being installed along Union Avenue in selected locations, and in other areas in northeast Portland.
- Highway improvements had been considered and approved, including preliminary plans for landscaping, lighting, rebuilding, and improving the 3-1/2-mile corridor.

In addition, the integration of the CPTED project plans with the Union Avenue Redevelopment Plan resulted in the following proposed strategies (both physical and social):*

- Safe Streets For People (safe passage corridors).
- Residential Services Center (Woodlawn Neighborhood Shopping Center).

* Additional details on each strategy will be discussed in later chapters.

- Residential Activities Center (mini-plaza).
- Transportation Services (new bus routes, transportation for the handicapped, shelters).
- Security Advisor Services (inspections, community organization).
- Rehabilitation Design Review.
- Commercial Design Review.
- Cash-Off-The-Streets.

3.4.2 Proposed Participants

The CPTED commercial demonstration was designed to enlist the participation of several public, quasi-public, and private organizations for important contributing roles. These roles included: Providing knowledge of local attitudes and conditions; acting as sources or conduits for technical and financial assistance; judging the feasibility of various plan options; providing entrees to business, residential, professional, and social communities; and, in general, facilitating implementation. The organizations that were expected to play important roles fell into three general categories: City agencies, special agencies and programs, and neighborhood associations and businesses (see Chapter 4 for more detail).

3.4.3 Potential Funding Sources

The process of identifying potential funding sources for the CPTED project was initiated at the start of the program, when broadly based contacts were made through public interest groups, professional

organizations, and through research into State and Federal acts and programs that might provide potential funding. With the narrowing of definition of the commercial demonstration to the Union Avenue Corridor, regional and municipal programs were also reviewed to determine possible complementary and mutually beneficial relationships between CPTED and other programs that might enable resource-sharing. This type of investigation was expected to be an ongoing process, since funding is responsive to economic activity at all levels of government, and is particularly sensitive to new acts that are created and to old ones that are deleted. The following is a synopsis of then current funding potentials for the commercial demonstration in Portland.

- Federal Level
 - LEAA CPTED Project
 - Economic Development Administration
 - HUD Discretionary Funds for Innovative Projects
- State/Regional Level
 - LEAA Discretionary (Block Grants)
 - Small Business Administration
 - TRI-MET
- Local Level
 - Housing and Community Development Program (HCDP)
 - Portland LEAA Impact Program

- City of Portland General Funds
- City of Portland Tax Allocation Funds
- Neighborhood Commons Project (NCP)

In addition, the Concept Plan assumed that commitments of public funds would help to leverage the commitment of private funds. This assumption was implicit in several of the proposed strategies.

3.5 Proposed Project Schedule

Figure 3-1 presents the overall work program and schedule that was proposed to Portland officials. Its implicit assumption was that the project should be "in place and operating" early enough that an impact evaluation could be completed prior to termination of the NILECJ/Westinghouse Program which, at that time, was scheduled to be a 2-year effort.

CPTED PROGRAM	1974		1975												1976				
	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
PREPARE, REVISE, AND OBTAIN APPROVALS FOR DEMONSTRATION PLAN																			
OBTAIN IMPLEMENTATION FUNDING																			
IMPLEMENTATION																			
DEMONSTRATION IN PLACE AND OPERATING																			
CPTED EVALUATION																			

Figure 3-1. Proposed Planning and Implementation Schedule

CHAPTER 4. PROJECT PLANNING

4.1 Introduction

The Project Planning phase of the Portland demonstration project had the same broad concerns as the Project Initiation and Organization phase, except that now the issue was to use the real-world reactions to the Concept Plan to establish the step-by-step activities and responsibilities. This phase's major concerns, therefore, were to specify the programmatic implications of the:

- Assessment of crime-related problems and issues.
- Assessment of potential resources and support programs.
- Organization of the CPTED planning and implementing team, including community participation.
- Work program and schedule.

4.2 Crime/Environment Analysis

The crime analysis went beyond the compilation of statistics on the crimes occurring in the Union Avenue Corridor. Where available, the analysis included such information as use of weapon, time, injury, location, loss, and demographic characteristics of victim and suspected offender. Law enforcement behavior in the area was examined, including such factors as deployment practices, response time and rate, and community programs. The analysis also considered elements of the physical and social environments that might have affected past crime rates and,

if made the focus of CPTED strategies, might help to lower future crime rates. For example:

- Density of built environment.
- Structural design.
- Building codes and ordinances.
- Location of streetlighting
- Location of transit routes and waiting stations.
- Location of public amenities.
- Land use type.
- Location of parking areas.
- Landscaping and vegetation patterns.
- Layout of streets, alleys, and pedestrian ways.
- Spatial arrangements of buildings.
- Physical security measures used in individual structures (i.e., degree of target hardness).
- Surveillability of the environment (i.e., likelihood of observation of attempted offenses).
- Actual usage of environment.
- Potential usability of the built environment (i.e., whether the physical environment provided opportunities for constructive activities).
- Reputation of UAC (i.e., whether residents and potential users were afraid to use it).

The CPTED project's crime/environment targets emerged from this analysis. The major objectives for the strategies to reduce crime opportunity included:

- Improve the surveillability of streets and open areas and increase the number of "eyes on the streets."
- Provide means and procedures through which neighborhood residents, businessmen, and police can work together more effectively to reduce opportunities and incentives for crime.
- Increase neighborhood identity, investor confidence, and social cohesion to increase the vitality of the area and to promote citizen cooperation with crime prevention efforts.
- Provide building security surveys and public information programs to help business owners/operators and residents protect themselves from crime risk.
- Make activity nodes and vital services more accessible, particularly to people who are most vulnerable to street crime problems, by improving existing transportation services and by providing new ones.

- Remove crime incentives and reduce loss risk by providing viable alternatives to carrying cash on the streets.
- Provide effective and efficient police patrol operations.
- Provide means and encouragement to promote citizen crime reporting.

4.3 The CPTED Demonstration Plan

4.3.1 Introduction

For a number of reasons, it was important that the demonstration project be implemented and coordinated through efforts by locally based organizations and people who believed that the CPTED project could and must be consistent with the best interests of their community.

Accordingly, the Demonstration Plan called for a local Redevelopment Program Coordinator and a local Security Advisor Coordinator to be assigned key demonstration project management roles. These coordinators were to receive planning, management, and technical assistance from the CPTED consortium, as required, to assist in the implementation, monitoring, and evaluation phases of the project. This assistance would be provided through a CPTED onsite representative. A Union Avenue CPTED Advisory Panel, made up of City agency representatives and other knowledgeable citizens, would be organized and would review demonstration progress to ensure compatibility with other City programs and activities.

The Demonstration Plan related key functional responsibilities of each of the local coordinators to project strategies. The Demonstration Plan also outlined the roles of each of the two coordinators in relationship to other important actors who would participate in the demonstration process. In addition, the Plan discussed general management considerations, known and potential funding sources, and the planned project schedule.

4.3.2 Planned CPTED Strategies

Seven specific strategies, based on the previously noted objectives, were proposed:

- Safe Streets for People. This strategy was designed to reduce the opportunities for crime, improve crime reporting, and reduce the fear of crime on the streets by creating safe passage corridors through complementary physical, social, and law enforcement strategies. These would include landscaping improvements, traffic pattern alterations, lighting, and such social strategies as block watch and the encouragement of residents to use their newly provided area, thus providing more natural surveillance. One of the prime objectives was to create a sense of territoriality among residents of the area by creating a positive and distinct identity for the area.

- Mini-Plaza or Residential Activities Center.

These plazas were conceived as safe locations where residential streets connect with bus waiting areas located along the commercial strip. These additions would improve the visual appearance of the area by means of landscaping, graphics, social amenities, telephones, bus shelters, and other facilities. The plazas were also designed to bolster neighborhood pride and identity for residents and businesses in the area.

- Corridor Promotion. Two projects were suggested as possible means to restore public confidence along Union Avenue: Weekend markets, to attract more shoppers and businesses into the area, and the Woodlawn Neighborhood Shopping Center, a mini-mall development designed to enhance the commercial character of the area. By reversing the impression that the corridor was deteriorating and experiencing public abandonment, this strategy would reduce fear of crime in the area.

- Transportation Improvements. These would include a bus program for the elderly and handicapped,

weekend market shuttle buses, improved bus services and shelters, and street and sidewalk improvements. These improvements were designed to reduce the crime-risk exposure of citizens to street assaults, stimulate and support commercial activity, and provide stronger links between the area and important employment and market resource areas of the city.

- Security Advisor Services. Security Advisor Services would include commercial and residential security surveys and followup, organization of citizen involvement, and security awareness promotion. The security services were primarily aimed at reducing the opportunity for commercial and residential burglary and robbery. The program involved both social strategies (citizen participation) and physical strategies (target hardening).
- Law Enforcement Support. This would include patrol surveillance, special support to the Union Avenue Corridor activities, revision of police patrol districts, storefront operation on the corridor, and improved communication. This strategy was intended to improve police/community

relations, encourage citizens to report suspected or known crime events, and increase the effectiveness of police patrol efforts. Another benefit of improved law enforcement support would be crime deterrence as a result of increased police visibility.

- Cash Off The Streets. This strategy would encourage people not to carry significant amounts of currency on the streets and would enable them to communicate this fact to potential purse-snatchers and robbers. The program would include special bank checking services for the elderly, commercial business support, and a public awareness campaign.

Finally, the management plan for the CPTED project included providing technical assistance in such areas as housing rehabilitation and commercial design.

4.3.3 Functional Responsibilities

4.3.3.1 Security Advisor Function

The Security Advisor function had prime responsibility for implementing the nonphysical elements of the Concept Plan. It was the responsibility of this function to develop and initiate activities that would involve commercial business owners/operators, local residents, public representatives, special interest groups, and law enforcement

agencies to promote awareness of crime problems and to mobilize cooperative efforts to reduce those problems. The function was also responsible for monitoring the activities to ensure that all efforts were properly coordinated and undertaken on schedule.

4.3.3.2 Redevelopment Project Coordinator

The Redevelopment Project Coordinator's prime responsibility was to implement the long-range plans of the Union Avenue Redevelopment Program under the jurisdiction of the Portland Development Commission and to work to ensure that the planned physical changes were consistent with CPTED demonstration objectives.

4.3.3.3 CPTED Consortium Support

The CPTED consortium provided technical management assistance to the local program coordinators through the CPTED Liaison Representative. In addition, the consortium provided funding to support evaluation activities, as well as assistance in seeking funding for implementation of some elements of the Concept Plan.

4.3.3.4 The Union Avenue CPTED Advisory Panel

The Union Avenue CPTED Advisory Panel was made up of representatives of City agencies, citizen and business organizations, the CPTED consortium, and other involved groups appointed by the Mayor. The primary functions of the Panel were to review CPTED demonstration proposals and other developments to ensure that the Commercial Demonstration project was properly coordinated with other City projects; to report CPTED Program developments to the Mayor; to make appropriate recommendations;

and to assist the local coordinators in procuring supplementary funds, in-kind services, and local cooperation.

4.3.4 Management Plan

Coordination of the divergent functional thrusts in the implementation of the CPTED Demonstration Plan was of critical importance. The consortium worked with several City agencies to develop a management approach for the Portland project. Figure 4-1 depicts the proposed management structure with respective relationships drawn between key roles. It was the expressed intent of the consortium for this structure to serve the City of Portland beyond the life of the CPTED Commercial Demonstration Project.

4.3.5 Participating Groups

This section describes the participants in the CPTED Commercial Demonstration project in three categories: City of Portland organizations, other public agencies, and community and private organizations.

4.3.5.1 City of Portland Organizations

The City of Portland, together with NILECJ and the CPTED consortium, was the primary sponsor of the CPTED project in Portland. Consequently, the largest participating group of organizations fell within the jurisdiction of City government. Figure 4-2 outlines City organizations, within their line structure, that were then perceived as CPTED-related. The major departmental organizations and their proposed relationship with the implementation of the Demonstration Plan are described below.

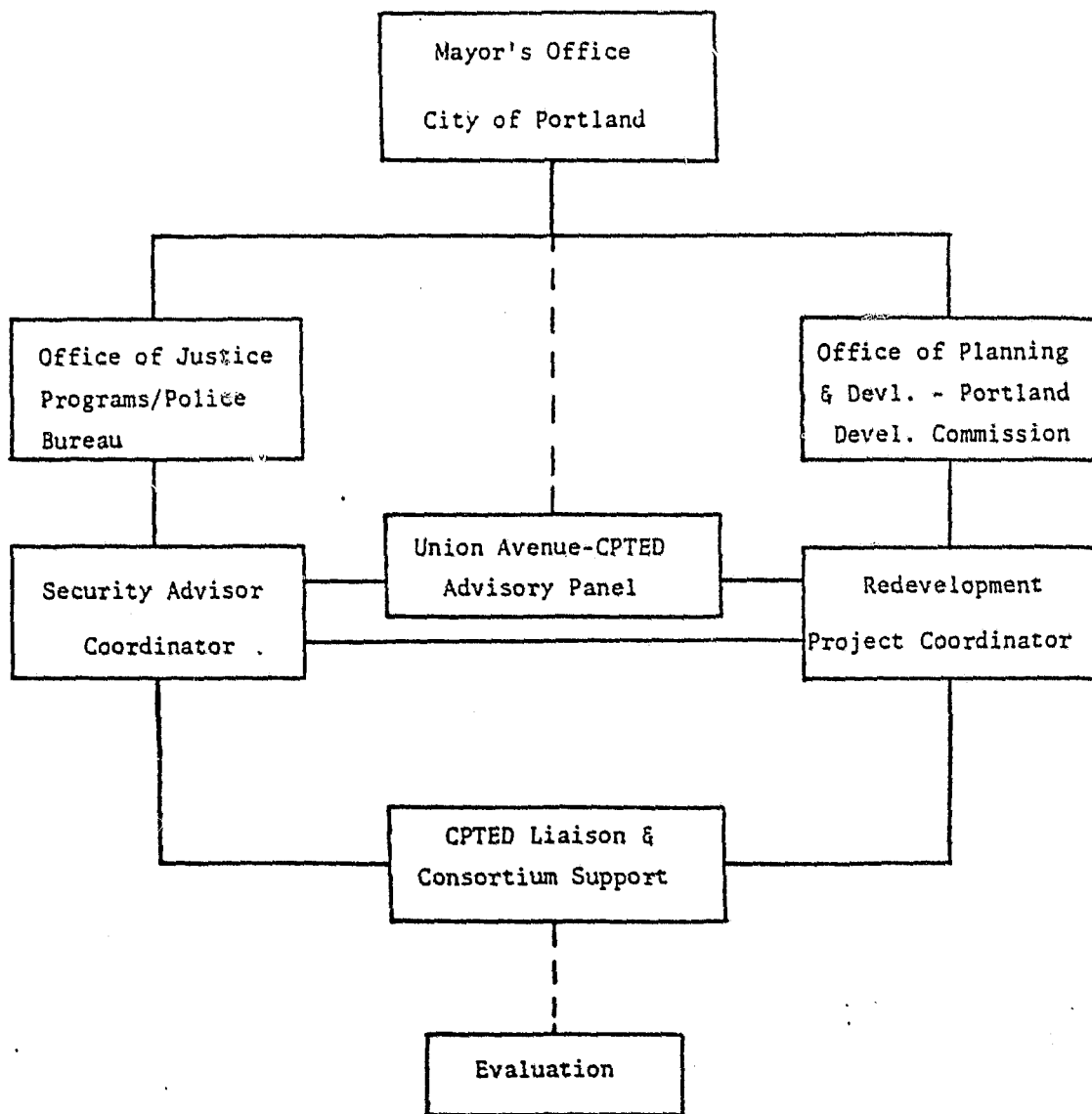


Figure 4-1. CPTED Commercial Demonstration Project
Organizational Relationships

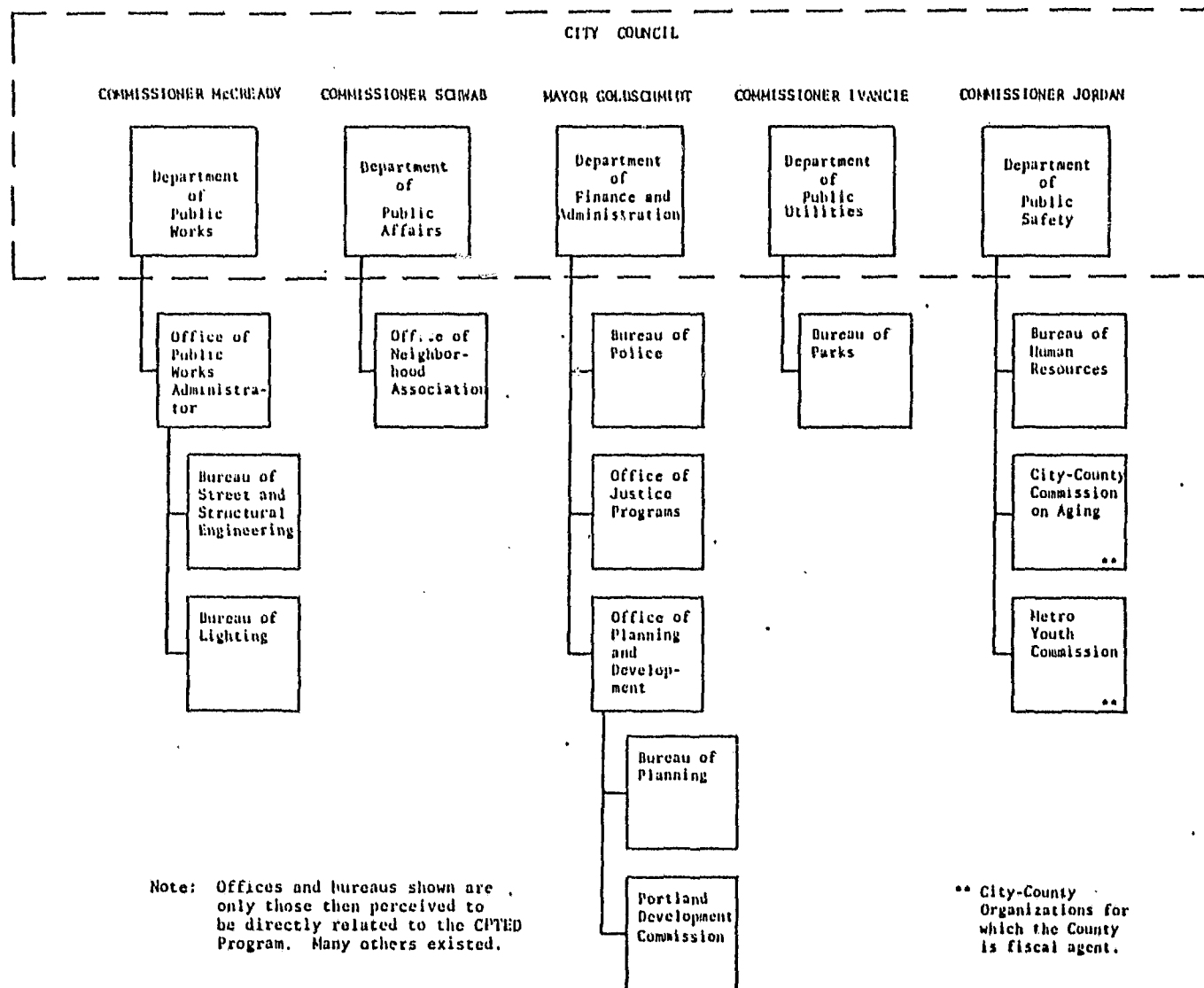


Figure 4-2. City of Portland Organizations Directly Involved in the CPED Demonstration

- Department of Finance and Administration. This department was headed by the Mayor and was the key to establishing the CPTED project in Portland. The department reviewed and approved both the CPTED Concept Plan and the Union Avenue Five Year Redevelopment Plan to ensure consistency. The bulk of organizations involved in the comprehensive CPTED process fell within the responsibility of this department.
- The Department of Public Affairs. The Department of Public Affairs reviewed those parts of the CPTED Demonstration project that related to neighborhood activities.
- The Department of Public Safety. The Department of Public Safety was responsible for the activities of several offices identified as having direct relationships to the CPTED project.
- The Department of Public Utilities. The Department of Public Utilities reviewed recommendations that related to landscaping on easements and other municipally owned land.
- The Department of Public Works. The Department of Public Works reviewed plans that influenced street engineering and lighting.

4.3.5.2 Other Public Agencies

This category was comprised of those agencies that would be asked to participate either directly or indirectly in the CPTED demonstration project outside of the formal organization of the City of Portland.

They included:

- Columbia Region Association of Governments.
- Economic Development Administration.
- Portland State University Educational Center.
- State Highway Division.

4.3.5.3 Community and Private Organizations

This category was comprised of special interest groups directly involved in the implementation of various CPTED strategies, including:

- Oregon Automated Clearinghouse Association.
- Oregon Bankers Association.
- Pacific Northwest Bell Telephone Company.
- Union Avenue Boosters Club.
- A Union Avenue Businessmen's Association.

4.4 Funding Sources

As noted in Chapter 3, the issue of funding sources was envisioned as ongoing throughout the life of the CPTED project. The issue of funding sources was, in fact, understood to be complementary to the overall concept of the CPTED Program. In other words, any new activity that is to take place in a given environment -- be it social, physical, or otherwise -- which has an element of planning or design is a candidate for integration of CPTED concepts.

The following were the sources secured at the time of project implementation:

- LEAA/NILECJ CPTED Program.
- Portland LEAA Impact Program.
- Housing and Community Development Program (HCD).
- Tri-Metropolitan Transit Authority.

4.5 Planned Project Schedule

The distinction between the planning phase and the initiation/organization phase was nowhere clearer than with respect to the proposed work schedules associated with each phase. The official Demonstration Plan was released 14 months after the Concept Plan had been released. Progress on the CPTED Commercial Demonstration project was viewed as both encouraging and slow. The machinery of such a comprehensive approach was by then understood to be quite cumbersome yet necessary to ensure long-range realization of project objectives.

The Demonstration Plan's proposed work schedule is presented in Figure 4-3. The activities identified represented sincere commitments by respective areas of responsibility. It was noted that, with the exception of the Evaluation Plan, none of the activities was a function of the NILECJ/Westinghouse CPTED contract.

Responsibility	Tasks	1975				1976												1977												1978				
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	
Security Advisor	Commercial Security Surveys																																	
	Commercial Security Survey Followups																																	
	Community Involvement Planning																																	
	Community Involvement Implementation																																	
	Businessmen's Committee																																	
	Media Coordination																																	
	Cash Off The Streets Planning																																	
	Cash Off The Streets Implementation																																	
	Crime Prevention Dissemination																																	
Liaison With Neighborhood Special Interest Groups and with Other Agencies																																		
Redevelopment Coordinator	Mini Plaza & Transportation Planning																																	
	Mini Plaza & Transportation Implementation																																	
	Landscape Union Between Graham & Sacramento - Plan Implement																																	
	Second Year H.C.D. Programming																																	
	Liaison With Other Agencies																																	
	Initiate Highway Improvements																																	
	Landscape Knott Street - Planning																																	
	Landscape Knott Street - Implementation																																	
	Area Improvements & Economic Development																																	
Lighting Bureau	Lighting Design Engineering																																	
	Lighting Construction																																	
Tri Met	Bus Shelter Installation																																	
Evaluation (CPTED)	Baseline Data Collection																																	
	Contract For Evaluation																																	
	Evaluation																																	
CPTED Liaison	Documentation																																	
	Coordinate All CPTED Related Activities																																	
	CPTED Demonstration Consortium Support																																	

Figure 4-3. Commercial Demonstration Project Schedule

CHAPTER 5. PROJECT IMPLEMENTATION

5.1 Introduction

The Project Implementation phase of Portland's CPTED demonstration project formally began with the organization of the implementation team and the finalization of the Demonstration Plan, and continued throughout the life of the project. In the broader sense, however, because successful implementation depended to a large extent on the CPTED project's being integrated with a number of ongoing and planned programs in the Union Avenue Corridor, the Implementation phase began even before the first site visit to assess Portland's feasibility as a potential demonstration site.

Moreover, there was no one point at which Portland's CPTED planning ended and implementation began. Strategy implementation required continuous reassessment of what could be accomplished; that is, continuous replanning was implicit in the Implementation phase. For example, as the leadership for Union Avenue revitalization switched from the City's Planning Bureau to the Development Commission early in 1976, some momentum was lost. Both agencies were under the Mayor's direction but, with changing personnel and a different orientation, the Development Commission had difficulty in committing resources for some project elements. Since they were not directly involved in planning, this was primarily due to problems in coordinating project activities with already existing development commitments.

These concerns culminated in a 2-day workshop in Chicago in May 1976 at which consortium and local representatives hammered out the details of a workable program for applying their CPTED resources (the existing work plans had not enabled the planners' agendas to become developers' activities). This was 19 months after the October 1974 official agreement-in-principle to go forward with the proposed demonstration project.

In summary, the process of implementing Portland's CPTED project was quite complex. Table 5-1 presents some of the events that contributed to and reflected that complexity, from well before the initial site visit through the Chicago meeting.

The following sections discuss the two basic issues that emerge from this phase:

- The effort that went into making the project a reality.
- The physical, social, managerial, and law enforcement changes that actually occurred.

5.2 CPTED Effort

Two sets of data indicate the effort that was expended to implement and maintain the project: Description (number, type, quality) of the project activities, and documentation of some costs associated with these activities, and assessment of the quantity and quality of the immediate changes in UAC's environment, including the costs of these changes.

TABLE 5-1

Implementation of Commercial Demonstration Project
(Page 1 of 2)

<u>Event and Participants</u>	<u>Months Since Inception*</u>
Draft of Model Cities Comprehensive Plan recommends that Union Avenue be developed as a specific program - plan and redevelopment. Economic studies prepared.	-16
Administrator of the Office of Planning and Development hired - new position to coordinate Planning Bureau, Building bureau, Development Commission. Responsible to Mayor; eventually responsible for ensuring support pledged for the Bureaus and Commissions under him.	-14
Model Cities Planning Board and City agree to launch Union Avenue Redevelopment Plan. Planning Bureau starts.	-10
Office of Justice Programs conducts neighborhood meetings in central locations in parallel with Police Bureau -- explains crime prevention.	- 5
CPTED Consortium visits candidate cities in search for Commercial Demonstration site; holds site analysis meeting with local officials and consultants; tie together CPTED and potential commercial strip site.	- 2
CPTED Consortium presents briefing to Mayor. Major meetings are held among CPTED Consortium and local officials, steering committees, staff, and neighborhood committees; develop specific recommendations for redevelopment and planning process with consortium input. Consortium and city staff tie Union Avenue plans and CPTED together in detail. With pledge of support by Mayor, "in principle" agreement on mutual cooperation is achieved.	0*
Union Avenue redevelopment plan delayed two months due to discussions on Fremont Bridge ramp opening; plan further refined during hold period.	0
CPTED Concept Plan issued.	3
Onsite CPTED Consortium Coordinator begins, part-time.	5
News article in daily paper describes CPTED developments.	9
LEAA announces that Portland is chosen as a demonstration site -- CPTED to be integrated with 5-year redevelopment plan.	9
Feature news article in weekly paper is basically critical because of no new funding, although does note CPTED Consortium role in successful lighting grant and acknowledges CPTED Consortium role in helping to pull together otherwise divergent activities.	10

* October 1974 is designated as the Demonstration's inception month.

TABLE 5-1

Implementation of Commercial Demonstration Project
(Page 2 of 2)

<u>Event and Participants</u>	<u>Months Since Inception*</u>
Union Avenue 5-year redevelopment plan completed; presented to City Planning Commission; sets forth policies, strategies, land use, plans for redevelopment; discussed, but no action taken.	14
City Union Avenue Coordinator working Planning Bureau -- coordinates with CPTED Consortium on CPTED.	14
Union Avenue Coordinator position transferred to Development Commission.	15
Development Commission assumes leadership in implementing program. Planning Bureau staff phases out and becomes advisory. CPTED Consortium shifts emphasis to Development Commission.	15
City Council approves Housing and Community Development Program Budget \$350,000 earmarked for Union Avenue ('76 - '77) to support CPTED activities.	15
City Planning Commission approves revised Union Avenue 5-year plan; now an official document; presented to Development Commission Project Manager for Union Avenue Program hired by Development Commission (CPTED Consortium onsite coordinator resigns).	16
CPTED Demonstration Plan issued.	17
CPTED Consortium and city staff conduct major meeting to refine work program (Chicago); refinement focuses on gaps revealed in transition from a planning document to Development Commission activities that can be coordinated with ongoing Development programs.	19

* October 1974 is designated as the Demonstration's inception month.

5.2.1 Staff Activities

The Westinghouse CPTED coordinator was on-site part-time from March 1975 to June 1976 and full-time from September 1976 through February 1978. With ongoing consortium support, the coordinator helped the city of Portland develop, review, promote, and implement the UAC revitalization efforts to conform with the CPTED approach as outlined in the Commerical Demonstation Plan.

In addition, two other sets of personnel were intimately involved in the Portland Demonstration. Three staff members from the Portland Police Crime Prevention Unit provided security advice, assisted the functioning of the Northeast Business Boosters (NEBB), helped coordinate the Sunday Market and Clean-up Day activities, and coordinated and helped perform the commercial and residential security surveys from October 1975 through December 1977, for approximately 350 man-days. The cost of police personnel and related operating expenses is estimated at \$25,000 to \$30,000.

The Union Avenue Office of the PDC had three staff members involved in CPTED-related activities throughout the period December 1976 through December 1977, for a total of 310 man-days. These individuals provided various support services to both the business and residential communities. The cost associated with these personnel and related operating expenses was approximately \$32,000.

In addition, throughout the project, the City of Portland provided ad hoc staff for the development, review, promotion, and implementation activities.

5.2.2 Quantity and Quality Of Immediate Changes in the Physical and Social Environments

A number of strategies were implemented in UAC to bring about changes in the physical and social environments. These strategies represent the program's operationalization of the CPTED design concepts (e.g., access control). The strategies included commercial and residential security surveys, installation of high intensity and infill street lighting, creation of a "safe street for people," installation of new bus shelters, organization and support of the Northeast Business Boosters (NEBB), Sunday Market and Clean-up Days, and planning support and technical assistance for other environmental changes.

5.2.2.1 Security Surveys

The City of Portland received an LEAA grant (\$400,000 plus \$40,000 in local matching funds) to provide Security Advisor Services and to make street light improvements in Northeast Portland; \$78,000 of the total was earmarked for the Advisor Services. The Portland Police Department's Crime Prevention Bureau performed security surveys of all UAC businesses (approximately 210) and of approximately 160 residents in the Alberta-Killingsworth area. The commercial surveys were performed in February 1976 and follow-up surveys were done in August 1976 and February 1977. For each original survey, a police officer inspected the businesses' physical premise in order to identify security deficiencies. When such deficiencies were identified, recommendations

for improvements were made (e.g., install better locks). A copy of the form used to perform the security surveys is shown in Appendix I. The police subsequently checked to determine the extent to which their recommendations were followed.* Twenty-five officers were involved in the commercial surveys and follow-ups for approximately 170 man-days at an estimated cost of \$12,500.

The residential surveys were performed in August and September of 1976. There were limited funds available for these surveys and subsequent target-hardening efforts. Thus, a decision was made to concentrate the surveys and improvements in an area east of Union Avenue, between Alberta Street and Killingsworth Street. Approximately 160 residents were surveyed by police, requiring approximately 200 man-days for an estimated cost of \$16,500. Recommendations for improvements were made on a form similar to that shown in Appendix J. As these residences were owned by lower-income persons, public money was available for some of the recommended security improvements. From April 1977 through August 1977, security devices were installed by veterans hired on a CETA grant at an estimated labor cost of \$26,000. The total cost of the security devices that were installed (e.g., locks) is estimated at \$13,500. Money for these improvements was provided by the Portland Office of Planning and Development using HCD funds at their disposal.

*Costs for all security improvements were incurred by the businessmen, as no public funds were available for purchasing security devices for private businesses.

5.2.2.2 Street Lighting

The LEAA grant provided \$362,000 for the street light improvements. Installation of high intensity lights on Union Avenue and infill lighting in residential side streets began in January 1976 and was completed by March 1977. This work required approximately 10 man-years of labor for an estimated cost of \$210,000. In addition, material costs were approximately \$151,000. The work was performed primarily by an outside contractor for Portland's Street Lighting Department.

5.2.2.3 Safe Street for People

Knott Street was designated as a "safe street for people." In its redesigning, Knott Street was repaved, curbs were reconstructed to narrow the street at several points in order to necessitate slow vehicular speeds, sidewalks were repaved with walk-up ramps at curbs, and physical amenities and landscaping were provided both for functional and aesthetic purposes.* Construction was begun in September 1976 and completed by February 1977; landscaping was done in March of 1977. In total, approximately \$120,000 in labor and \$70,000 in materials were committed to the Knott Street redesign. In addition, it is estimated that \$13,500 is required for yearly maintenance.

5.2.2.4 Bus Shelters

In November 1975, eleven new bus shelters were installed in various locations throughout UAC. Total labor costs associated with these shel-

*In November 1977, construction began on a housing complex for the elderly near the west end of Knott Street. It is intended that Knott will function as a safe passageway to Union Avenue for the elderly.

ters were approximately \$2,000, with material costs estimated at \$21,000. These shelters provide riders with adequate protection from the weather, have a functional appearance, and are transparent to afford good two-way surveillability.

5.2.2.5 Northeast Business Boosters (NEBB)

A businessman's organization, the Northeast Business Boosters (NEBB), was organized and maintained through the efforts of the Crime Prevention Bureau staff, CPTED coordinator, PDC staff, and other key UAC business leaders. NEBB has met monthly since its start-up in June 1976 with an average attendance of 20 to 30 members. Support services are provided by the PDC staff at the Union Avenue office, and by the Crime Prevention Bureau staff. NEBB has maintained an average membership of 100, and has strongly supported the CPTED revitalization efforts.

5.2.2.6 Special Events

A UAC Clean-up Day and Sunday Market were organized to improve the appearance of the physical environment and to promote community spirit. The Clean-up Day occurred in August 1976 and the Sunday Market took place in October 1976. Support services for organizing these events were provided by the Crime Prevention Bureau staff at an estimated cost of \$1,800. Approximately one-fourth of the businesses participated in the Clean-up Day; the Sunday Market had an attendance of over 500 persons.

5.2.2.7 Support and Technical Assistance

Finally, the CPTED coordinator, Crime Prevention Bureau staff, and UAC-PDC staff have provided support and review services for the planning stages of other UAC revitalization activities. These include the Knott Street housing project for the elderly, a total redesigning of Union Avenue, construction of new businesses, and the possible construction of a new veteran's hospital.

The interviews that were conducted with businessmen and residents assessed the extent to which each group was aware of the physical changes associated with the CPTED revitalization effort. The percentage of persons who recalled a particular physical improvement is shown in Table 5-2. In total, 87.5 percent of the businessmen and 57.1 percent of the residents mentioned at least one major physical change that they could remember had taken place in the past year or so. This information was gained via a recall-type question. Thus, the percentages are undoubtedly conservative, due to a memory effect (i.e., some proportion was probably aware of a certain physical change but simply failed to remember it at the time of the interview).

Businessmen who recalled at least one of the CPTED revitalization changes were also questioned about the purpose for such changes. Forty-four percent felt the changes were meant to increase business confidence, 32 percent stated the changes were aimed at improving UAC's appearance, 13 percent felt the changes were an attempt to improve UAC's reputation, 12 percent stated they were aimed at crime reduction,

TABLE 5-2

Percentage Recalling Physical Changes

<u>PHYSICAL CHANGE</u>	<u>BUSINESSMEN</u>	<u>RESIDENTS</u>
Street Lights	54.4%	22.0%
Structural Clearances	19.1%	23.2%
Bus Shelters	7.4%	1.7%
Repaved Streets & Curbs	8.1%	13.0%
Sidewalk Repairs	4.4%	1.1%
Other Physical Changes*	58.1%	27.1%

*Most of these responses were related to "cleaning-up" or improvement of the physical appearance of businesses and residences.

and 7 percent felt they were an attempt to decrease fear of crime and improve the quality of life in UAC. These results indicate that while not a majority, a sizable proportion of the UAC businessmen are aware of CPTED's goals.

5.3 Factors Affecting Specific Strategies

Many strategies had been proposed during the Initiation and Planning phases, and others were developed later. Some were implemented as proposed, others had to be revised, and still others were delayed or had to be dropped. Such results had been anticipated because of the experimental nature of the demonstration project. The following comments suggest the range of circumstances affecting various strategies.

5.3.1 Residential Services Center

The original CPTED and Redevelopment plans called for the creation of a neighborhood shopping center at the corner of Dekum and Union Avenue. A local economist and the Portland Economic Development Director did a market feasibility study, with assistance provided by the consortium. The results were not encouraging for business development in that area at the present time.

5.3.2 Road Improvements

Approximately \$4.5 million in transferred Federal highway funds were made available to the Union Avenue Redevelopment program. A full-time coordinator, hired by the City Public Works Bureau, is now working on plans for construction, which is scheduled to begin in early 1979. Plans call for a complete overhaul of 3 1/2 miles of Union Avenue, adding left-turn lanes, a median strip, directional signals, landscaping, and trees to make the street more amenable to vehicular and pedestrian traffic.

5.3.3 Community Organization

The formation and support of the Northeast Business Boosters was a major improvement in UAC's environment. Efforts to organize the residential community into one cohesive, viable group were not as successful. The CPTED and Redevelopment projects both drew on existing neighborhood associations that had been created under Model Cities' plans. CPTED Advisory Committees were formed, but they have not been very stable. Many presentations on revitalization and crime prevention efforts were made to citizen's groups, however, these groups have not been directly involved with CPTED. Police/community coordination could have been aided by the proposed relocation of the police North Precinct headquarters. The move had favorable public support, but plans had to be abandoned when the Public Works bill, under which the move was to be financed, was vetoed.

5.3.4 Bus Shelters and Transportation Improvements

As mentioned previously, the Tri-Met Transit Company installed eleven transparent, three-sided bus shelters in the Union Avenue area. Original plans called for telephones, lights, mini-plazas, and landscaping near the bus shelters, but implementation of most of these plans was determined to be too costly. Limited landscaping was done and some of the shelters happened to be located near phones.

A special bus service, known as LIFT, was created for the elderly and the handicapped. This dial-a-bus system is offered free to the indigent and others pay what they are able. It has proven highly successful in UAC and other low income areas of the City.

5.3.5 Mini-Plazas

Design consultants were asked to draw up plans for mini-plazas at major intersections and bus stops. However, the City parks department would not approve the construction of such small parks, primarily because of maintenance considerations. An alternate plan proposed construction of a mini-plaza adjacent to the neighborhood shopping center. Since the neighborhood shopping center has not yet materialized, plans for the mini-plaza are also suspended for the time being.

5.3.6 Special Events

A farmer's market was held throughout the warm months of 1977, providing low-cost fresh produce to residents of the area. Although the CPTED Demonstration Plan had not included this activity, it served the purposes of CPTED in drawing people to the commercial area. It represented a positive happening in the general revitalization effort.

5.3.7 Business Development

Several large business concerns have indicated renewed interest in the Union Avenue location. A BMW dealership opened in the area in 1976, along with a number of smaller concerns. Herfy's Hamburger House, a national franchise restaurant chain, has purchased land in the area, although no development has yet taken place. A major national department store chain has also expressed an interest in developing a warehouse/office complex along Union Avenue. There is general support from the City and local business people, with some concern expressed because a number of residences would have to be demolished. Meetings with

neighborhood associations affected by the proposed warehouse are now taking place and a decision has not yet been made.

5.3.8 Cash Off The Streets

The Cash-Off-The-Streets program was one of the original strategies of the CPTED effort, designed to reduce the number of robberies and assaults, particularly against the elderly. A preliminary advisory committee was formed and plans were made to submit a grant application to the Administration on Aging. In addition, there was apparent support from local banks and savings and loan establishments. CPTED technical assistance was also provided. However, the grant application was not approved. In addition, local branches of the banks found that statewide changes in policy were needed to implement some of the proposed strategies, such as paying utility bills at the bank and issuing special identification cards. These changes could not be leveraged within the scope of the CPTED project. Since local interest remains high, this strategy may eventually be established under ongoing crime prevention programs in the city.

CHAPTER 6. PROJECT EVALUATION

6.1 Introduction

Evaluation of Portland's CPTED project included two distinct phases. During the first phase, the American Institutes for Research (AIR), a consortium member, performed preevaluation activities, including the preparation of a draft evaluation plan (incorporated in the Commercial Demonstration Plan) and the collection of baseline information.* The second phase was initiated in January 1977, when the Westinghouse Evaluation Institute (WEI) accepted responsibility for designing and conducting an evaluation that reflected the most current understanding of both CPTED theory and demonstration project realities. This chapter includes a brief description of AIR's early effort, followed by a more detailed discussion of the design and process of WEI's evaluation.

6.2 Preevaluation Report

The demonstration plan posed several evaluation problems for AIR. First, a staggered implementation schedule was almost inevitable given

*American Institutes for Research. Evaluation of the CPTED Commercial Demonstration in Portland: Baseline Sources and Materials, by B. B. Bourque. Prepared for the Westinghouse Electric Corporation under contract to the U. S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, Washington, DC: American Institutes for Research, August 1976.

the expectation of varied funding sources for the proposed projects. This increased the difficulty of obtaining pre- and post-measures of variables related to CPTED inputs. In addition, the first project -- new and in-fill lighting funded by the grant from LEAA -- was initiated a year before the evaluators were to be hired. Since baseline trends had to be documented before the high intensity lighting was installed, AIR assumed responsibility for collecting perishable baseline data.

The search for potential data points was guided by an evaluation plan prepared by AIR in 1975. In that plan the assessment of CPTED was divided into three levels of impact: Immediate outcomes, or the extent to which planned physical and organizational changes were implemented; intermediate impact, such as increases in the difficulty of committing crimes, increases in risk of apprehension, and increases in environmental attractiveness; and ultimate impact, or reductions in crime and fear of crime and revitalization of the corridor. Outcomes at each of these levels of impact were mediated by variables related to the implementation process and by disposing conditions or independent variables.

Working within the general framework of the evaluation plan, AIR attempted to determine if relevant data could be retrieved from existing archives and to collect any perishable data not available from the archives. Portland agencies were found to be unusually rich archival data sources, partially because of the ongoing Union Avenue

urban renewal project and the residual Impact Cities programs. However, there were significant gaps in the archival sources: Few unobtrusive indicators of activity levels in the corridor and no detailed record of the pre-CPTED physical environment were available. These data were supplied through observation of persons in the corridor area in the evening and photographs of a sample of residential and commercial lots.

Beginning with preliminary lists of variables for assessing outcomes at each impact level, AIR attempted to locate data sources for each variable and to describe them in terms of organization and comprehensiveness. In the process, indicators were both deleted and added. No sources were reported for other indicators as they could not be described until CPTED strategies were implemented.

Tables 6-1 through 6-5 present brief descriptions of potential data sources for independent and dependent variables. (Process variables were not described as they would most likely be measured by interviewing CPTED staff and Portland officials.) AIR noted that these tables did not comprise an evaluation plan but were intended as a tool that would expedite the evaluation process without dictating its form. Most of this effort could not be used in the actual evaluation because of time constraints (including those imposed by delays in project implementation), cost constraints, and the need for different types of information that were dictated by refinement of the theory underlying the CPTED demonstration. Nevertheless, Tables 6-1 through

CONTINUED

1 OF 4

TABLE 6-1

Dependent Variables for Assessing Reductions in Crime

Indicators	Unit of Analysis	Data Source	File Structure	Dates Available	Missing Data	Difficulty Obtaining
1. Number of assaults/street robberies/ purse-snatches/commercial robberies, day/night	street block or commercial establishment	• Strike Force Street Crime Log	organized by date; type of offense clustered for each day	January 1974—June 1975	None	None
		• Strike Force Daily Crime Log	organized by date; precinct and type of offense clustered for each day	June 1975—July 1976	None	None
		• Strike Force xeroxes of Police Crime Reports	organized by month; precincts clustered for each month	January 1973—June 1976	None	None
		• Police Crime Reports	organized by case number (approximates chronological order)	1973 to present	None	must identify case number
2. Number of rapes and murders, day/night	street block	• Police Crime Reports	see above	see above	None	see above
		• Police Detective Listings	organized by type of serious crime for each year	for the most recent year	None	None
3. Number of commercial burglaries/residential burglaries, day/night	street block or commercial establishment	• Strike Force Daily Log	see above	see above	None	None
		• Strike Force xeroxes of Police Crime Reports	see above	see above	None	None
		• Police Crime Reports	see above	see above	None	see above

TABLE 6-2

Dependent Variables for Assessing Reduced Fear of Crime

Indicators	Unit of Analysis	Data Source	File Structure	Dates Available	Missing Data	Difficulty Obtaining
1. Number of pedestrians in corridor at night	street block	• a. observation	organized by street, age, sex, and race	October, 1975 and January, 1976	daytime	pretest in package; posttest to be taken
2. Bus usage	bus stop	• a. observation	organized by street	October, 1975 and January, 1976	too few persons were sighted at bus stops for a pretest; night only	pretest in package; posttest to be taken
		• b. retrospective interview Interviews with bus drivers	—	—	—	—
3. Commercial activity—day/night	commercial establishment	• City of Portland—Business License Division	organized by fiscal and calendar years	1975 to present	no breakouts for day/night sales; only estimates available for businesses initiated in previous year	None
a. value of sales	commercial establishment	• Individual businesses (Union Avenue Booster Club for persons to contact)	—	—	—	—
b. hours open	commercial establishment	—	—	—	—	—
4. Fear of crime items in a local victimization survey (items no. 6/1, /6, /7, /8, /9, /10, /11, /12, /12a, /14, /14a, /15)	Union Avenue corridor area	• raw data from Oregon Research Institute (ORI)	ORI is recoding data for the Union	1974	no posttest interviews	included in Base-line Data Package
5. Attendance at community function—day/night	8 associations in Union Avenue corridor area	• office of neighborhood associations	organized by date of meetings	June 1975 to present	about half of the rosters were not turned into the office	None
a. neighborhood association meetings	8 neighborhoods	• Crime Prevention Bureau	—	July 1973 to present	—	None
b. crime prevention neighborhood meeting records	—	—	—	—	—	—

TABLE 6-3

Dependent Variables for Assessing Revitalization of the Corridor

Indicators	Unit of Analysis	Data Source	File Structure	Dates Available	Missing Data	Difficulty Obtaining
1. Commercial Activity						
a. value of sales for previous year	commercial establishment	• City of Portland, Business License Division, Form L-18	organized in fiscal and calendar years	1975 to present	None	None
b. number of new businesses on corridor	Union Avenue corridor	• City of Portland, Business License Division, Form L-12	organized in fiscal and calendar years	1975 to present	None	None
c. number of commercial establishments going out of business or moving	Union Avenue corridor	• City of Portland, Business License Division, Form L-18	organized in fiscal and calendar years	1975 to present	None	None
2. Evidence of residential and commercial maintenance	street block/ commercial establishment	<ul style="list-style-type: none"> • a. Photographs of Union Avenue and sample of residential and commercial lots • b. Portland Planning Bureau photographs of Union Avenue 	included in package — 1974	1976 1974 only	— photographs are of Union Avenue only	included in package None
3. Condition of structures	street block	• Portland Planning Bureau; Union Avenue Redevelopment Land Use Survey	computer printout of raw data	1974 only	no posttest	None
4. Real estate value	street block	• City of Portland—records of sales	—	—	—	—
5. Opinion of Union Avenue corridor residents	street block	• interviews				
6. Attendance at community functions:						
a. neighborhood association mtg.	8 association areas	• Office of neighborhood Associations	organized by date of meetings	June 1975 to present	about half of the rosters were not turned in to office	None
b. crime prevention block mtg.	8 association areas	• Crime Prevention Bureau	—	July 1973 to present	—	None

TABLE 6-4

Variables and Sources for Assessing Achievement of Intermediate Outcomes
(Page 1 of 2)

Outcome	Type of Crime	Indicator	Operational Measures	Data Sources	File Structure	Missing Data	Dates Available	Difficulty Obtaining
1. Increase the physical difficulty of committing a crime	violent street crime	reduced cover for offender	a. inventory of changes implemented by CPTED to reduce cover	1. photographs (see exhibits A and B)	east and west sides of Union Avenue ordered sequentially; sample of side street lots	none for Union Avenue; only a sample of residential areas available	January 1976	in package
				2. listing of changes with security coordinator's office	---	---	no changes had been implemented in January 1976	---
			b. analysis of relationship between exact location of street attack and availability of cover	1. Police Crime Reports (items 28, 31 and 32)	organized by case number (approximates chronological order)	None	1973 to present	yes; no direct access to files; must locate case numbers for each crime
				2. Strike Force xeroxes of Police Crime Reports	organized by month, and within each month by type of offense and precinct	no reports filed for murder; rape reports are incomplete	January 1973 to June 1976	None
		increased number of people on the scene (potential witnesses or deterrents)	a. number of persons who observed or were in a position to observe the crime	1. Police Crime Reports (items 24-27 and details) Police Dept.	see above	yes; all witnesses to crimes are not necessarily listed on the reports and the details section is usually brief	1973 to present	see above
		increased visibility of offender to victim and potential witnesses	a. quantitative measures of illumination	1. Relamping classes and reports of periodic checks of lighting levels by Portland Lighting Bureau	organized by area	None	---	None
	commercial robbery and burglary and residential burglary	increased efficiency of surveillance for police	a. Interviews	---	---	---	---	---
		increased security of the premises (commercial)	a. changes in building access, alarm systems, and lighting	1. building security survey forms (security advisor coordinator)	organized by business	most businesses completed the survey; 200 were conducted	March 1975 to March 1976	None
		increased security of the premises (residential)	a. changes in building access, alarm systems, and lighting	1. interviews with victims to determine changes	---	---	---	---

TABLE 6-4

Variables and Sources for Assessing Achievement of Intermediate Outcomes
(Page 2 of 2)

Outcome	Type of Crime	Indicator	Operational Measures	Data Sources	File Structure	Missing Data	Dates Available	Difficulty Obtaining
				2. Interviews with crime prevention officers in the Police Dept.	—	—	—	—
		Increased incidence of unsuccessful burglary/robbery	a. number of unsuccessful attempts	1. Police Crime Reports	see above	None	see above	see above
		Increased exchange of offender information among businesses	a. use of updated lists of bad check and credit card suspects	Business Owner/Operator Crime Prevention Committee (to be established)				
2. Increase the risk of apprehension	residential and commercial robbery and burglary	increased efficiency of police response to B&E's and robbery calls	a. time lapse between police radio call and rear arrival	1. Police Crime Reports	see above	None	see above	see above
		increased apprehension of offenders	a. apprehension rates by type of crime	1. Police Crime Reports	see above	None	see above	see above
			b. time lapse between commitment of a crime and arrest	1. Police Crime Reports	"	"	"	"
			c. indictment and conviction rates	1. Court records	—	—	—	—
3. Increase the attractiveness of the environment	—		a. comparison of photographs	1. photographs of a sample of residential and commercial lots and of the east and west sides of Union Avenue corridor	—	posttest photographs	January 1976	in package

TABLE 6-5

Independent Variables to be Measured for CPTED
(Page 1 of 3)

Variable	Measurement/ Scoring	Data Source	File Structure	Missing Data	Dates Available	Difficulty Obtaining
General Socio-Economic Environment 1. type of land usage	percent falling into each zoning category	a. Union Avenue Redevelopment Land Use Survey	computerized	None	1974	None
		b. Land Use maps (see pp. 22-30 of <u>Union Avenue Redevelopment Plan--Summary Plan</u>)	—	—	1974	in package, Exhibit O
2. Intensity of land use	percent of lots vacant or abandoned	a. Land Use Survey Maps (see above)	computerized	None	1974	None
		b. vertical aerial photographs of the Union Avenue area	—	—	1969	in package, Exhibit N
3. income (for residential usage)	mean for residential units	a. summary statistics only available in Redevelopment Social Service and Facilities Study	—	no break-outs for street blocks possible	1974	in package, Exhibit X
4. house value	municipally assessed value	a. <u>The Economic Component of the Union Avenue Redevelopment Program</u>	—	no break-outs for street block possible	1974	in package, Exhibit Y
		Land Use Survey	computerized	None	see above	see above
		b. photographs of a sample of residential & commercial lots	—	no posttest photographs	January 1976	in package, Exhibit C

TABLE 6-5

Independent Variables to be Measured for CPTED
(Page 2 of 3)

Variable	Measurement/ Scoring	Data Source	File Structure	Missing Data	Dates Available	Difficulty Obtaining
5. house owner- ship	percent owned by occupant	a. list of Union Avenue corridor landowners (with home addresses)	alphabetical listing	—	November 1974	in package, Portland Planning Bureau
6. evidence of maintenance	mean for residential units on an observa- tional scale for cosmetic condition of house and yard	a. photographs of a sample of residen- tial and commercial lots b. observation	see above	see above	see above	see above
7. racial composition	percent white, black, other —	a. Census Department Block statistics b. <i>The Economic Component of the Union Avenue Re- development Plan</i>	organized by block but Union Avenue blocks are not contiguous	None	1970	in package, Exhibit F
8. exposure to non- CPTED inputs	—	Portland Planning Bureau	—	—	—	to be developed
Crime-Related Environment						
9. accessibility to Union Avenue	number of blocks distance to the avenue avenue	property identification or land use maps—Port land Planning Bureau	—	None	1976	in package, Exhibits N,O
10. security: lighting	indicators to be de- veloped on the basis of lighting checks (i.e. percent of streets below a critical illum- ination level)	Portland Lighting Bureau—Lighting checks	—	None	1975 to present	None

TABLE 6-5

Independent Variables to be Measured for CPTED
(Page 3 of 3)

Variable	Measurement/ Scoring	Data Source	File Structure	Missing Data	Dates Available	Difficulty Obtaining
11. security: land usage indicators	1. number of un- fenced vacant lots	a. photographs of east and west sides of Union Avenue and a sample of residen- tial and commercial lots	-	none for Union Avenue; only a sample of side streets photo- graphed	January 1976	in package, Exhibits A,C
	2. number of lots with hedges, shrubs, trees providing cover	" "	"	"	"	"
	3. business parking lot security (gates, fencing, guards)	interviews with businessmen	-	-	-	-
12. exposure to non-CPTED and CPTED inputs	indicators to be developed	-	-	-	-	-

6-5 are important because they document a significant component of the project's planning and implementation process.

6.3 Evaluation Design and Process

6.3.1 Introduction

This evaluation was designed to assess the extent to which the Commercial Demonstration is a valid implementation of CPTED theory, and the extent to which any measurable impact on CPTED's ultimate goals can be linked to that implementation. The first point addresses the question of program success, while the second point addresses the question of theory success. If it is found that the CPTED program was not validly implemented, then there can be no valid test of CPTED theory; this would be referred to as a program failure. On the other hand, if it is found that there has been a CPTED program success, then the Commercial Demonstration can be regarded as a valid test of CPTED theory. At this point, findings can be evaluated to determine whether the theory appeared to "work" (theory success) or not (theory failure).

6.3.2 Design Considerations

The evaluation design reflects time and budget constraints. These constraints precluded the use of non-UAC comparison groups and limited the scope of data that could be collected in UAC. Two additional constraints operated on the planning of the evaluation: (1) The Commercial Demonstration was an ongoing process and there was no one date that could be identified as "the day" CPTED became operational; and (2)

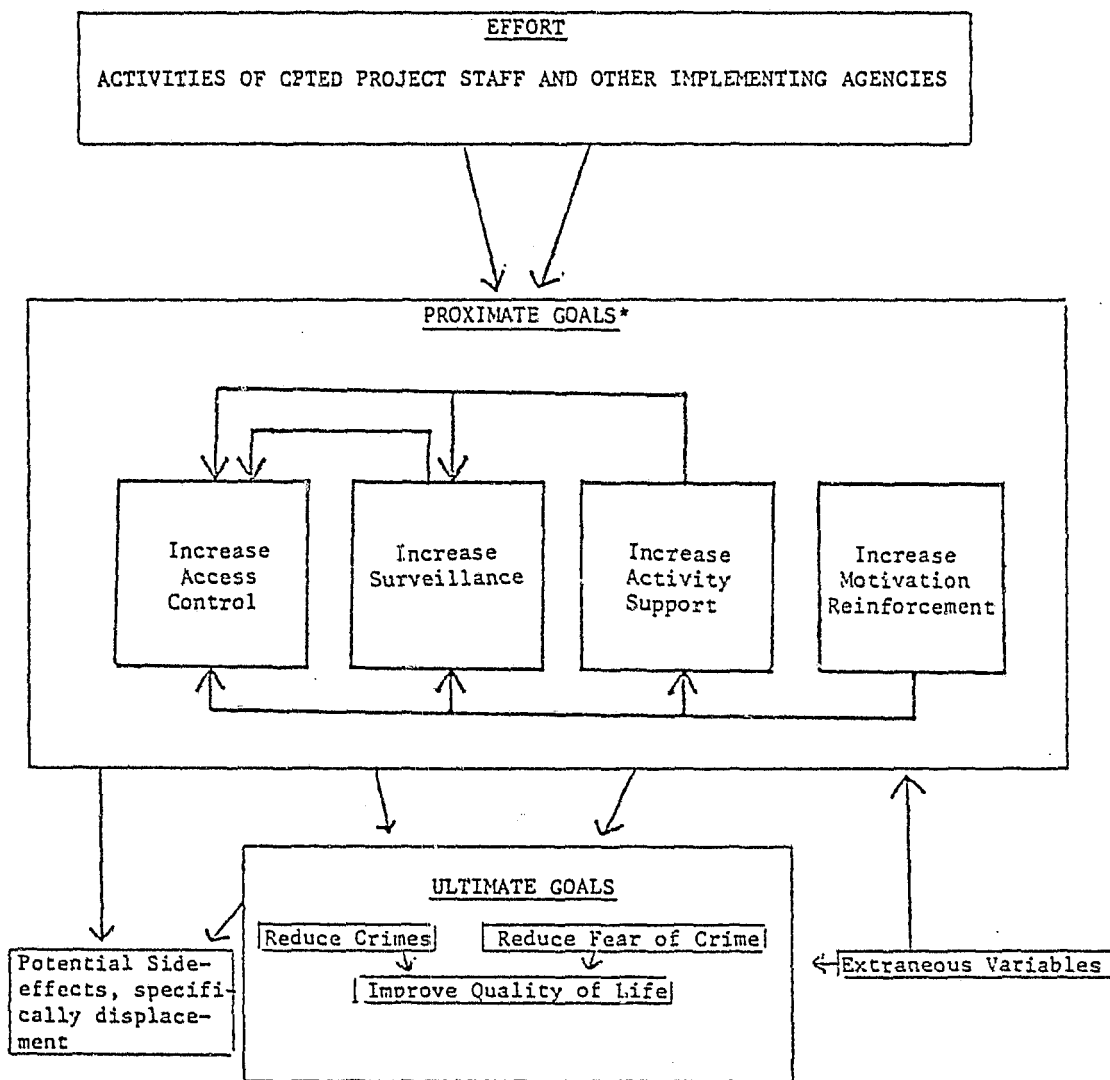
at best, a loose control existed over the timing and location of CPTED implementation. In the absence of rigorous control over when and where CPTED strategies were implemented, the use of one overall experimental or quasi-experimental evaluation design was not possible. Instead, the current evaluation plan was conceptualized so as to maximally understand whether CPTED effort (input variables) led to CPTED proximate goals (intervening variables), which, in turn, led to CPTED ultimate goals (impact variables).

6.3.3 Conceptual Framework

To develop this type of evaluation, it was first necessary to identify the hypothesized CPTED process for Portland's UAC. This meant specifying the logic underlying the project. This required a clear statement of what effort would be expended, what proximate goals this effort was to meet, and what ultimate goals would eventually be attained. The following discussion is based upon the present state of the CPTED theory.

6.3.3.1 Effort and Proximate Goals

The generalized CPTED evaluation framework is illustrated in Figure 6-1. To evaluate the CPTED process, one had to know what effort the project expended: Knowledge of the amount, cost, and timing of project staff activities, and the activities of other groups, related to the planned CPTED environmental changes had to be developed. It was hypothesized that the activities engaged in by the implementing groups would lead to increases in access control, surveillance, activity support, and motivation reinforcement. These proximate goals, or basic CPTED design concepts, are



*The four proximate goals are not mutually exclusive. Surveillance increases also serve to increase access control; increased activity support promotes increased surveillance and access control; and increased motivation reinforcement provides support for increases in the other three.

Figure 6-1. CPTED Evaluation Framework

briefly described below.

- Access Control -- The primary objective of access control is to keep potential offenders out of areas where they may commit crimes. The physical strategies associated with this design concept create obstacles to unlawful entry. The social strategies are aimed at developing social and psychological barriers to potential offenders. The term *social barrier* refers to the tendency of a citizenry to be aware of, and possibly approach, suspicious strangers to determine their reasons for entering the environment. A psychological barrier is assumed to result when potential offenders become aware that their behavior will be monitored and challenged by the citizenry. The successful implementation of access control is assumed to cause the potential offender to perceive his/her chances of successfully executing a crime as being very low, and thus, ultimately act as a crime deterrent.
- Surveillance -- The primary objective of surveillance is to increase the offender's risk by creating an environment in which potential offenders' behaviors are very likely to be observed by nonoffenders (i.e., potential witnesses). The physical strategy

for surveillance is to design and/or modify the built environment so as to make it easier to observe activities. The social strategy is to encourage citizens to be aware of suspicious/criminal activity and to educate citizens about surveillance and crime reporting. Once citizens have been educated and motivated to improve their crime reporting behavior, it is assumed that crime reporting calls will increase in frequency and improve in quality (see below for discussions of activity support and motivation reinforcement). The successful implementation of surveillance is assumed to have a direct deterrent effect on the potential offender by reducing the opportunity for committing a crime without being seen. Improved surveillance should also lead to more efficient police response (e.g., more interrupted crimes in progress), which will eventually act as a deterrent as potential offenders realize that the citizenry is looking and reporting, and the police are responding to these reports.

- Activity Support -- The primary objective of developing activity support is to increase the effective use of the built environment. The physical

strategy for activity support involves designing or modifying the built environment in ways that encourage its constructive use (e.g., improved transportation systems, improved parks, play areas and other positive gathering nodes, etc.). The social strategy increases interaction and communication by organizing, developing, and/or supporting positive social networks in a community. In its most structured form, this social approach is represented by the Community Development Corporation. In this way, the misused or underused potential of the community can be channeled to constructive purposes in a way that people will populate the built environment and eventually, if motivationally reinforced, behave as though it is a semipublic extension of their own immediate habitat (i.e., territoriality). The successful implementation of activity support should lead to an increase in the frequency of usage, and an improvement in the quality of usage, of the built environment. This is assumed to act as a deterrent to crime, as the potential offender will find that the environment contains citizens actively engaged in noncriminal activity and behaving in ways that

indicate a positive concern for what goes on (e.g., various forms of bystander surveillance, crime reporting, and even intervention).

- Motivation Reinforcement -- The primary objectives of motivation reinforcement are to develop a sense of belonging in the environment and to promote and reinforce the development of a community identity in the citizenry, including potential offenders. The physical strategy associated with motivation reinforcement aims to design and/or modify the physical environment in a manner that makes it more personalized and more decentralized. One part of the social strategy is aimed at getting the potential offender population involved in constructive behaviors in the built environment, e.g., hiring unemployed youth to aid in local revitalization activities. A second aspect of the social focus is to reinforce the nonoffender population's positive identification with the environment. The successful implementation of motivation reinforcement will bring about an increase in territoriality and social cohesion. In this way, motivation reinforcement overlaps and supports the design concepts of access control and activity support. It is proposed that as more

persons are reinforced for positive usage of the environment, the proportion of potential offenders in the environment will diminish. Ultimately, motivation reinforcement is aimed at reducing the number of individuals who are likely to commit crimes.

6.3.3.2 Ultimate Goals

These proximate goals must have been accomplished for the CPTED theory to have a valid implementation, because it is through the attainment of the proximate goals that the project theoretically would attain its ultimate goals.

The ultimate goals of the CPTED process are to reduce crime and to reduce the fear of crime, and thereby improve the quality of life. Depending on the specific environment toward which a CPTED project is directed, there may also be other ultimate goals. For example, in a commercial environment such as UAC, an improvement in the economic vitality of the area may be an ultimate goal.* Once the ultimate goals have been identified, an important consideration is understanding the process by which these goals may be attained. While it may be reasoned that fear of crime will decrease as the actual rate of crime decreases, it can also be suggested that fear of crime may change independently

*At the same time, increases in the number and viability of business establishments enhances the commercial environment's ability to provide Activity Support, a proximate goal.

of the actual crime rate. This could occur because fear of crime might be changed (improved or worsened) by factors other than the actual crime rate.

Once the types of effort, the proximate goals, and the ultimate goals have been identified in the general CPTED framework, two final considerations must be identified: Extraneous variables and possible side-effects, specifically displacement. These additional considerations are important to the thorough planning and evaluation of any CPTED project.

6.3.3.3 Extraneous Variables

Extraneous variables are merely factors that may affect the attainment of CPTED's goals, but have no direct relationship to the CPTED project, itself. Examples of such factors are the local economy, local politics, local media, weather, etc. These factors, which are not under the control of the CPTED project, may affect an area's rate of crime and fear of crime. Any effect associated with these extraneous variables could easily be confused with the impact of the CPTED project. As such, it is important to be sensitive to and document changes in these outside factors, in order to help understand CPTED's goal attainment.

6.3.3.4 Side-Effects

A second consideration is the occurrence of possible side-effects, specifically that of displacement. Any crime prevention project must be sensitive to the possibility that while it may meet its specific

crime-reduction goal within its target area, it may also be displacing these crimes to other types of crimes, other crime targets, other geographical areas, other time periods, and/or other crime tactics. An example of this would be a target-hardening strategy that is aimed at reducing unlawful entry without force. While it may reduce the incidence of this specific offense, there may be a comparable increase in unlawful entry with force. Similarly, while a project may reduce the crime rate within its target area, offenders may commit crimes in a new locale. Thus, a CPTED evaluation should address the question of displacement.

In addition to displacement, CPTED strategies can lead to other negative side-effects. The design concepts of access control and surveillance, if carried to an extreme, can cause citizens to be suspicious of any stranger, even one with legitimate reasons for being in the locale. CPTED is clearly not intended to foster such unwanted paranoia. Another example of an unwanted side-effect regards fear of crime. It is possible that in sensitizing citizens toward crime prevention techniques, a project can increase fear and concern about crime. A thorough CPTED evaluation must be sensitive to these and other possible side-effects if the impact of the CPTED process is to be clearly understood.

Associated with the effort, proximate goal, and ultimate goal variables are specific measurement points, discussed below.

6.3.4 Measurement Points

6.3.4.1 Effort Measurement Points

The first set of measurement points related to the effort (activity) that was expended to implement and maintain the project: Description (number, type, quality) of the project activities, and documentation of the costs associated with these activities. The next effort measurement point was the assessment of the quantity and quality of the immediate changes in UAC's environment. Included in this is a documentation of the costs of these changes...

6.3.4.2 Proximate Goal Measurement Points

These measurement points related to the extent of actualization of access control, surveillance, activity support, and motivation reinforcement. The measurement points related to the physical environment were:

- The state of the physical security of UAC's built environment (i.e., target hardness).
- The potential surveillability of UAC's built environment (i.e., how well can one see what is going on).
- The potential usability of UAC's built environment (i.e., what is in the physical environment and how can it be used constructively).
- Specific psychological dimensions of UAC's built environment related to CPTED design concepts

(e.g., aesthetic quality, degree of personalization, clarity of defined spaces).

The measurement points related to the social environment were:

- The manner in which citizens and law enforcement authorities respond to suspicious/criminal activities in UAC.
- The extent of social networks and the degree of community cohesiveness in UAC.
- The degree of territoriality (i.e., behaving as though the generalized built environment is an extension of one's own immediate habitat, thereby creating social barriers to crime in UAC).
- The degree of psychological barriers associated with UAC; specifically, the reputation of UAC.
- The actual usage of UAC's built environment by the nonoffender and potential offender populations.
- Resident and businessman identification with UAC (i.e., to what extent there is a sense of belonging).

Measurement of these indicators of the various proximate goals was central to the evaluation of the CPTED process. These proximate goals are the bridges that link CPTED's activities (effort) to the ultimate goals. Unless it can be demonstrated that the proximate goals were attained, it will be difficult to attribute any attainment of the ultimate goals

to CPTED.*

6.3.4.3 Ultimate Goal Measurement Points

The measurement points associated with Portland's CPTED ultimate goals of crime reduction were:

- The crime rate by type of crime in UAC.
- The nonoffender population's perception of crime levels in UAC.

The following measurement points were associated with the ultimate goal of a reduction in the fear of crime:

- Nonoffender population's usage of UAC's built environment.
- Nonoffender population's perceptions of fear of crime in UAC.
- Reputation of UAC on a safe-to-dangerous continuum.

Finally, the following measurement points were associated with the ultimate goal of improved quality of life:

- Financial status of the businesses in UAC.
- UAC business community's perception of UAC's economic vitality.

*However, an unknown variable (and unknowable within the limitations of the Portland evaluation design) is the perceptions of the actual and potential offender population. Thus, if business persons or residents perceive little change in access control, surveillability, etc., but the potential offenders perceive a great deal of change, the attainment of CPTED's ultimate goals still could be attributable to the CPTED activities.

- UAC residents' satisfaction with life in UAC.
- Reputation of the quality of life in UAC.

6.3.5 Data Elements

The approach of multiple operationalism was taken in determining the types of data to gather. Therefore, the results of the evaluation do not rest on any one method of data collection. The following is a list of data elements that were chosen to represent the aforementioned measurement points. In addition to the types of data that were gathered, the source of the data is also identified.

6.3.5.1 Effort Data Elements

The following are data elements associated with effort measurement points:

- Costs and time associated with staff activities.
 - Documentation of the number of staff involved in implementing CPTED; from CPTED files.
 - Documentation of the amount of time spent by CPTED personnel; from CPTED files.
 - Documentation of the total cost of labor and operating expenses of CPTED personnel; from CPTED files.
 - Documentation of comparable operating costs and time of other groups performing

work associated with CPTED; from CPTED files.

- Quantity and quality of immediate changes in the physical and social environment.
 - Documentation of what activities were engaged in to bring about changes in UAC's physical and social environment; from CPTED files.
 - Documentation of the extent to which these activities were performed; through key-person, businessman, and resident interviews, CPTED files, and observation in UAC.
 - Judgments of the quality of these changes; through key-person, businessman, resident interviews, and observation in UAC.

6.3.5.2 Proximate Goal Data Elements

The following are data elements associated with proximate goal measurement points related to UAC's physical environment:

- Physical security of UAC's built environment.
 - Documentation of the type and quantity of physical security measures employed by businessmen and residents; through interviews of businessmen, residents, and

patrol officers.

- Judgments of the quality of target hardness of the built environment; through interviews of patrol officers.
- Surveillability of built environment.
 - Ratings of how easy it is to see what is going on; through interviews of businessmen and residents, and observations in UAC.
- Potential usability of UAC built environment.
 - Documentation of type and quantity of CPTED-related physical amenities and other public structures and areas in the built environment; through observations.
 - Ratings of the ability of these physical structures to promote usability; through key-person interviews.
- Psychological dimensions of UAC built environment.
 - Ratings of aesthetic quality of built environment; through businessmen, residents, and key-person interviews.
 - Ratings of degree of personalization of UAC environment; through interviews of businessmen and residents.
 - Judgments of clarity of defined spaces

(i.e., boundaries) in UAC; based upon observations.

The following are data elements associated with proximate goal measurement points related to the UAC social environment:

- Crime prevention behavior of UAC businessmen and residents.
 - Documentation of the quantity of businessmen's and residents' involvement in crime prevention activities; through interviews with businessmen and residents.
- Law enforcement response to UAC suspicious/criminal activities.
 - Businessmen's and residents' perceptions of police job performance; through interviews.
- Extent of social networks and degree of cohesiveness in UAC.
 - Description of social networks; through businessmen, residents, and key-person interviews.
 - Attitudes toward community cohesiveness in UAC; through interviews with businessmen and residents.
- Extent of psychological barriers.

- Ratings of UAC's reputation along a low-high offender's risk continuum; through interviews with patrol officers.
- Use of UAC built environment.
 - Documentation of the type and frequency of use of built environment; from observations and interviews with businessmen and residents.
 - Judgments of the quality of use by UAC nonoffender and potential-offender populations; through interviews with key-persons.
- Businessmen's and residents' identification with UAC.
 - Degree to which businessmen and residents feel a sense of belonging to UAC: through interviews with businessmen and residents.
 - Judgments that project a sense of belonging from citizen behavior; based upon observations.

6.3.5.3 Ultimate Goal Data Elements

The following are data elements associated with measurement points for reduction in crime:

- Crime rate in UAC for commercial robbery, commercial

burglary, street robbery, residential burglary, pursesnatch, and assault.

- Actual crime rate by type of crimes; from police files.
- Victimization rate of businessmen and residents in UAC; through interviews.
- Nonoffenders' perceptions of crime rate in UAC.
 - Ratings of present severity of crime in UAC; through interviews with businessmen, residents, and key-persons, and from media reports.
 - Ratings of past change in UAC crime rate; through interviews with businessmen, residents, and key-persons.

The following are data elements associated with fear of crime measurement points:

- Actual pedestrian usage of built environment.
 - UAC nonoffender population's usage of built environment; from observations.
 - Self-report of frequency of usage of Union Avenue businesses by residents during daytime and nighttime; through resident interviews.
- Perception of fear and concern for crime.

- Ratings of businessmen and citizens of own fear and concern; through interviews.
- Behavior changes (restrictions) due to fear and concern; through businessmen and resident interviews, and observations.
- UAC's reputation for safety.
 - Ratings on a safe-to-dangerous continuum; through interviews with businessmen, residents, and key-persons, and from media reports.
 - Expert judgments about UAC's reputation for safeness; through interviews with patrol officers.

The following are data elements associated with quality of life measurement points:

- Financial status of the businesses in UAC.
 - Trend changes in annual gross sales since 1970; through interviews with businessmen.
 - Actual changes in annual net income of UAC business since 1970; from Portland Business License Division files.
 - Trend changes in numbers of businesses opened and closed since 1971; from

Portland Business License Division files.

- Trend changes in overall commercial activity since 1971; from Portland Business License Division files.
- Indications of change in location for commercial activity (greater dispersion or losses of commercial property) since 1971; from Portland Business License Division files.
- Perceptions of UAC's economic vitality.
 - Ratings of UAC's present economic vitality; through interviews with UAC businessmen.
 - Ratings of changes in UAC's economic vitality since 1970; through businessmen interviews.

6.3.6 General Methodology

A number of data collection strategies were used to assemble the data for the various data elements. The following sections discuss the major data collection strategies carried out to gather information pertinent to each data element.

6.3.6.1 Retrieval of UAC Crime Reports

Crime reports were retrieved from the Portland Police Bureau's Crime Analysis files for the period October 1974 through September 1977. This necessitated hand-screening all crime reports to locate those occurring

in the target area. The AIR evaluators retrieved UAC reports for commercial burglary, commercial robbery, pursesnatch, street robbery, street assault, rape, and residential burglary for the period October 1974 through December 1975. Crime reports for these crimes for the period January 1976 through September 1977 were retrieved during the present evaluation effort. This provided a total of 36 months of crime reports for analyses. A copy of the form that was used to retrieve these data is shown in Appendix C.

6.3.6.2 Interviews with UAC Businessmen

An interview questionnaire was developed and used to survey three independent samples of UAC businessmen who had been in business in UAC for an average of 22 years. Approximately 51 percent owned their business property, with the remaining 49 percent renting their property. Forty percent were members of the Northeast Business Boosters.

Forty-nine businessmen were surveyed in May 1977, 37 were surveyed in August 1977, and 48 were surveyed in November 1977. The interviews were conducted in person, individually, and took approximately 30 minutes to complete. A copy of the survey questionnaire is shown in Appendix D.

6.3.6.3 Interviews with UAC Residents

An interview questionnaire was developed and used to survey two independent, geographically stratified, random samples of UAC residents. Thirty-nine percent of the residents were 60 years old or over; 17 percent were in their 50's; 12 percent were in their 40's; 15 percent were in their 30's; and 16 percent were under 30. Fifty-two percent were

female and 48 percent were male. Fifty-five percent were black and 45 percent were white. Sixty-nine percent were the heads of households; the average household contained approximately three residents (2.92, $sd=1.57$).

Ninety-seven residents were surveyed in late May 1977 and 80 were surveyed in late October 1977. These interviews were conducted by telephone and each took approximately 15 minutes to complete. A copy of the survey questionnaire is shown in Appendix E.

6.3.6.4 UAC Observations

A series of evening observations was performed in UAC to record pedestrian activity level from April 1977 through November 1977. For each evening observation, the observer drove along Union Avenue from Broadway to Lombard, drove along Dekum from Union to 18th Street, parked at Woodlawn Park for 10 minutes, drove along Union Avenue from Lombard to Broadway, and drove along Knott Street from Gatenbein to Union. Throughout the observation run, the observer recorded the sex, race, and approximate age of all visible pedestrians. In addition, the observer noted in what activity each pedestrian was engaged (e.g., walking, bicycling, socializing). Seventy-three observations were performed, randomly scheduled between 6 p.m. and 12 a.m. Copies of the observational recording forms are shown in Appendix F. The forms are similar to those used by AIR when they collected baseline observational data (ten observations in October 1975, and ten in January 1976).

6.3.6.5 Retrieval of Economic Data

Tax files in Portland's Business License Division, containing information about businesses' net incomes and gross annual sales, were accessed. Files for 350 UAC businesses were reviewed and pertinent information was recorded for analyses.

6.3.6.6 Interviews with Key Persons

Interviews were conducted in early December 1977 with 16 individuals with special knowledge about UAC. This group included business and community leaders, and patrol officers. These individuals were interviewed for approximately 30 minutes and asked to make judgments about UAC's present, past, and future condition. A copy of the questionnaire that was used for these interviews is shown in Appendix G.

These were the major data collection strategies carried out to gather information pertinent to each data element. The schedule shown in Appendix H presents the timing of the data collection, which began in April 1977 and ended in December 1977.

CHAPTER 7. RESULTS and DISCUSSION

7.1 Results

7.1.1 Effort Measurement Points

In Chapter 5, two sets of data were presented to indicate the effort that was expended to implement and maintain the project: Description (number, type, quality) of the project activities, and documentation of some costs associated with these activities, and assessment of the quantity and quality of the immediate changes in UAC's environment, including the costs of these changes. The figures that were presented, however, represent only a portion of the effort actually expended. The indirect costs associated with the ongoing and ad hoc support provided by Consortium and City staff would have to be included in order to present a truer picture of the overall effort. It can only be noted that these indirect costs were substantial.

7.1.2 Proximate Goal Measurement Points

7.1.2.1 Physical Environment

7.1.2.1.1 Physical Security of Built Environment

As mentioned earlier, the Portland Police Crime Prevention Unit performed security surveys of nearly all UAC business in February 1976. Of the businessmen interviewed, 81 percent recalled having a security survey performed for their own establishment and 40 percent recalled having a follow-up survey. When asked the extent to which they followed the police recommendations, 29 percent stated that all

security recommendations were followed, 21 percent followed almost all of the recommendations, 12 percent followed some of the recommendations, and 13 percent did not make any of the recommended security improvements. (The remaining 25 percent were either not surveyed or needed no security improvements.) Thus, the majority of businesses made at least some security improvements as a result of the surveys.

Businessmen and residents also were asked what security measures they have taken or plan to take. Forty-six percent of the businesses have a burglar alarm, and another 7 percent have plans to install one. Eleven percent have a silent alarm for robbery, and another 4 percent have plans to install one. Eighteen percent have a gun on the premises for protection, while 24 percent have some other weapon for protection. Finally, 43 percent of the businesses reported displaying crime prevention stickers as an attempt to discourage would-be offenders.

When asked what security measures they have at their homes, 84 percent of the residents stated they always lock their doors when away from home, 50 percent of the residents indicated having special locks on doors, 34 percent have special window locks, 10 percent have a burglar alarm, 38 percent have a gun that could be used for protection, 13 percent have a specially trained guard dog, 23 percent have a regular dog, and 51 percent have engraved their valuables with an I.D. number.

During the interviews with the UAC patrol officers, it was their unanimous expert judgment that the target-hardness of UAC businesses

was generally adequate, while physical security at residences was generally inadequate. These officers were also unanimously positive about the impact of the commercial security surveys in improving the physical security of UAC businesses.

7.1.2.1.2 Surveillability of Built Environment

The degree to which the built environment is surveillable is a key CPTED design construct. For the most part, this deals with the adequacy of lighting in the environment and the presence or absence of structural and natural impediments to clear viewing. Sixty-eight percent of the businesses have outside lights that are turned on at night, and 84 percent keep inside lights on at night. In addition, less than 5 percent of the businessmen considered the Union Avenue street lighting as insufficient. Paralleling this, a majority of the residents (69 percent) regarded the quality of street lighting in UAC as good, with an additional 22 percent describing it as fair; only 9 percent of the residents felt the street lighting was inadequate.

For an additional perspective on the surveillability of UAC, residents were asked how likely it would be that an offender would be seen committing a crime. Twenty-three percent responded "very likely," 26 percent said "somewhat likely," 18 percent said "somewhat unlikely," 12 percent said "very unlikely," and 21 percent were uncertain. In general, it appears that there is adequate surveillability in UAC. This conclusion is supported by our own visual assessment of UAC's lighting and absence of structural impediments to surveillance. This

judgment was formed during more than 20 drives along Union Avenue.*

7.1.2.1.3 Potential Usability of UAC Built Environment

Part of the CPTED theory suggests that the environment should contain physical amenities, public and private structures and facilities, and public areas that will encourage use by citizens. In the original Commercial Demonstration Plan, recommendations were made to provide mini-plazas on Union Avenue and a Residential Activity Center. Neither of these strategies was actualized. The major post-1974 accomplishments that could be described as increasing the capacity of UAC's built environment to promote usability seem to be the improved street lighting, the redesign of Knott Street, and an increase in the number of business establishments. (See the discussion of Quality of Life Measurement Points in Section 3.5.) Forty-eight percent of the residents described the quality of the area's parks and playgrounds as good (only 13 percent said they were poor), although there were some comments that there is a disproportionate usage of parks by minority group members. In addition, through observations, it was found that there is little (other than the parks) in the UAC built environment for positive recreational purposes. Regarding UAC's shopping facilities, there is a diversity of commercial establishments. Yet, for the most part, these stores and restaurants apparently are not competitive, in quality, quantity, or cost of merchandise, with

*These drives are independent of the 73 evening observation runs that were referred to in the methodology section.

other local shopping centers (e.g., Lloyd Center).

From the perspective of the businessmen, 27 percent felt that insufficient parking is a major hindrance to the successful operation of their businesses. In addition, 17 percent regard the current Union Avenue traffic patterns as a hindrance to business success. These difficulties may be remedied with the planned and partially implemented redesign of Union Avenue by Portland's Bureau of Streets and Structural Engineering.

Interviews with key persons uncovered mixed opinions about the capacity of UAC's physical environment to promote positive usage. Most felt that while many citizens shop at local establishments, they do so mostly because of proximity and not because they are especially attracted to the stores for quality and/or economy. These individuals held mixed opinions regarding the trend of residents' use of UAC commercial establishments. Some feel there has been an increase in reliance on local stores since 1974, while others have noticed no change.

7.1.2.1.4 Psychological Dimensions of Built Environment

A final aspect of the physical environment that is important in CPTED theory is its psychological (perceived) dimensions. Central to this is UAC's perceived aesthetic quality, personalization, and clarity of space.

Through the business interviews, it was found that only 15 percent of the businessmen regard the physical appearance of their own

business as a major hindrance to business success. Despite this, 45 percent consider the general physical appearance of UAC as a major hindrance to business success. Interviews with residents indicated that while 55 percent of the residents rate the physical appearance of streets (in terms of street repair and street trash) as good, only 35 percent regard the upkeep of residential property as good; in fact, 25 percent consider it poor to very poor, with the remaining 40 percent describing it as fair.

Consistent with our own observation of the aesthetic quality of UAC's built environment, the respondents in key-person interviews rated UAC's present physical appearance as, at best, somewhat unattractive. When asked whether they had observed any changes in UAC's aesthetic quality since 1974, key persons noted that both businesses and residents had started to improve the neighborhood, but the process has been a slow one. For the most part, the community leaders were optimistic that this improvement will continue as residents gain more neighborhood spirit and pride.

Through observations of the UAC built environment, judgments were made about UAC's degree of personalization and the clarity of defined spaces. In general, there is little in UAC's built environment that is distinctly "Union Avenue." An exception may be an attractive new wall mural depicting minority group recreational activity. In addition, Knott Street may come to be identified by residents in southwest as a "model" street. Yet, other than these few instances, there is

little to note as a CPTED-type change in the degree of personalization of the built environment. Observations also indicated that UAC has no unusual clarity of defined spaces, that is, CPTED has had no visible effect on the area's psychological boundaries.

Thus, it was concluded that there has been relatively little impact on these psychological dimensions of UAC's built environment.

7.1.2.2 Social Environment

7.1.2.2.1 Crime Prevention Behavior of Businessmen and Residents

Crime prevention has been a major topic of discussion at NEBB meetings. Forty-three percent of the surveyed businessmen were aware of local crime prevention meetings occurring in the 3 months prior to being interviewed, and 13 percent reported having attended at least one meeting. Twenty-seven percent of the surveyed residents were aware of citizen crime prevention meetings that had occurred in the 5 months prior to being interviewed, and 10 percent reported having attended at least one meeting. In addition, approximately 30 percent of the residents were aware that the City of Portland was making a special crime prevention effort in UAC.

To assess the extent to which residents were motivated to discuss crime problems, and their solution, a question was asked about "how often crime was a topic in neighborhood discussions." Many UAC residents report never or almost never discussing crime with neighbors (51 percent); 31 percent discuss it sometimes; and 17 percent discuss it often. The final information available about residents' crime prevention behavior comes from the businessmen interviews. When asked

whether residents would report an in-progress suspicious/criminal event, 41 percent of the businessmen predicted most would, 25 percent said "some would, some wouldn't," and 33 percent felt most residents would not make bystander crime reports.

From first-hand knowledge of the UAC revitalization efforts, it appeared that little was done to impact on residents' crime prevention behavior. On the other hand, a concerted effort was made to raise businessmen's awareness of crime prevention techniques (physical and social).

7.1.2.2.2 Law Enforcement Response to Suspicious/Criminal Activities

Theoretically, the quality of law enforcement response to suspicious/criminal activities should be high in order to play a strong supportive role in the CPTED framework leading to crime reduction. In the Union Avenue area, both businessmen and residents perceive local police as doing a good job. Specifically, 87 percent of the businessmen and 80 percent of the residents were "favorable" or "very favorable" about the job performance of the police in UAC. In addition, two-thirds of the residents described the general quality of local police/community relations as fair to very good. Nineteen percent were uncertain about the state of police/community relations in UAC, and 15 percent described it as poor. Many of the residents with negative attitudes had apparently been victimized within the last year, and in general, were not positive about the resolution of their cases. Whether this is a comment on the police, courts, or the entire Portland criminal justice system is uncertain.

Paralleling these opinions, 90 percent of the businessmen regarded the level of police protection as adequate and not a hindrance to their successful operation of business. Businessmen on the average perceive the police as passing by their business, while on patrol, about every half-hour throughout the day and night. This they apparently feel is a sufficient level of patrol effort.

Finally, despite their generally positive attitude toward the local police, residents showed mixed opinions when asked to estimate the likelihood that any offender, in general, would be caught by the police. Twelve percent felt it was "very likely," 25 percent felt "somewhat likely," 23 percent felt "somewhat unlikely," 19 percent felt it was "very unlikely," and 21 percent were "uncertain" about the likelihood that an offender would be caught. Recognizing that the likelihood of apprehension may not be the primary factor in quality of police response, based on contact with UAC patrol officers, it is felt that the law enforcement response to suspicious/criminal activities in UAC is of high quality. This has played a strong supportive role in the general CPTED framework.

7.1.2.2.3 UAC Social Network and Community Cohesiveness

The UAC business community has been organized into a viable and apparently stable social network (i.e., NEBB). This clearly has been a major accomplishment of the UAC CPTED revitalization effort. In contrast, UAC residents have not, to date, been brought together into one

viable and representative UAC community group.*

The residential sections of UAC are ethnically diverse and this appears to present a barrier to community cohesiveness. Residents themselves are mixed in their opinions about local "togetherness." While 46 percent of the residents say neighbors mostly go their own ways, 38 percent feel most people help each other out.** This difference of opinions was also found in the key-person interviews. While a majority of these individuals described UAC residential community spirit as low, others felt that there were some subsections that had a positive "togetherness." In the same way, some key persons described the change in community spirit since 1974 as slightly better, while others said slightly worse. The evaluators judgment in this matter is that the UAC residential community feels a normally unspoken tension due to racial differences. These differences seem to be confounded by citizens' perceptions of community cohesiveness (i.e., whites are relatively more negative, while blacks are relatively more positive).

7.1.2.2.4 Psychological Barriers

Without access to UAC's potential offender population, it was difficult to gather primary data on psychological barriers to potential offenders. At best, anecdotal information was gathered from patrol

*One factor affecting this is that the Union Avenue Corridor crosscuts eight distinct neighborhoods, each with its own association.

**For an additional perspective on the degree of neighborhood cohesiveness, residents were asked "how many families they know well enough to ask a favor of." The average response was five (4.924; SD=5.49), but it is interesting to note that 23 percent knew only one or none.

officers during key-person interviews. In general, it is the patrol officers' opinion that UAC, as a whole, has become a less attractive target to potential offenders, due to higher perceived risk. At present it is uncertain whether this opinion is valid.

7.1.2.2.5 Use of Built Environment

While an environment may contain physical structures and facilities for use, it is of explicit interest for a CPTED evaluation to document the extent to which the citizenry does, in fact, utilize them. Most businesses are open either 5 days a week (41 percent) or 6 (43 percent), for an average of 54 hours. Of the businesses which have customers from UAC, 23 percent have perceived an increase in local customers in the past year, 58 percent have seen no change, and 18 percent feel there has been a decrease in the proportion of their customers who are local residents. on the average, UAC residents report shopping or eating at Union Avenue establishments about twice a week during the day and about once a week at night. There was no observed difference in the frequency of residents shopping or eating at Union Avenue businesses between the spring and fall residential interviews.

It is our judgment and also the opinion of most of the interviewed key persons that residents, for the most part, use the built commercial environment because of its proximity and when afforded a choice will shop or eat elsewhere. There is presently not a high motivation for residents to use the UAC built environment.

7.1.2.2.6 Businessmen's and Residents' Identification with UAC

CPTED theory suggests that if citizens have a positive identifica-

tion with their environment, they will act in ways that will help attain CPTED's ultimate goal of crime reduction. Both businessmen and residents showed a somewhat high level of identification with UAC. This statement is based, in part, on the findings that less than 6 percent of the businessmen and less than 24 percent of the residents felt that it was likely that they would move from the area in the next few years. However, there probably are others who would plan to move if they could (e.g., the elderly), but who cannot afford to move; thus, these proportions are most likely low. Personal contact with UAC businessmen and residents indicated that the majority of them feel a part of UAC and have sincere optimism that the quality of life in the area will improve.

7.1.3 Crime Reduction Measurement Points

7.1.3.1 Reported UAC Crime Rate

UAC crime reports for three years (October 1974 through September 1977) were retrieved from the files of the Portland Police Bureau's Crime Analysis office for commercial burglary, residential burglary, commercial robbery, street robbery, pursesnatch, street assault, and rape. The geographical target area for retrieval of crime reports was bounded by Broadway on the south, Rodney on the west, Lombard on the north, and 7th Avenue on the east. The observed monthly frequencies for each of the individual types of street crimes were low, so they were combined into a monthly count for "street crime." The actual reported crime rates for Commercial Burglary, Residential Burglary, Commercial Robbery, and Street Crime are shown

in Figures 7-1 through 7-4. Each of these data sets were analyzed as time-series. A detailed presentation of these analyses is contained in Appendix K.

It was hypothesized that the commercial security surveys performed in February 1976 would bring about a reduction in commercial burglary. Figure 7-1 suggests that coinciding with and following the commercial surveys there was a decrease in commercial burglary. The time-series analyses that were performed using this set of 36-months of crime reports for commercial burglary indicated that this observation is statistically valid. Both a significant decrease in level ($t(32) = -2.57$, $p < .01$) and a significant decrease in slope ($t(32) = -5.18$, $p < .001$) occurred after the commercial security surveys. In nonstatistical terms this means that for the 20-month period following February 1976, there was a significant drop in the average monthly number of commercial burglaries. For the 16 months prior to February 1976 the average monthly incidence of commercial burglaries was 16.38. For the 20 months including and following February 1976 the average monthly rate was 8.45; a decrease of 48 percent. In addition, the rate at which this average decrease occurred showed a significantly decreasing trend, i.e., as time went on (after the surveys) commercial burglaries continued to occur less frequently. Information from the Portland Police Bureau indicates that while there was a slight overall decrease in commercial burglaries in 1976 and 1977 for all of Portland, it is not comparable to the sizable reduction in UAC. To be more confident about the internal validity

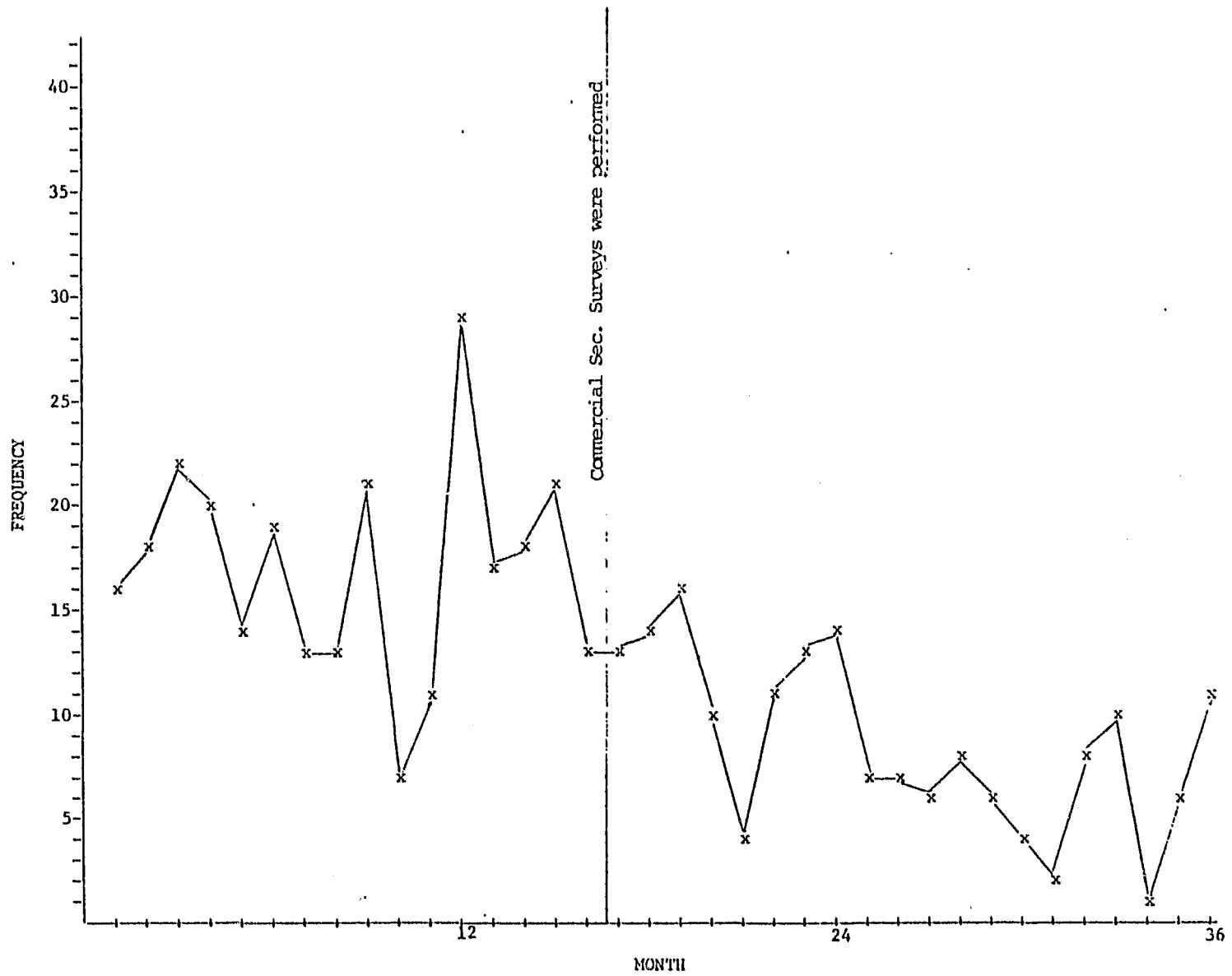


Figure 7-1. Commercial Burglaries, 10/74-9/77

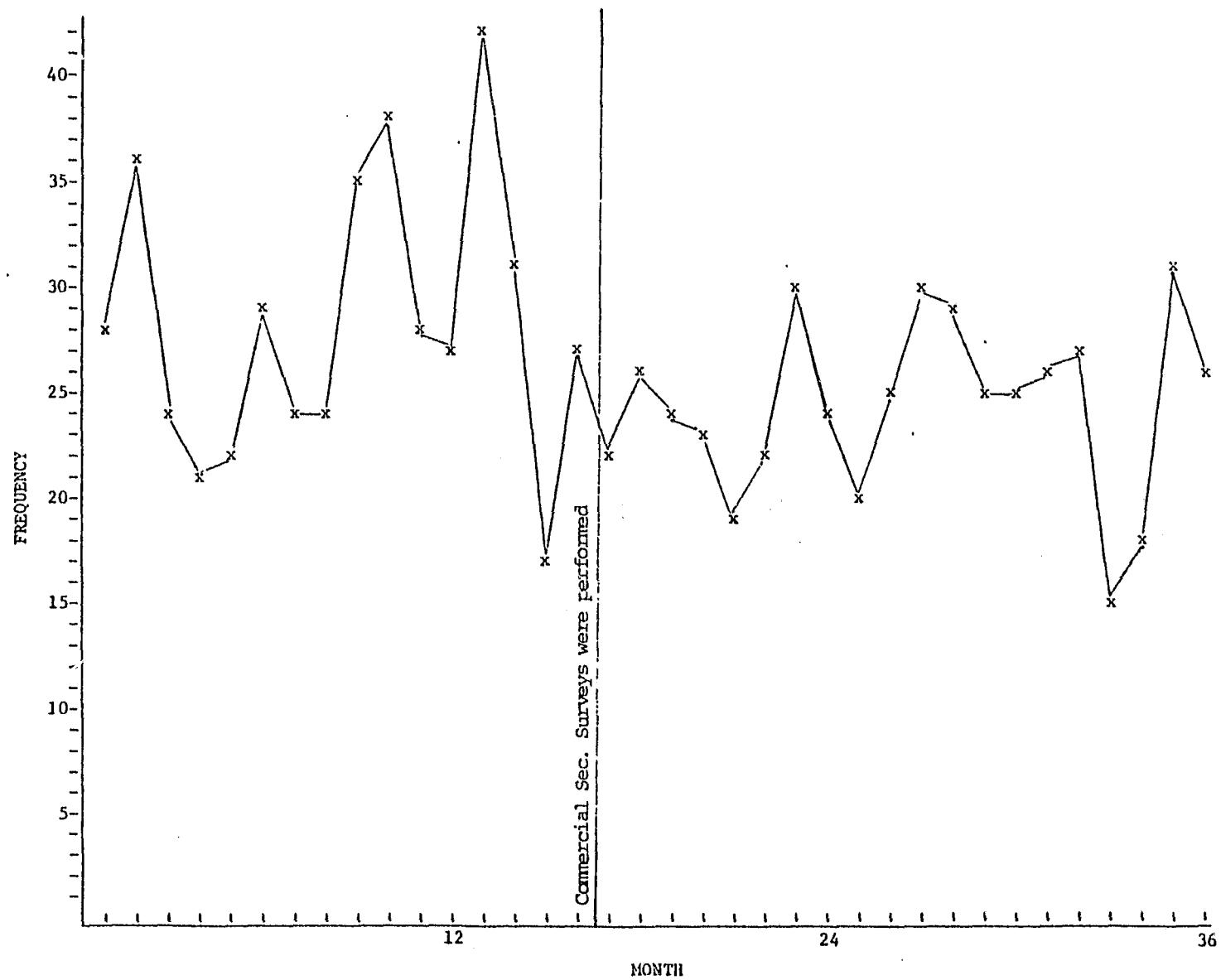


Figure 7-2. Residential Burglaries, 10/74-9/77

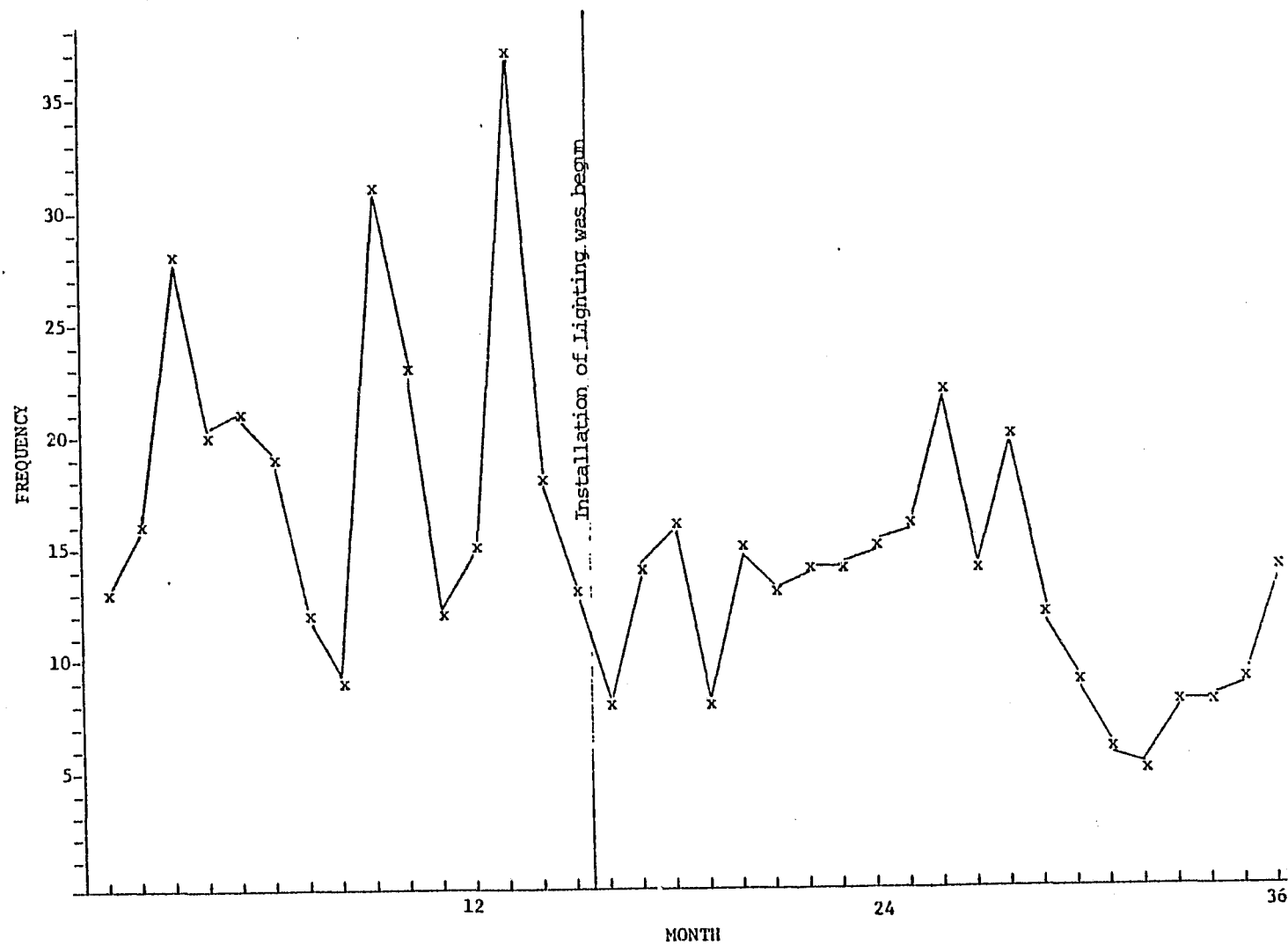


Figure 7-4. Street Crime, 10/74-9/77

of the conclusion that the commercial security surveys brought about the significant reduction in commercial burglaries, it is helpful to look at the reported crime rates for residential burglaries and commercial robberies. Theoretically, commercial security surveys should have an impact on commercial burglary and not necessarily on commercial robbery nor on residential burglary. Thus these two crimes can serve as comparison groups for the commercial burglary data set.

Figure 7-2 suggests that coinciding with and following the commercial security surveys there was a decrease in residential burglary. The time-series analyses that were performed indicate that there was in fact a significant decrease in level ($t(32) = -1.98$, $p < .05$), but not in slope ($t(32) = -.53$, n.s.), during the 20-month period after February 1976. This means that following the commercial security surveys there was a significant average monthly reduction in residential burglary. For the 16 months prior to February 1976, the average monthly incidence of residential burglaries was 28.31. For the 20 months including and following February, 1976 the average monthly rate was 24.35; a decrease of 14 percent.

This observed decrease in residential burglary is especially interesting. First, it fairly well rules out the possibility that there was a burglary displacement from the commercial to the Corridor's residential setting. Second, since there was a significant decrease coinciding with the commercial security surveys, it raises the possibility that the commercial surveys may have had some effect on

the residential environment. Third, the size of the average monthly reduction in residential burglaries was considerably less than the comparable reduction in commercial burglaries (14 percent vs. 48 percent). These points will be discussed shortly, but prior to this it is informative to look at the commercial robbery data set.

Figure 7-3 indicates that there was basically no change in the reported rate of commercial robbery following the commercial security surveys. The time-series analyses support this conclusion with no significant change in level ($t(32) = .01$, n.s.), or in slope ($t(32) = .96$, n.s.). Thus, there appears to have been no reduction in commercial robbery coinciding with and following the security surveys in February 1976. For the 16-month period prior to February 1976, the average monthly incidence of commercial burglary was 3.00. For the 20-month period including and following February 1976, the average monthly rate was 2.50. While this represents a decrease of 17 percent, the times-series analyses indicate that this should not be considered a significant decrease, as it may be due to chance fluctuation, or to a historical decreasing trend unrelated to the security surveys. Not to be overlooked is the fact that the existing low level to begin with creates a data density problem, thereby minimizing the significance of any comparisons.

Considering the results of the time-series analyses for Commercial Burglary, Residential Burglary, and Commercial Robbery, the following conclusions are deemed most plausible. It was suggested by Sgt. G. Blair, the CPTED Security Advisor for UAC, that the commercial security

surveys were not simply an access control (i.e. target hardening) strategy. These surveys brought a relatively large number of police officers to Union Avenue during February 1976 and during the follow-up surveys in August 1976 and February 1977. This inordinate visibility of police officers may have been perceived by the potential offender population (burglars), and may have become part of the "treatment" at work here. This modification of the access control hypothesis can explain the data. The much larger reduction in commercial burglaries vs. residential burglaries suggests that the security surveys and related security improvements at the commercial establishments did, in fact, help to decrease commercial burglary. Yet there may have been a spillover effect due to the police visibility, which could account for the smaller, but significant, reduction in residential burglary. Additionally, the security surveys were not primarily aimed at reducing robbery, and thus the fact that no significant decrease in commercial robbery was observed supports the reasoning that the security surveys had an impact on the potential offender population of burglars. Therefore, it is felt that the significant reductions in both commercial and residential burglaries should be regarded as, at least partially, due to the CPTED commercial security surveys.

A second major CPTED change in the physical environment was the installation of high intensity lighting. In CPTED theory, such lighting should increase the potential for natural surveillance and cause an increase in perceived risk to potential offenders. It is hypothesized that this CPTED strategy should bring about a decrease

in street crime. Figure 7-4 indicates that there was a drop in the average monthly incidence of UAC street crime following the commencement of street light installation. But the time-series analyses indicate that there were no statistically significant changes in level ($t(32) = -1.09$, n.s.) or in slope ($t(32) = -.49$, n.s.) following December 1975. For the 15-month period prior to January 1976, the average monthly incidence of street crime was 19.13. For the 21-month period including and following January 1976, the average monthly rate was 12.38; a decrease of 35 percent.

Further inspection of Figure 7-4 suggests a likely explanation. In the period prior to January 1976, there was so much fluctuation in rates, or unexplained variance, that little confidence can be placed in any single estimate or average of the pre-lighting monthly incidence rates. For any pre-/post-comparison to be statistically significant, either the decrease or the number of measurements (monthly incidence rates) would have to be much greater.

There is an additional issue as well. The high intensity lights were installed throughout 1976. The rate of installation could not be determined and therefore an analysis that took degree of completion into account was not performed. Had this information been available a more sensitive analysis could have been performed, which in turn might have supported the indication of a significant reduction in street crime. In lieu of this, it is felt that the present data enable only a tentative conclusion; namely, that the visibility of

activities associated with the installation of high intensity lighting seems to be associated with a major reduction in street crime.

In addition to the reported crime data that were collected from the Police Department, victimization information was collected in the businessmen and residents interviews. Table 7-1 shows the proportions of businessmen in the spring ($n = 48$), summer ($n = 38$), and fall ($n = 49$) samples who experienced crimes at or within a block of their businesses during the 3-month period prior to the interviews. Because of the small samples, none of these rates indicates a significant increase or decrease throughout 1977. For residents, 15 percent of the spring sample and 20 percent of the fall sample stated that they, or a member of their family, had been victimized in UAC during the past 6 months. This proportion is comparable to the 1977 victimization rate for all of Portland,* and suggests that UAC does not deserve a reputation as an especially high-crime area. In conclusion, we find that the victimization data complement the conclusions from the reported crime data: UAC's crime rate has decreased since the early 1970's (prior to 1974), when UAC had a disproportionate share of Portland's crime.

7.1.3.2 Nonoffenders' Perception of the UAC Crime Rate

Central to CPTED's ultimate goals is its impact on citizen's

* Personal communication from Sherrill L. Whittemore, Office of Justice Programs, City of Portland; January 31, 1978. Using 1977 UCR figures, 11 percent of Portland's citizenry appears to be victimized, while using results from a 1977 victimization study in Portland, the 1977 victimization rate is estimated at 26 percent.

TABLE 7-1

Victimization Rates for Businessmen

Percentage Experiencing Crimes
in Past 3 Months

<u>Type of Crime</u>	<u>Spring</u>	<u>Summer</u>	<u>Fall</u>
Break-in	10.4	18.4	24.5
Hold-up	8.3	7.9	4.1
Pursesnatch	20.8	26.3	10.2
Street Assault	19.1	34.2	14.3
Street Robbery	14.6	7.9	2.0
Vandalism	35.4	63.2	28.6

perception of the crime rate: It is not only desirable that an actual reduction in crime be attained but also that citizens perceive that crime is being reduced. Therefore, it is important to document the perception of businessmen and residents about the present UAC crime rate and how it has changed.

The average businessman regards the current UAC crime problem as moderate. Yet 38 percent of the businessmen still consider it a major hindrance to the successful operation of their business. When asked whether their chances of being a victim of burglary, robbery, assault, or vandalism have changed in the past 6 months, most businessmen (67 percent to 75 percent) felt there had been no change. Nonetheless, 40 percent of the businessmen thought there had been a decrease in crime since the early 1970's. Thirty-five percent perceived no basic change, while 15 percent thought that crime had generally increased, and 11 percent were uncertain.

Paralleling the general perceptions of businessmen, most UAC residents regarded the current crime problem as moderate, with only 18 percent describing it as severe. Most residents said that their daily lives in UAC are relatively unaffected by local crime. Most of the key persons who were interviewed also described the UAC crime level as moderate. These individuals thought that there had been a decrease in crime since 1974.

In general, these citizen perceptions of UAC's crime rate support the findings of the time-series analyses on the reported monthly crime data. Therefore, it is concluded that there has been a general decrease

in crime in UAC since 1974, and that at least some of this change should be attributed to the CPTED revitalization efforts.

7.1.4 Fear-of-Crime Measurement Points

7.1.4.1 Pedestrian Usage of Built Environment

It is hypothesized that the level of fear of crime in an environment will be directly related to the frequency of use of the built environment. If fear of crime were to be reduced, more people should start using the environment. In order to collect behavioral measures presumably related to fear, observations of UAC pedestrian activity level were taken from April 1977 through November 1977. In addition, AIR had collected somewhat comparable data in October 1975 and January 1976.

Using a time-series analysis,* it was found that the average number of pedestrians on Union Avenue remained stable through the 1977 observation period ($t(68) = -1.095$, n.s.). In addition there was no indication that the number of persons using Knott Street, Dekum Street, or Woodlawn Park increased over time. Thus, there is no behavioral evidence that the level of fear of crime changed during 1977. Despite this, it is interesting to note that the UAC built environment is used to a greater extent by blacks than whites. (The UAC population is approximately 50 percent black and 50 percent white.) The average

*In this analysis time of day, temperature, and precipitation were controlled, as each was significantly correlated with the observed number of pedestrians. These correlations were $r(71) = -.659$, $p < .001$; $r(71) = .591$, $p < .001$; and $r(71) = .329$, $p < .005$, respectively.

number of blacks on Union Avenue (mean = 44.63; SD = 20.96) is significantly greater ($t(72) = 17.32$, $p < .001$) than the average number of whites (mean = 14.60; SD=8.95). In addition, the average number of blacks who use Woodlawn Park (mean = 13.10; SD = 19.59) significantly exceeds ($t(72) = 5.75$, $p < .001$) the average number of white park users (mean = 2.58; SD = 5.22). This differential usage of the environment is of interest in light of the opinions of some of the patrol officers that whites avoided public areas of UAC because of fear. It is uncertain whether this is a valid explanation of the fact that blacks are three times more likely to be pedestrians on Union Avenue, and are five times more likely to use Woodlawn Park, than are whites.

A final comparison that can be made about change in usage of UAC's built environment is a somewhat qualitative one. During the twenty observational runs that were made by AIR, an average of 38.5 persons were observed. During the 1977 observational runs that were performed on Union Avenue, an average of 59.23 persons were observed. Unfortunately, these values are not exactly comparable, as the AIR observers traveled on Union Avenue and on parallel residential streets instead of solely on Union Avenue. But to the extent that the 1975-1976 observations and the 1977 observations are comparable, it suggests that more persons are presently using UAC's built environment. Here again, it is interesting to note that the ratio of blacks to whites in the 1975-1976 AIR observations was 2 to 1, compared with 3 to 1 in 1977.

In addition to the observational data of actual usage of UAC's environment, interviewed residents were asked how often they shop or eat on Union Avenue during the day and at night, and how often they take nighttime walks. As reported earlier, residents patronize Union Avenue businesses about twice a week during the day, and about once a week at night. Residents interviewed in the spring reported taking one nighttime walk per week (.96), while residents interviewed in the fall took, on the average, less than one nighttime walk per week (.48). This is a significant difference between spring and fall ($t(174) = 2.47$, $p < .02$), but is most likely due to normal seasonal variation. In contrast to this reported difference in the number of walks between spring and fall samples, there were no differences between samples in their frequenting of UAC businesses. It is concluded that these data support the findings of the behavioral observations; that is, there was no apparent change during 1977 in usage of the built environment, and therefore no indication of any change in fear of crime.

7.1.4.2 Perceptions of Fear and Concern for Crime

In addition to direct behavioral measures, it is important in a CPTED evaluation to directly measure attitudes toward fear and concern for crime. During 1977, the average businessman reported to be slightly concerned that he might be victimized while in UAC. But a comparison of the change in concern among the spring, summer, and fall businessmen samples indicated that the fall group was significantly less concerned about being victimized ($F(1,128) = 6.11$, $p < .03$); that

is, they were more likely to feel "almost never" concerned about being victimized than were the spring and summer groups.

When asked how safe their employees felt in UAC, the vast majority of businessmen (91 percent) responded that employees felt at least reasonably safe during the daytime. On the other hand, it was the opinion of 50 percent of the businessmen that their employees felt somewhat unsafe to very unsafe working at night in UAC. These perceptions of employees' fear remained stable across the spring, summer, and fall samples.

Paralleling their opinions on their employees' fear level, 74 percent of the businessmen perceive their customers as feeling at least reasonably safe during the daytime. Comparably, a large proportion (82 percent) thought customers felt somewhat unsafe to very unsafe while shopping in UAC at night. These opinions are not completely in accordance with residents' descriptions of their own fear levels. Fifty-five percent of the residents report feeling very safe on Union Avenue during the daytime, 24 percent feel reasonably safe, and only 17 percent feel unsafe. At night, reported fear increases, but not to the extent perceived by businessmen. Fifty percent of the residents still describe themselves as feeling at least reasonably safe, while 18 percent feel "somewhat unsafe," and 28 percent feel "very unsafe". Not surprisingly, it is the older residents who experience the most nighttime fear ($r=.45$, $p<.001$).

Residents' concern about the possibility of a break-in is relatively

low. Forty-four percent describe themselves as not at all worried that their home will be burglarized, while 34 percent are "somewhat worried" and 21 percent are "very worried." Similarly, residents concern for being robbed or assaulted while on UAC streets is relatively low. Fifty-six percent are not at all worried about being robbed or assaulted, while 23 percent are "somewhat worried" and 18 percent are very worried. It is interesting to note that there were no significant age differences associated with a person's concern for robbery, assault, or burglary.

Businessmen and residents were also asked to what extent their behavior has been affected by fear of crime. Thirty-seven percent of the businessmen avoid certain Union Avenue intersections during the day. At night, 74 percent of the businessmen avoid certain Union Avenue intersections. In addition, businessmen on the average avoid three times as many places at night as during the day. At all times the Killingsworth to Russell section of Union Avenue is most avoided, with the Fremont intersection as the one place that businessmen stay away from most. There were no comparison data from prior years to determine if these current avoidance rates represent a change, but comparing the spring, summer, and fall responses, no change was evident during 1977.

Regarding the effect that fear of crime has on their customers' behavior, 40 percent of the businessmen thought at least some of their customers had limited their use of UAC businesses in the past few years, while 31 percent thought hardly any had stopped coming to

UAC stores. (The remaining businessmen were uncertain.) Regarding the effect fear of crime has had on hiring employees, 71 percent of the businessmen say it has not caused any problem, while it has been a slight to moderate problem for 21 percent, and a severe problem for 5 percent.

The final data that were gathered on the behavioral effects of fear of crime regard the carrying of weapons for protection by residents at night. Twenty percent report carrying a weapon at night in UAC. Given this and the other findings on the behavioral effects of fear of crime it is our conclusion that fear of crime still has a slight to moderate effect on businessmen's and residents' behavior. There is no indication that this level has changed during 1977.

7.1.4.3 UAC's Reputation for Safeness

A final issue regarding fear of crime is the poor reputation that UAC has for safety. Residents felt that it was significantly more likely for a crime to occur in UAC than in most other sections of Portland ($t(153)=4.31$, $p<.002$). There was no change in this perception between the spring and fall resident surveys. This negative perception is in contrast with the findings that UAC's victimization rate is comparable to Portland's overall victimization rate.

Key persons agreed with the residents' perceptions that UAC has a reputation in Portland as a high-crime area. But it is important to note that most of the key persons felt UAC's reputation was presently undeserved, i.e., that while crime was still somewhat of a problem,

UAC deserves a better reputation. In addition, some key persons commented that if the current trend for decrease in crime continues, and if the media continue to accurately publicize the facts, then UAC's reputation will become a realistic one in the near future.

7.1.5 Quality-of-Life Measurement Points

7.1.5.1 Financial Status of UAC Business

During the period of January 1, 1971 to October 1, 1977, the number of ongoing businesses in the UAC increased significantly, with 252 businesses existing on December 31, 1971 and 354 on September 30, 1977 ($\chi^2(6) = 25.90$, $p < .001$). As shown in Figure 7-5 the rate of this growth is not constant. It appears that the period 1971-73 represents a business boom, while the latter period (1975-77) shows a stabilizing of the growth pattern.

This overall growth appears to have occurred uniformly throughout UAC, favoring neither Union Avenue itself nor its adjacent areas. While the percentage of ongoing businesses which are situated off Union Avenue has grown steadily and evenly, this change is not statistically significant ($\chi^2(6) = 3.70$, n.s.). In 1971, 27.38 percent of all businesses were situated off of Union Avenue; by 1977, this percentage had only increased to 33.33 percent. However, there appears to be a greater dispersion of those businesses located off of Union Avenue. In 1971, 23 Union Avenue cross-streets contained commercial activity, while by 1977, this number had increased to 35. It is not known whether this increase represents a recovery of formerly abandoned commercial sites or an encroachment on residential space.

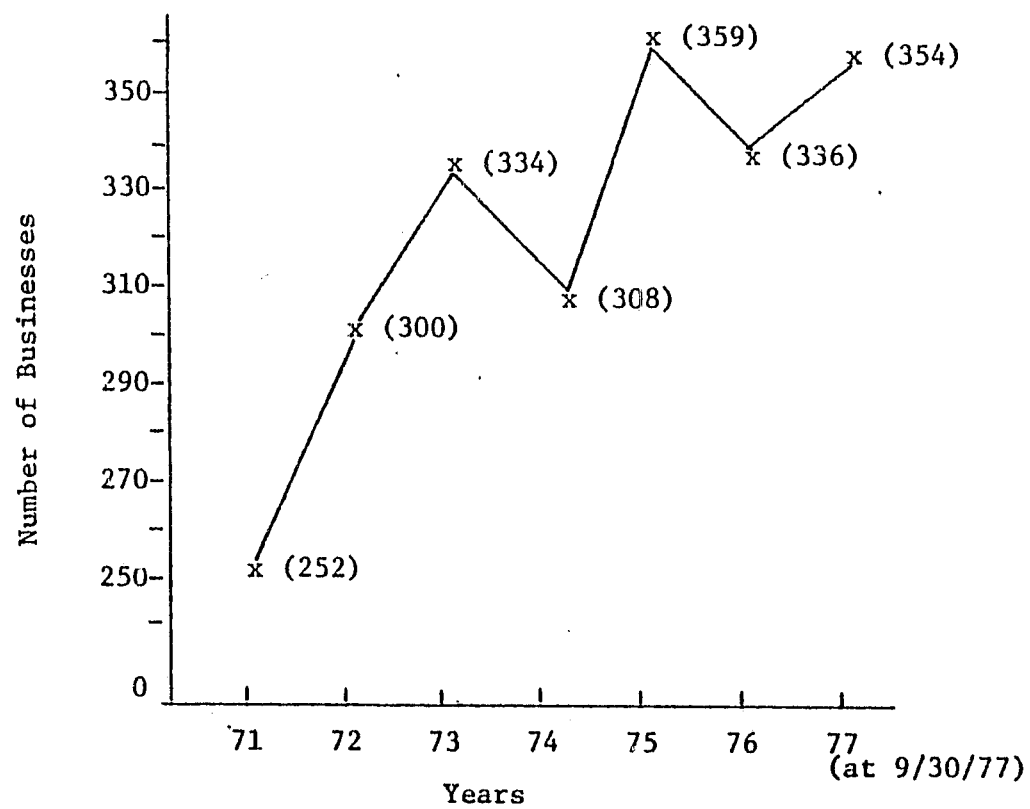


Figure 7-5. Number of Ongoing Businesses at Year's End

As shown in Figure 7-6, the annual rate of new business openings has not been constant ($\chi^2(5) = 46.00, p < .001$). In 1973, 1974, 1976, and 1977, the number of openings was fairly stable, averaging approximately 50 new businesses a year. In 1975, however, there were 113 new businesses. As is also readily apparent in Figure 7-6, the annual rate of business closing has not been consistent ($\chi^2(4) = 63.1, p < .001$), with 1974 having a high of 95 business closings. The annual number of closings decreased thereafter.

Unlike the pattern found for net overall growth in ongoing businesses, a differential pattern of openings and closings is apparent for Union Avenue vs. its adjacent areas. Sites located off of Union Avenue have generally experienced a significantly higher rate of openings than Union Avenue ($\chi^2(4) = 10.48, p < .05$), especially subsequent to December 31, 1974.

In general, however, these differential rates of openings and closings are not reflected in the average length of time the businesses existing on September 30, 1977, have operated, whether on or off Union ($t(352) = 1.00, n.s.$). This suggests that, although there has been an overall growth off Union Avenue with longstanding, stable businesses as its bulwark, it is also subject to fleeting and perhaps unsound commercial endeavors.

A review of the city tax files for the period 1974 to 1976, on record at the Portland Business License Division, revealed an increase in average annual business sales (gross receipts) for 1975 compared to

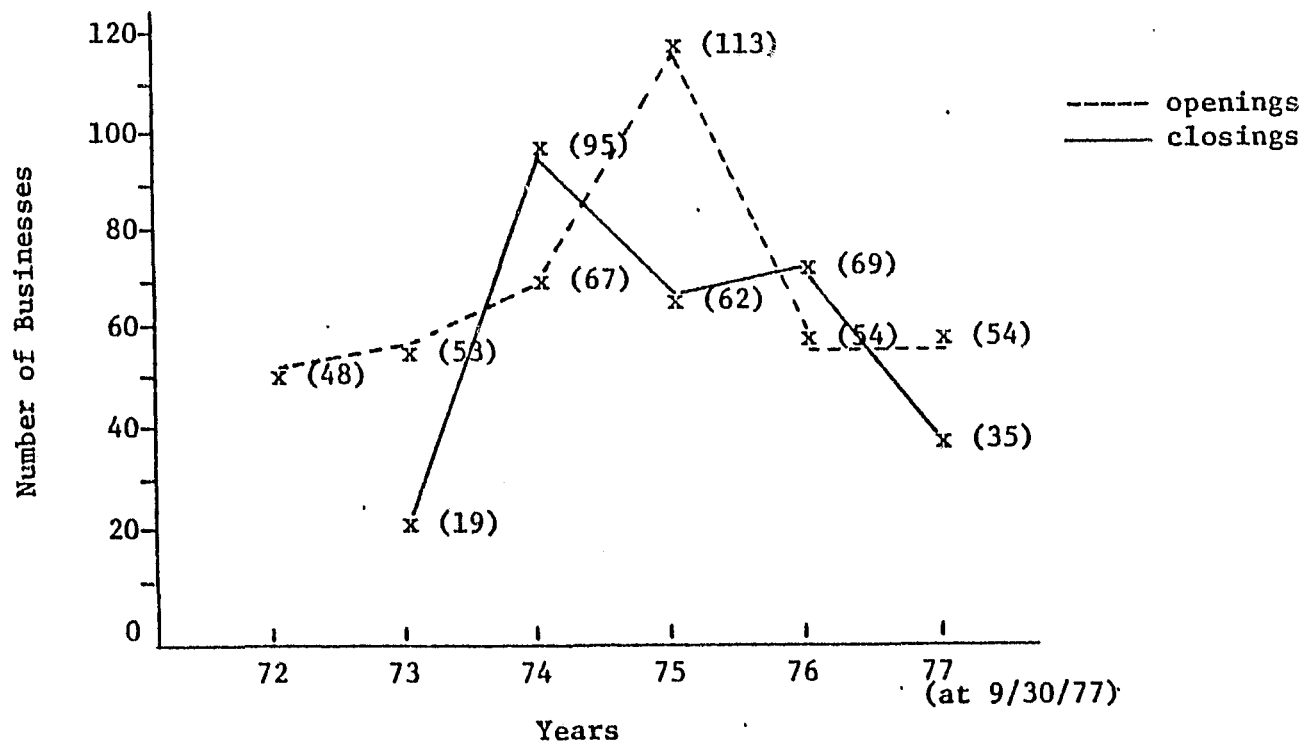


Figure 7-6. Number of Business Openings and Closings at Year's End

1974. In terms of dollar amounts, the average business annually earned more than it did in the prior year. The year of 1975 reflected sales representing 119.33 percent of those for 1974, while 1976 increased to 149.22 percent of the 1974 amount. This trend supports the businessmen's estimates of the direction and magnitude of changes in their own sales. (Of the 136 businessmen surveyed, 45 percent were able and willing to respond to questions about their volume of sales). In general, when comparing each subsequent year's sales as some percentage of their 1970's sales, there was a consistent tendency to report each later year as better than each of the previous years. For example, businessmen perceived their average 1976 sales to represent 165 percent of their gross receipts (less than 15 percent of the respondents experienced lower sales). Further, the rate of change appears to have accelerated in later years. For instance, while 1971 was seen to be a 3 percent increase from 1970, there was a 25 percent increase between 1975 and 1976. In addition, positive growth and acceleration were projected for the 1977 year, with businessmen expecting their sales to represent 194 percent of their 1970 year (less than 11 percent of the respondents expected lower sales).

Because there is insufficient information regarding the influence of inflation and the increase in business expenses, one must use extreme caution in making inferences about positive changes in gross receipts on Union Avenue. There is uncertainty whether, after the affects of inflation and the costs of operating expenses are removed,

there has been real net growth. These data suggest only that there has been a consistent increase in dollar amounts taken in, without referral to growth.

However, changes in the flow of dollars in the community that have coincided with the UAC revitalization efforts may be examined for 1975 and 1976. There is evidence from the differential patterns of openings and closings that the business communities located on and off of Union Avenue are undergoing differential change. In addition, the data on gross receipts suggests that the extent to which a business is reliant on local trade is an important factor in evaluating changes operating in UAC.

The percentage of transactions that a business conducts in Portland can be viewed as a probable indicator of the basic nature and focus of the enterprise. Businesses whose activities are concentrated outside of Portland and/or the state are more likely to be industrial, serving commercial rather than residential clients. As such, the relationship between conditions at the immediate business site and customer behavior is less direct. General service and retail operations, however, are more likely to be dependent on and influenced by local conditions and the attitudes of local shoppers, since they are also more likely to be totally reliant on local trade. That is, consumer businesses should be more sensitive to the effects of changes in UAC.

Comparing 1975 and 1976 with 1974, there were no average differences in the amount of gross receipts between commercial and consumer

activities ($F(1,97)=.05$, n.s.). Nor were there differences, considering the percentage of business conducted in Portland, in the amount of increase to gross receipts for businesses located on Union vs. those off Union Avenue ($F(1,97)=.32$, n.s.).

However, there was a significant increase when comparing 1975 to 1976 ($F(1,97)=11.50$, $p<.001$). This can be interpreted only in relation to business location (on-off Union) and percent of business conducted in Portland (see Figures 7-7 and 7-8). Gross receipts for businesses situated in areas adjacent to Union Avenue increased significantly from 1975 to 1976, while those on Union Avenue rose only minimally ($F(1,97)=0.42$; $p<.07$). Inspection of the average increase shows the the largest change to have occurred in businesses located off Union that disperse their goods and services mainly outside of Portland.

With the enhanced dispersion of business throughout UAC, with increases in consumer sales activity, and with differential growth of businesses located off of Union Avenue, it appears that UAC has become somewhat more industrialized. The lack of more than minimal growth for consumer businesses (specifically those situated on Union) suggests there is some reluctance to shop in the main UAC business district. Consumer activity may have shifted in part to areas nearer to home (perhaps only as convenience shopping) or other parts of Portland where a wider range of goods and services is offered.

7.1.5.2 Perceptions of Economic Vitality

As was the case for the perception of crime vs. actual crime, it is

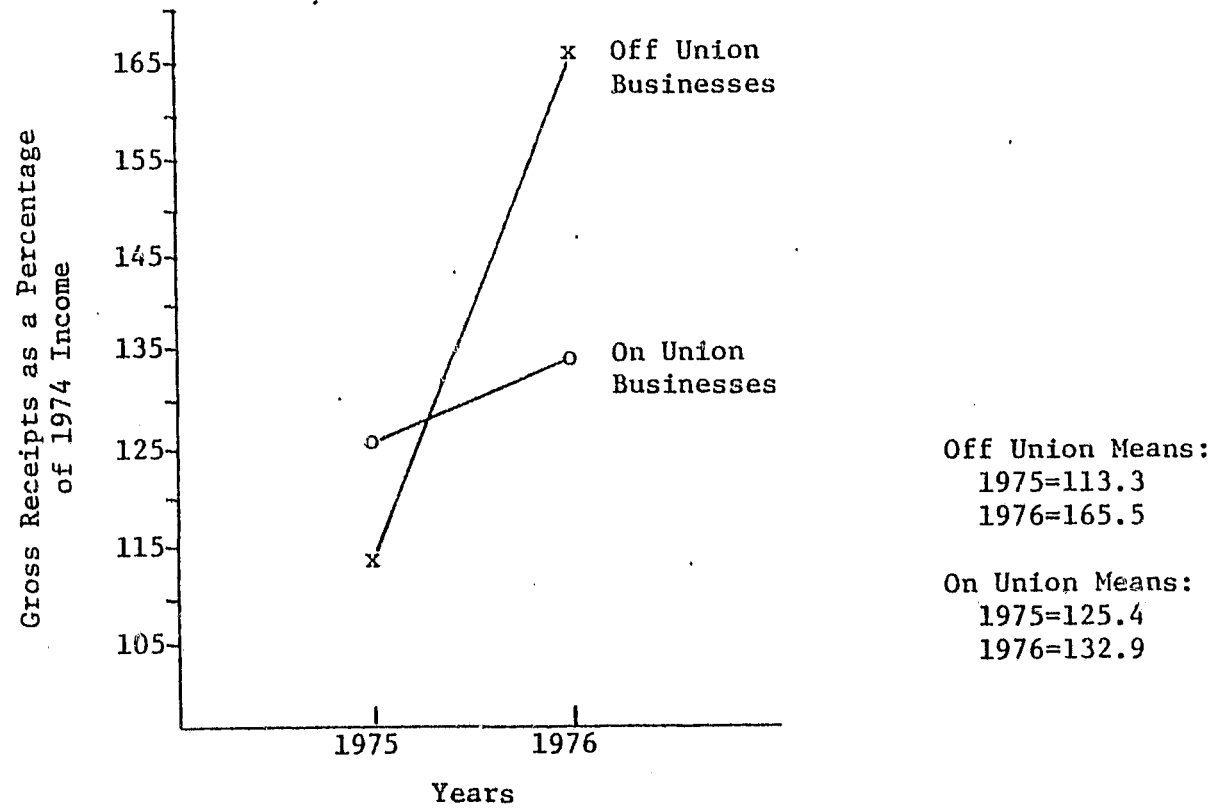


Figure 7-7. Mean Gross Income by Business Location

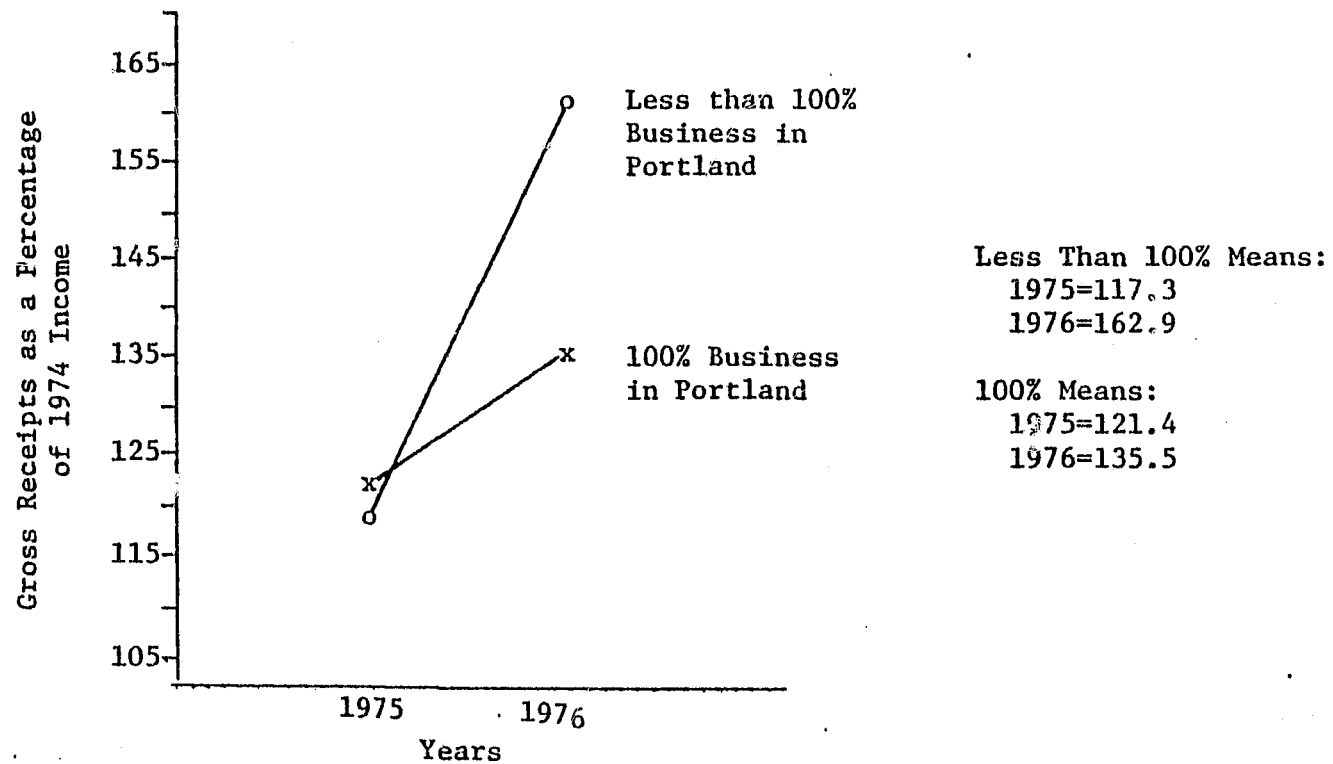


Figure 7-8. Mean Gross Income by Percentage of Business Conducted in Portland

of interest to document perceptions of UAC's economic vitality and compare them with the actual financial status of UAC businesses. Regarding UAC's comparisons with other commercial areas of Portland, the majority of interviewed businessmen described it as currently the same to somewhat worse. This represents a significant improvement ($t(136) = 3.21, p < .001$) since the early 1970's, when most businessmen saw UAC as somewhat worse to definitely worse than other commercial areas of Portland. Finally, a revealing finding is that 84 percent of the businessmen had no future plans to move their business from UAC. Ten percent were uncertain about a possible move, while only 6 percent had a moving plan. These results support the findings from the financial data: That the economic health of UAC businesses has improved since the early 1970's and that this is reflected in businessmen's confidence in UAC's future.

7.1.5.3 Quality of Residential Life

As was reported earlier, the vast majority of UAC residents were generally positive about their schools, parks, streets, and sidewalks, and upkeep of yards. Seventy-six percent described the area's quality of life as either "just o.k." or "nice." Twelve percent felt UAC was a "very nice place" to live, while another 12 percent describe it as "not a nice place." In addition, there was a marginal trend for residents to feel that UAC had become a better place to live in the past year ($t(172) = 1.59, p < .10$). Persons who were more positive about the past year's change in the quality of life were significantly more likely to be aware of the city's CPTED-type revitalization

efforts,* three-fourths felt the changes had improved UAC living conditions.

When asked what UAC will be like in 5 years, residents had a significant tendency to predict that living conditions would be better ($t(184)=3.67$, $p<.001$), with only 19 percent expecting conditions to be worse. Supporting these findings, 75 percent of the residents stated that they have no plans to move from the area in the next year or two.

The community leaders and patrol officers who were interviewed held similar opinions as the residents. Most felt the area was an "o.k." place to live, and had seen a slight improvement in UAC's quality of life since 1974. Anecdotal information highlighted the perceived improvement as one of "attitude," that is, the community has come to feel optimistic about UAC's future. These key persons were mixed in their assessment of the impact of the city's revitalization efforts on the quality of life. Most of the patrol officers saw little if any tangible effects, but felt these efforts were "a step in the right direction." The community leaders, on the other hand, assessed the revitalization effort as having a positive impact, especially on the business community.

Based on evaluation experience with UAC, opinions held are similar to those of key persons. That is, the quality of life in UAC seems to have improved in the past few years compared with the late 1960's and

*Fifty-seven percent of the 177 residents interviewed were able to recall at least one of the changes in UAC's built environment.

early 1970's. It was judged that at least part of this improvement, especially the renewed confidence in the area, should be attributed to the revitalization efforts. This issue will be discussed further in the next Chapter.

7.2 Discussion

As earlier stated, this evaluation was designed to assess whether the Commercial Demonstration was a valid implementation of CPTED (i.e., a program success) and whether any measureable impact on CPTED ultimate goals can be causally linked to the CPTED effort (i.e., a theory success). The first issue concerns the extent to which the revitalization activities represented CPTED and the extent to which the proximate goals were actualized. If it is concluded that the CPTED program was not successfully implemented (i.e., a program failure), there can be no valid test to CPTED theory. On the other hand, if there has been a program success, then the Commercial Demonstration can be regarded as a valid test of CPTED theory. At this point, the assessment of findings becomes a test of theory success or failure.

7.2.1 Program Success or Failure

The following CPTED-related accomplishments took place in Portland's UAC:

- A Westinghouse on-site CPTED coordinator -- initially part-time, later full-time -- helped the City of Portland develop, review, and promote, and implement UAC revitalization efforts so as to conform with the CPTED approach.

- An office of the Portland Development Commission was opened on Union Avenue. The full-time director and others who staffed the offices provided ongoing services to the UAC residents and users, thereby giving the City viability and credibility.
- A police security advisor provided security services to UAC businessmen and residents, including help in organizing and coordinating CPTED-oriented social activities.
 - 210 commercial security surveys were performed.
 - 160 residential security surveys were performed, and target hardening improvements made.
- A business group, the Northeast Business Boosters (NEBB), was organized to be responsive to the interests of the UAC business community.
- New high intensity lighting and infill lighting were installed throughout UAC.
- Knott Street was redesigned and reconstructed as a "Safe Street for People."
- Bus shelters were installed along Union Avenue
- Sunday Market and Clean-up Days were held.

The extent to which these accomplishments represent an implementation of CPTED will now be discussed.

The efforts of the Westinghouse CPTED coordinator (and other consortium staff and consultants) and the director of the Union Avenue PDC office were directly responsible for many of the other accomplishments. Thus, while the presence of these persons was not a direct change to UAC's physical and social environments, their efforts, in part, helped bring about the actual environmental changes (e.g., the increase in the number of business establishments).

The police security advisor was highly visible in supporting and coordinating a number of activity support and motivation reinforcement efforts, including the Sunday Market and Clean-up Days and the mobilization of NEBB. He was directly responsible for the commercial and residential security surveys and follow-ups that had a major impact on access control. Finally the visibility and credibility of his activities led to the City's taking over funding of the Security Advisor positions, once the LEAA support had run out. This institutionalization of a component of the CPTED approach is a significant "ultimate" accomplishment.

The performance of 210 commercial security surveys, and the security improvement at businesses that later resulted, represented another major improvement in the physical environment. In addition, there is little question that this police effort had a positive impact on the social environment by increasing the sense of confidence, and the knowledge of crime

prevention techniques, of both individual businessmen and the collective business community. From the perspective of CPTED theory, the security surveys had a large impact on access control and appear to have impacted motivation reinforcement, as applied to potential offenders.

The performance of residential security surveys and subsequent security improvements at 160 residences in the Alberta-Killingsworth area represents a major improvement on a relatively small segment of UAC's physical environment. Nonetheless, these activities have impacted on this specific area's access control. As it was beyond the resources of this evaluation, it is not known what impact these surveys have had on Residential Burglary.

The formation and support of NEBB represents a major improvement in UAC's social environment. This organization provided the business community with a much-needed formal social network. NEBB gives UAC businessmen a sense of collective identity, and a forum in which to work toward solving mutual problems, e.g., crime prevention. From the perspective of CPTED theory, NEBB directly represents the activity support concept. Functionally, it provides sustenance to both the access control concept by encouraging target hardening and to the motivation reinforcement concept by providing a sense of belonging to the businessman population.

The installation of high intensity lighting on Union Avenue and infill lighting on side streets represents a significantly noticeable improvement in the physical environment. These lights provide UAC with

more-than-adequate nighttime illumination. From the perspective of CPTED theory, the improved lighting impacts on the natural surveillance concept, as it makes it easier to observe activities. In addition, the lighting may be impacting on the motivation reinforcement concept as applied to the potential-offender population. That is, offenders' perception of risk may have increased as a result of the additional illumination and the activities associated with its installation.*

The redesign of and reconstruction of Knott Street represents a relatively minor, but positive change in the overall physical environment. Knott Street was converted to a "Safe Street for People" by modifying its physical properties (e.g. curbs, traffic pattern, landscaping) to meet the needs of the elderly and other residents who are and will be living in the immediate area. From the perspective of CPTED theory, the changes on Knott Street primarily represent the activity support concept by providing local residents with an attractive and highly usable subenvironment. Potentially, this will impact on the natural surveillance concept as more "eyes and ears" may be out in the environment.

The installation of eleven bus shelters represents a somewhat minor improvement in the physical environment. These shelters provide citizens with adequate protection from the weather, in a manner that does not obstruct vision. From the perspective of CPTED theory, the shelters

*This statement is worded in qualified terms due to the equivocal results from the street crime data.

impact on the activity support concept, in a way that does not interfere with natural surveillance.

The Sunday Market and Clean-up Days represent a relatively minor change in the physical and social environments. The Clean-up Day brought UAC citizens together in an effort to improve the aesthetic quality of their environment. The Sunday Market brought non-UAC residents into the area for a positive purpose. From the perspective of CPTED theory, these events impacted on the activity support and motivation reinforcement concepts; they provided citizens with an opportunity to engage in positive usage of the built environment and, to some extent, contributed to UAC businessmen's and residents' sense of identity and cohesiveness.

Table 7-2 presents a judgment of the degree to which the CPTED proximate goals were attained in UAC. This table represents a synthesis of the findings presented in the previous chapter. With this review in mind, it is concluded that the implementation of CPTED was a moderate success in the business environment and a lesser success in the residential environment. It is beyond the scope and resources of this evaluation to carefully document whether more should have been accomplished, i.e., this was not intended as a rigorous Adequacy Evaluation. In summary, there are many reasons to state that a good start has been made to implement the CPTED concept in UAC. If one were to note an area most in need of additional change, it is suggested that future work be directed toward the residential social environment.

CONTINUED

2 OF 4

TABLE 7-2

Degree of Attainment of CPTED Proximate Goals

<u>Proximate Goals</u>	<u>Degree of Attainment</u>
Physical Environment	
1. Increased physical security	High (Business); Low (Residential)
2. Increased surveillability	Moderate
3. Increased potential for usability	Low-Moderate
4. Improvement in psychological dimensions	Low
Social Environment	
1. Improved crime prevention behavior	Moderate (Business); Low (Residential)
2. Improved law enforcement response	No change necessary because it was already good
3. Increased community cohesiveness and social networks	High(Business); Low (Residential)
4. Increased psychological barriers	Low-Moderate
5. Increased usage of built environment	Low-Moderate
6. Increased identification with UAC	Low-Moderate

7.2.2 Theory Success or Failure

Given that the CPTED Commercial Demonstration has been judged to be a moderate program success, it is reasonable to review available evidence to determine the success or failure of the CPTED theory. This requires asking "to what extent were the ultimate goals attained?", and "can these attainments be attributed to the CPTED Commercial Demonstration?"

As was earlier noted, reported crime data indicates that Commercial Burglary and Residential Burglary were reduced following the commercial security surveys. This is deemed to be a valid conclusion and an indication that the CPTED approach was at least partially responsible for a reduction in UAC's crime rate. This conclusion is also supported by businessmen's and residents' perceptions of the UAC crime rate.

In general, it was found that UAC businessmen and residents still feel a slight-to-moderate fear of crime. While anecdotal evidence suggests that this represents a decrease since the early 1970's, no comparison is available to support a statistically based conclusion that the CPTED approach brought about a reduction in fear of crime. Despite this, it is a qualitative judgment that the revitalization efforts have had some positive impact on fear reduction, but this judgment is not advanced with great confidence. Fear of crime is a perception that can be influenced by many factors independent of the actual crime rate. Until a greater residential cohesiveness occurs in UAC's social environment, the impact of more physical-type strategies (e.g., security surveys) on crime reduction may not be reflected in a proportional decrease in fear of crime.

Conclusions about the impact of the CPTED approach on UAC's quality of life must be qualified. In the business community, there has been a renewed confidence in UAC. It is the general opinion of those interviewed that the CPTED-type revitalization efforts have played an important role in building this confidence. On the other hand, while the financial data are positive for post-1975 years, the present evaluation could not collect enough data* to draw methodologically valid conclusions about the CPTED approach's impact on the business community's quality of life.

Regarding the quality of residential life, again no methodologically valid conclusions are possible. Nonetheless, the overwhelming trend of the data suggests that the CPTED-type environmental changes have contributed to residents' somewhat optimistic outlook about the UAC, but not the extent that the business community's confidence has been strengthened.

In summary, the CPTED Commercial Demonstration is judged to be a qualified theory success. From a criminal justice perspective, this recommends CPTED as a concept for further testing. From the City of Portland's perspective, it recommends that their CPTED-type approach to revitalizing UAC be continued.

*There was no non-UAC comparison group, nor enough years of data for a time-series analysis.

CHAPTER 8. CONCLUSIONS

8.1 The CPTED Experiment

Conclusions about the CPTED demonstration project in Portland's Union Avenue Corridor require sensitivity to the kinds of impacts that legitimately can be associated with a project of this nature. First and foremost, it was an experiment -- physical, social, management, and law enforcement conditions were to be manipulated in relatively untested combinations. But it was an experiment with no possibility for even quasi-experimental controls.

In the strictest sense, the Portland commercial demonstration had no beginning. The UAC was viable before the NILECJ/Westinghouse experiment arrived: There was some awareness of the range of the Corridor's needs; some plans had been developed (e.g., the Union Avenue Redevelopment Plan and an unfunded application for a lighting grant); and the area had received the attention of some programs (e.g., Model Cities). On the other hand, there was genuine concern about the area's future. It had been deteriorating in a number of ways and crime and the fear of crime were major factors. Both the local community and City officials had real questions about what it would take to turn things around. Thus, the CPTED demonstration was at least as much an experiment in catalyzing a commercial strip corridor's revitalization as it was an experiment in crime prevention.

The other side of this issue is that there is no self-evident point at which the CPTED commercial experiment can be declared ended. The phase-out of consortium support does not terminate the corridor's viability, needs,

plans, or programs. For example, the success of one strategy -- to get \$4.5 million in highway improvement funds committed to Union Avenue -- resulted in an activity that will not even be started until the spring of 1979, at the earliest. The basic question is whether there are indications that any revitalization that has occurred is likely to be sustained.

Between the experiment's non-beginning and non-end, there was very little control over when and where CPTED strategies were implemented. The process of implementing them was quite complex. Attempts to impact upon the design and use of each subenvironment had to relate to a variety of entrenched agencies, groups, and programs, each responding to its own set of regulations, schedules, and informal agendas. An important consideration for the project, therefore, was that the developmental aspects of the experiment be carefully monitored. The issue was whether insights could be generated that would improve the effectiveness of both follow-on activities in Portland and additional CPTED demonstrations elsewhere.

In summary, three questions address the overall adequacy of the Portland CPTED experiment:

- Was the project associated with an apparent revitalization of the UAC?
- Are there indications that the apparent revitalization is likely to be sustained?
- How did the project's planning and implementation process contribute to the above-noted outcomes?

Some answers to these questions are discussed in the next two sections.

8.2 Local and National Implications

The adequacy of the CPTED commercial demonstration project must be assessed at two levels:

- On the basis of local goals at the demonstration site to determine whether the crime intervention strategies produced measurable results -- not only in terms of crime and fear reduction, but in terms of projected trends if the project had not been implemented. For example, did the project seem to have an impact on important quality-of-life issues related to specific local needs, conditions, and priorities.
- On the basis of national LEAA goals to determine whether the concepts that were developed and implemented can be replicated at a large number of similar sites throughout the Nation with good opportunities for success.

8.2.1 Local Adequacy

At the beginning of the project, local representatives looked to the consortium for support and guidance in coordinating efforts that could be applied to the Union Avenue Corridor. The consortium was to help make explicit the CPTED components in each effort, with the CPTED project becoming the basis for leveraging other resources and funds for the UAC

revitalization program.

Table 8-1 presents some of the resources and investments associated with the increased attention given to the Corridor since it became the site of the CPTED demonstration. The role played by the demonstration in securing these commitments varied. For example, the \$4,500,000 in highway improvements funds would have been allocated in some part of the city regardless of the presence of a CPTED project. The fact that these improvements could be coordinated with an integrated project influenced the final choice of the Corridor. The lighting improvement grant, however, already had been rejected by LEAA. When the reapplication, which tied in with the night crime deterrence component of the CPTED project, was submitted, it was approved. Finally, consortium efforts to identify the CPTED aspects of other programs helped to integrate a number of otherwise unrelated resources and potential investments for the Corridor.

Since there is no true measure of what would have occurred if the CPTED commercial demonstration had not been there, the local participants' beliefs about what has occurred become that much more important. These beliefs can be a foundation for sustaining and enhancing any revitalization that has occurred.

The majority of the publicity received by the program has been overwhelmingly favorable. Consortium involvement has been given partial credit for increasing the amount of reinvestment into the Union Avenue area. Favorable reaction by community leaders is evident in media discussions of the Corridor. Articles on the decrease in the burglary rate also cited

TABLE 8-1

Estimated CPTED-Related Investment
(as of February 1978)

<u>ACTIVITY (AND FUNDING SOURCE)</u>	<u>AMOUNT</u>	<u>CPTED STRATEGY IMPACT</u>
Highway Improvements Including automobile and pedestrian improvements signals, walks (Federal, State, City, HCD)	\$4,500,000	Safe Streets Transportation Services
Lighting Improvements Infill and new (LEAA -- \$403,000, City -- \$44,000)	447,000	Safe Streets Law Enforcement Support Security Advisor Services
Project Improvements Knott St. and other (HCD, local)	500,000	Safe Streets Transportation Services
Commercial Rehabilitation (HCD, City, private)	100,000	Security Advisor Service Corridor Promotion
Residential Rehabilitation (HCD, local revolving funds)	40,000	Security Advisor Service Safe Streets
Commercial Development BMW dealership and other (private)	300,000	Corridor Promotion Safe Streets Security Advisor Service
 TOTAL	 \$5,387,000	

CPTED efforts. Overall, the City administration is satisfied with the effort and feels that the increased investment, lower crime rate, and broadened credibility have changed public attitudes towards Union Avenue. In large measure, this is a definite contribution of the CPTED experiment. In addition, two substantial CPTED technical assistance requests (Housing Authority and another business district) were made, suggesting growing community interest and acceptance.

An August 1975 feature news article in a weekly paper suggests one problem not adequately handled in the CPTED experiment. Although it did note the consortium's role in the successful lighting grant application and acknowledged the consortium's role in helping to pull together otherwise divergent activities, the article was basically critical of the program because it could not point to any new funding that the program had brought into the City. Basically, the problem was the confusion over the fact that the NILECJ/Westinghouse CPTED Program did not include implementation funding. The consortium could have done a better job publicizing and emphasizing its mandate to help generate interest in and support for a locally run, locally financed and locally controlled crime prevention project.

By implication, the above-noted article points up an additional shortcoming of the CPTED experiment. There was no continuous program of publicity for CPTED-related activities, whether newly generated or newly recognized (defined) as such. The project's local adequacy would have been enhanced had increasing numbers of UAC residents and

users been continually reminded of the integrated nature (i.e., CPTED character) of otherwise diverse revitalization activities. More sustained effort to promote the awareness and involvement of residents would have helped in this area.

Despite these missed opportunities, we conclude that the Portland CPTED commercial demonstration was a successful local experiment.

8.2.2 National Adequacy

We conclude that the Portland CPTED commercial demonstration was a successful national experiment for two reasons: (1) What was done and (2) what was not done. In the first case, the Portland process for initiating, planning, and implementing a successful CPTED project revealed a number of replicable strategies and relationships. In the second case, the process facilitated the recognition of shortcomings such as those cited in the previous subsection. Thus, the national implications are tied quite closely to the demonstration's highlighting of circumstances that could undermine a similar program's effectiveness.

In summary, the national experiment was a success because the CPTED concept was operationalized in ways that facilitate its replication at similar sites throughout the Nation. It was also a success because it suggested ways to revise the CPTED conceptual and evaluation framework. This revision is discussed in the next section.

8.3 Revised CPTED Conceptual and Evaluation Framework

The CPTED conceptual framework that served as the basis for the project's evaluation (see Chapter 6, particularly Figure 6-1) posited the

following:

- The effort expended would enable the ultimate goals to be achieved only if several proximate goals could be attained first.
- The proximate goals were increases in access control, surveillance, activity support, and motivation reinforcement.
 - Increased access control is basic.
 - Increased surveillance serves to increase access control.
 - Increased activity support promotes increased surveillance and access control.
 - Increased motivation reinforcement provides support for increases in the other three.
- The ultimate goals were reduced crime, reduced fear of crime, and improved quality of life.

The priorities for strategy selection and staging reflected these assumptions to a great extent. Thus, the first priority was the attainment of an LEAA grant for lighting, to help increase night surveillance, and security advisory services. These services were primarily to increase access control via hardening of commercial and residential structures, and, secondarily, to increase activity support and motivation reinforcement by organizing citizen participation and awareness activities and by

initiating a number of corridor promotional events. The promotional events were associated with an improved image for the corridor and increased concern for it among residents and users.

The crime reduction results discussed in Section 7.1.3 raise some questions about the hypothesized CPTED conceptual framework. Sizable reductions in commercial burglary, residential burglary, and street crime rates were noted. However, the relationships of these reductions to the CPTED physical strategies for increasing access control and surveillance (i.e., target hardening and streetlighting, respectively) were not found to be direct.

Commercial burglary rates dropped following completion of the commercial security surveys but the relative impact of the surveys and of businessmen's compliance with their recommendations was unclear. Residential burglary rates dropped following completion of the commercial security surveys but the relative impact of the later residential surveys was also unclear.

Street crime rates dropped following the initiation of streetlighting installation but since numerous problems with availability of supplies and materials caused the completion to be delayed for more than a year, the actual impact of increased night visibility was unclear.

With respect to the target hardening strategy, the evaluation team drew the conclusion that the commercial security surveys were not simply an access control (i.e., target hardening) strategy. These surveys brought a relatively large number of police officers to Union Avenue during

February 1976 and during the followup surveys in August 1976 and February 1977. The increased visibility of police officers may have influenced potential offenders and, therefore, become part of the "treatment."

Similar conclusions were suggested during key-person interviews with respect to the visibility of the streetlight installation activities. The activities per se increased the City's credibility: City representatives had expressed concern about corridor safety and this provided visible evidence that they were willing to do more than merely express concern.

In each situation, increased motivation reinforcement seemed to have occurred. By increasing the perceived risk of apprehension, the motivation of the offender population was negatively reinforced. By restoring confidence in the corridor as a safe and viable area, the motivation of the nonoffender population was positively reinforced. Thus, attainment of an ultimate goal of the CPTED project, namely, reduction in crime rate, seemed to be more closely related to the proximate goal of increased motivation reinforcement than to either increased access control or increased surveillance.

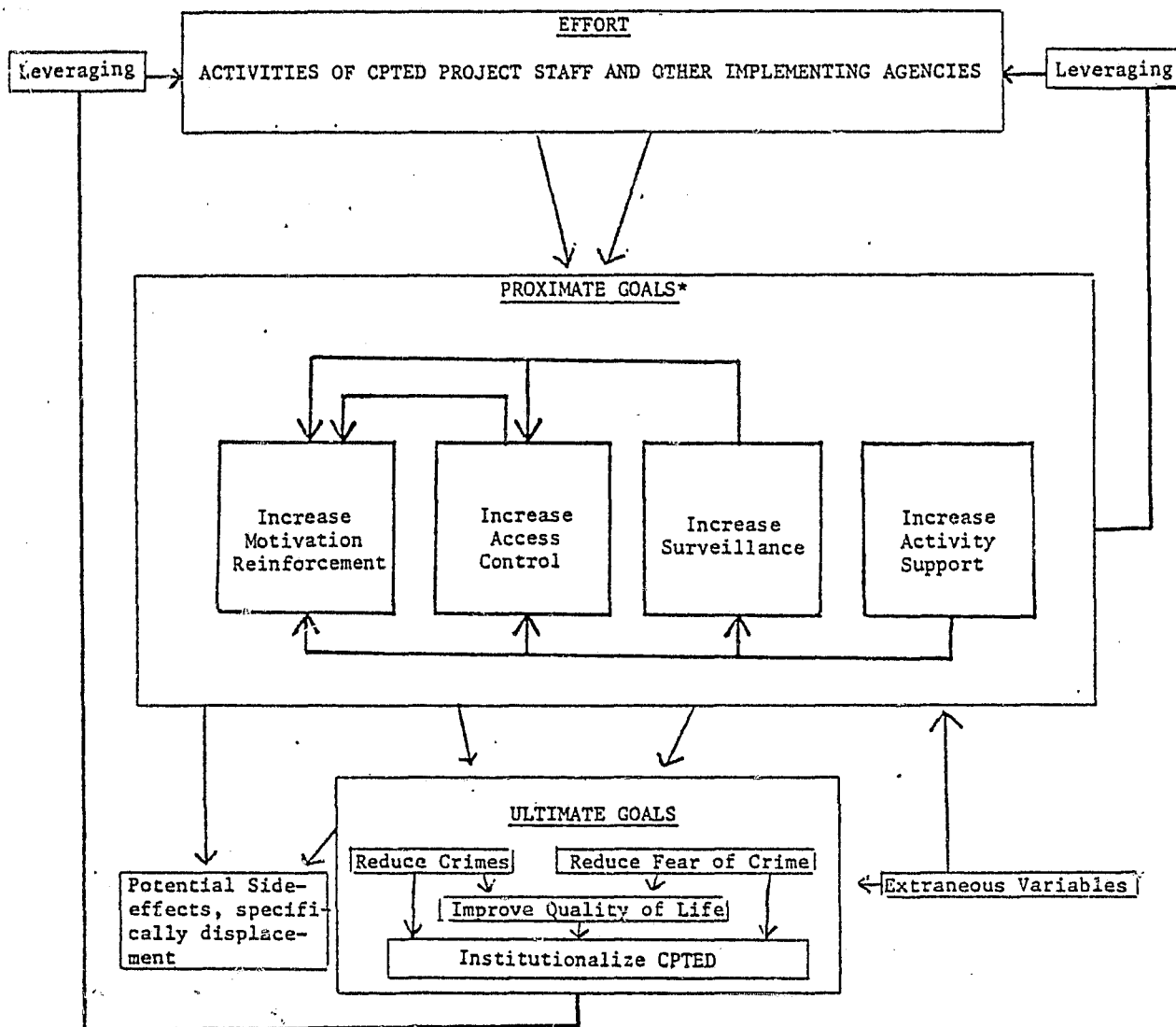
In light of the above, it can be hypothesized that the true impact of increased access control and increased surveillance occurs through their positive reinforcement of nonoffender motivations and negative reinforcement of offender motivations. If this is the case, access control and surveillance strategies should be undertaken initially for their symbolic value, i.e., their visibility gives immediate credibility to a CPTED project. Thus, with motivation reinforcement or confidence restoration viewed as the project's basic proximate goal, the proper role for access control and surveillance strategies, as well as activity support strategies, is to sustain

and enhance the impact of the motivation reinforcement strategies. Without such support, it seems likely that the initial crime prevention gains would quickly be lost -- a problem faced by many programs that are less comprehensive than CPTED.

Figure 8-1 presents a revised CPTED conceptual and evaluation framework with increased motivation reinforcement now the first listed proximate goal, supported and enhanced by increased access control, surveillance, and activity support.

Figure 8-1 also incorporates two other changes suggested by the Portland project. Both are related to the fact that the earlier framework had not given adequate recognition to the continuous nature of a successful CPTED project. The framework now includes an additional ultimate goal for the project: To institutionalize CPTED. The successful CPTED project will find that individuals and organizations both inside and outside the project increasingly incorporate CPTED considerations in their planning and programmatic decisions. This enhances the opportunity for leveraging additional funds and resources for the CPTED project, reflected as feedback in the revised CPTED framework.

This emphasis on institutionalization and leveraging-as-feedback is significant because it suggests that the evaluation of a CPTED project is more complex than previously indicated. This is not to say that the original criteria for assessing program success and theory success are no longer valid. They remain valid indicators of past success or failure, but they may be less important than institutionalization of the CPTED concept and leveraging of additional resources as indicators of future success



* As the arrows indicate, the proximate goals are not mutually exclusive. Increased access control provides support for increased motivation reinforcement; increased surveillance serves to increase access control and motivation reinforcement; and increased activity support promotes increases in the other three.

Figure 8-1. Revised CPTED Conceptual and Evaluation Framework

or failure. Thus, the fact that, following the termination of the LEAA Lighting and Night Crime Deterrence Grant, Portland officials allocated the funds for the security advisory staff as a regular line item in the city's annual budget (i.e., they institutionalized this CPTED-related function) is a better indicator of future program success than the finding of reduced commercial burglary. A similar statement can be made for the implications of the CPTED-related investments that were presented in Table 8-1. There were also other indications of institutionalization and leveraging in Portland.

The revised CPTED conceptual and evaluation framework enables us to conclude that the CPTED project in the Union Avenue Corridor is likely to sustain or increase its success in the foreseeable future.

APPENDIX A

CPTED Theoretical Framework

APPENDIX A. CPTED THEORETICAL FRAMEWORK

1. Introduction

The purpose of this appendix is to familiarize the reader with the program rationale of Crime Prevention Through Environmental Design (CPTED). There are three major parts. The first part describes the purview of the Program, the second part introduces some key theoretical postulates, and the last part discusses OTREP (opportunity, target, risk, effort, and payoff) as one approach to studying crime/environment problems.

2. The Purview of CPTED

CPTED seeks to reduce crime and fear of crime through the proper and effective use of the built environment. The CPTED Program is based on three beliefs: First, the security of one's surroundings is critical to achieving and maintaining a cohesive, stable, and optimally used environment; second, opportunities for crime can be minimized through architectural design and urban planning, either by imposing real structural constraints on criminal behavior or by creating psychological barriers; and third, crime and fear can be prevented by augmenting existing social control processes.

Social control is enhanced by supporting established covenants and shared perspectives that have evolved and are maintained by users for the protection of their environment. Such social protective mechanisms can be reinforced through law enforcement activities, the

formation of community organizations explicitly charged with the responsibility of deterring antisocial behavior and discouraging unwarranted intrusion, and environmental improvement programs that are aimed at raising the physical and social quality of that setting. The key premise is that design and effective use of physical space can lead to better citizen control over their environment and, at the same time, to an improvement in the quality of urban life.

2.1 CPTED Target Crimes

The offense categories addressed by the CPTED Program are those classified by the Federal Bureau of Investigation as Part I crimes against persons (criminal homicide, forcible rape, robbery, aggravated assault) or property (burglary, larceny, and auto theft), as well as some Part II crimes (simple assaults, arson, and vandalism). These offenses receive attention because they are destructive to the social and physical environment, they engender public fear of crime, and the opportunity for their commission can be eliminated or minimized through environmental design. Excluded from consideration are the so-called "white collar" crimes (fraud, embezzlement), "victimless" crimes (drug abuse, prostitution), crimes against government, organized racketeering, morals offenses, family and juvenile offenses, and disorderly conduct.

2.2 Prevention Concepts and CPTED

The term *prevention* as it is used throughout this paper refers to measures adopted to forestall the commission of a crime. Lejins*

*Peter Lejins. "The Field of Prevention." In W. E. Amos and C. R. Wellford (eds.). Delinquency Prevention: Theory and Practice. Englewood Cliffs, NJ: Prentice-Hall, 1967, p. 4-5:

posited three types of prevention -- punitive, mechanical, and corrective -- and, to varying degrees, CPTED strategies involve all three. In punitive prevention, threat of punishment discourages the potential offender. A key CPTED planning objective is to create an environment in which it is apparent that anyone who commits a crime is likely to be detected, apprehended, and punished. This will occur because legitimate users assume a large responsibility in policing their environment and have an effective working relationship with the police.

With mechanical prevention, obstacles are placed in the way of the potential offender to make it more difficult for him to commit an offense. Thus, while punitive prevention increases risk, mechanical prevention increases the level of effort required for criminal activity. It is important to note that mechanical prevention involves more than controlling access through physical design. Traditional target-hardening prevention techniques (such as dependable locking systems and window bars) are included among CPTED strategies. Also included are a broad range of urban design principles concerning the form of the buildings, the layouts of streets, the location of community facilities, the juxtaposition of social and functional activity areas, and other elements that affect the design and use of the environment.

Corrective prevention is perhaps the most fundamental of the three because it focuses on strategies aimed at the elimination of criminal

motives. Although the CPTED purview does not include broad-based education and employment programs, CPTED is corrective to the extent that environmental design can affect the quality of life in a community, and is a social as well as a physical planning process.

2.3 Environmental Design

The term *environmental design* refers to problem-solving activities that encompass more than architectural solutions but are still specific to geographically bounded environments. Design is viewed not only as an element in the environment but as a process through which plans are developed to influence how environments are used and treated.

3. Four Key Postulates

There are four general CPTED theoretical postulates that provide the underlying rationale for all of the crime prevention strategies. They are access control, surveillance, activity support, and motivation reinforcement. While conceptually distinct, these postulates tend to overlap in practice (that is, each CPTED strategy is based on principles derived from more than one postulate). For example, strategies designed to increase surveillance also tend to control access to a given environment. Similarly, if they are to work, activity support programs must involve surveillance strategies.

3.1 Access Control

Access control is primarily directed at decreasing criminal opportunity. In essence, it operates to keep unauthorized persons out of a particular locale if they do not have legitimate reasons for being

there. In its most elementary form, access control can be achieved in individual dwelling units or commercial establishments by use of adequate locks, doors, and the like (i.e., the group of design strategies known as target hardening). Many burglars and robbers display environmental preferences -- both physical and social -- that can also be frustrated by the creation of psychological barriers. These barriers may appear in the form of signs, parkways, hedges -- in short, anything that announces the integrity and uniqueness of an area.

3.2 Surveillance

Although similar to access control in some respects, the primary aim of surveillance is not to keep intruders out but to keep them under observation. Surveillance increases the perceived risk to offenders, as well as the actual risk if the observers are willing to act when potentially threatening situations develop.

A distinction can be made between organized surveillance and spontaneous or natural surveillance. Organized surveillance is usually carried out by police patrols in an attempt to project a sense of omnipresence (i.e., to convey to potential offenders the impression that police surveillance is highly likely at any given location). In some instances surveillance can be achieved by non-human techniques such as closed-circuit television (CCTV) or alarms.

Natural surveillance can be achieved by a number of design techniques such as channeling the flow of activity to put more observers

near a potential crime area, or creating a greater observation capacity by installing windows along the street side of a building, enclosing a staircase in glass, or using single-loaded corridors. The technique of defining spaces can also convey a proprietary sense to legitimate users, inducing a territorial concern.

3.3 Activity Support

The concept of activity support involves methods of reinforcing existing or new activities as a means of making effective use of the built environment. This perspective originates in the observation that, in a given community, social and physical networks and nodes exist as latent, often underused, resources capable of sustaining constructive community activities. Support of these activities can bring a vital and coalescing improvement to a given community, together with a reduction of the vulnerable social and physical gaps that permit criminal intrusions. Such an approach might focus on a geographic area (e.g., block, neighborhood, or city sector), a target population (e.g., vulnerable elderly victims or opportunistic youthful offenders), or an urban system (e.g., health delivery, transportation, or zoning).

3.4 Motivation Reinforcements

In contrast to the more mechanical concepts of access control and surveillance that concentrate on making offenders' operations more difficult, motivation reinforcement seeks not only to affect offender behavior relative to the built environment but to affect offender

motivation by increasing the risk of apprehension and by reducing the payoff to him.

The motivation reinforcement concept also seeks to positively reinforce the motivation of potential victims. Territorial concern, social cohesion, and a general sense of security can result from such positive reinforcement strategies as altering the scale of a large, impersonal environment by such measures as upgrading the housing stock, the school facilities, or the interiors of subway cars; organizing occupants; or changing management policy.

Territorial concern, social cohesion, and a general sense of security can be reinforced through the development of the identity and image of a community. Recognized consciously, this approach can improve not only the image the population has of itself and its domain but also the projection of that image to others. With a definition and raising of standards and expectations, patterns of social estrangement decline, together with opportunities for aberrant or criminal behavior.

4. OTREP

Although all CPTED strategies may appear to run the gamut of prevention options, they do not. CPTED strategies have one feature in common: Crime and fear-of-crime problems are examined in terms of environmental characteristics that foster or impede the commission of crimes. Thus, a crime problem is viewed as a crime/environment problem

because the focus is on solutions that treat the environment in such a way as to lessen the vulnerability of potential victims, increase the level of effort involved in committing a crime, reduce the potential payoff to the offender, and improve the chances of apprehension.

In order to study crime/environment relations in a way that is useful for the selection of appropriate CPTED intervention strategies, a comprehensive theoretical perspective is needed to understand the complex manner in which elements of the physical and social environment interact to affect levels of crime and fear.

If CPTED strategies are to be effective, they must serve a dual function. First, as indicated earlier, they must instill a sense of confidence and security in the use of the environment on the part of legitimate users; the second function is that they must create an impression for potential offenders that opportunities for crime in the target environment are not worth the effort or risk involved. Thus, CPTED strategies are designed to affect the perceptions of both legitimate users and potential offenders, as well as to bring about actual changes in the environment. The remainder of this section focuses on OTREP, a conceptual scheme to be used for defining crime/environment problems in such a way as to aid in the selection of appropriate strategies.

The OTREP concept proposes that the opportunity for crime to occur in an environment is a function of four factors: Target, risk, effort,

payoff. These four basic factors are of central importance to the criminal when selecting a site for a criminal act. It is assumed that criminals avoid low opportunity environments (e.g., those that require much effort to commit a crime, where the risk of apprehension or punishment is high, where few targets exist, and where only a small payoff can be obtained). Similarly, it is assumed that criminals prefer an environment where opportunity is high targets are available that allow crimes to be committed easily and quickly for large rewards, with little or no risk of apprehension.

No setting or place exists where crimes cannot be committed. Burglary, larceny, vandalism, and crimes of violence can occur anywhere. Faced with a wide array of available sites, the potential criminal must select a site for his act. If no logic or rationale for this choice existed, one would expect crimes to be randomly distributed in the environment.* However, such is not the case.

Crime occurs very frequently in certain areas, while it is almost unheard of in other areas. Geographic areas characterized as "high crime" or "dangerous" are well known to the residents and police of any municipal locality. Additionally, certain situations involving,

*One offender option is not to commit a crime in that or any other site. Although OTREP attempts to simulate the decisionmaking process of criminals, it is not based on the assumption that the potential offender has already decided to act and simply has to decide where to act. If this were the case, then the most that CPTED could hope to accomplish would be crime displacement. However, considering what is known about the nature of opportunistic crimes, it appears that the environment can be manipulated so that a large proportion of potential offenders do not even recognize sites as potential targets.

for example, the time of day, type of people, nature of the task, and so on are readily perceived as more dangerous than others ("I'd never let myself get into *that* situation!"). For some reason or set of reasons, crime tends to occur more frequently in some environments than in others.

Two approaches can be used to examine more closely the spatial distribution of crime. One approach is to study different environments to uncover dimensions that vary among them. The other approach is to examine the spatial distribution of crime from the perspective of the criminal. This approach assumes that criminal acts stem from individual decisionmaking processes occurring inside the potential offender.

Although both the environmental and cognitive approaches seem individually inadequate, a viable method of investigation emerges when both perspectives are simultaneously used. The questions to be addressed then become:

- What aspects of the environment are the most important to a potential criminal?
- How does the potential offender evaluate the available environments?
- What set of environmentally based dimensions is used in a criminal's decisionmaking process that distinguishes one environment from another?

Before further discussion of the four factors, a fifth factor -- which has purposely been excluded -- merits comment. This factor represents an individual, motivational, perceptual, and cognitive element. With this factor, the model would be sensitive to organismic variables that mediate environment/behavior relationships. To illustrate the operation of this factor, for example, one could suggest that individuals in greater need of a reward (e.g., a dope addict in need of a fix) will run higher risks for smaller payoffs than those with less immediate needs. Individuals who perceive an opportunity for a crime may attempt a criminal act, even though no opportunity in fact exists. A criminal might think that the risk of apprehension in a specific environment is low when, in fact, it is quite high.

The mediation of environment/behavior relationships by human pre-dispositional variables is acknowledged. However, this factor is presently excluded from OTREP because the emphasis of CPTED is towards the environment. Project managers must manipulate environments and physical design elements to reduce crime, and the orientation of OTREP reinforces the emphasis. The intent is to avoid shifting the emphasis from design variables that can be controlled and manipulated to motivational and cognitive factors over which the manager has little control. At some future date, however, the OTREP model may be expanded to include motivational and cognitive factors if their utility for CPTED programming efforts can be demonstrated.

OTREP conceptualizes four attributes that relate to criminal behavior. The first factor, *target*, can be said to exist whenever a potential victim and a potential offender are in proximity. However, many opportunities are lost because a potential offender does not perceive the individual or property as a potential target. As the salience of a potential target increases, criminal action by the potential offender becomes more likely.

The concept of target allows the same environment to be characterized by different degrees of opportunity for different crimes. If an elderly lady carrying a purse is walking next to a young woman on a semi-crowded street, the opportunity for pursesnatch would be much higher than the opportunity for rape.

The concept of *risk* implies that, as the risk of punishment or apprehension increases, the attractiveness of an environment (to a potential offender) decreases. This is precisely the notion of deterrence. From a CPTED viewpoint, perhaps the principal mechanism for increasing risk would be surveillance, although certain access control methods would also contribute.

The third factor, *effort*, assumes that an environment becomes less attractive as the physical effort required to commit a crime increases. The effort necessary to execute a crime may be increased through CPTED tactics, especially access control or target-hardening approaches. This is an area in which CPTED should be expected to have a large impact.

The final OTREP concept is *payoff*, or the anticipated benefits of crime to the offender. As the payoff grows larger in an environment, the attractiveness of that environment to the criminal is assumed to increase. It should be noted that the payoffs of acquisitive crimes (e.g., robbery and burglary) are more susceptible to reduction through CPTED than are the payoffs of other types of offenses (e.g., murder, drug abuse, and prostitution).

Some examples of the interplay of these elements are worth noting briefly. If a target is not perceived, no crime will occur. If an actual target is perceived, then payoff must be subjectively greater than both effort and risk for a crime to occur. Effort and risk are not completely independent in that risk can decrease somewhat as the amount of time (the effort) required to commit a crime decreases.

APPENDIX B

CPTED Commercial Demonstration: A Chronology*

* Based upon a consolidation of contractually required Monthly and Quarterly Reports.

May - July 1974

- Identification and evaluation of candidate sites began toward the selection of the demonstration site. Several papers were produced that suggested selection criteria and procedures. It was at this time that the commercial environment was identified as the focus of one of the Program's first two demonstrations.

August - October 1974

- Six potential Commercial Demonstration sites were identified and five were selected for site visitation, based upon predetermined site selection criteria. Arrangements for meetings and site visits were scheduled through local representatives in each of the cities, which included a visit to Portland, Oregon, on August 16. Extensive information was obtained from each site. A matrix form, which identified selection criteria, was developed and was used in conjunction with a modified Delphi screening procedure. After the merits and disadvantages of the sites were discussed, the CPTED team decided to visit Portland a second time. On the second trip, a more comprehensive investigation was conducted and the CPTED concept was presented to the Mayor, other key city officials, and various government and community organizations. Based on these meetings, available base data, and apparent community support, Portland was to be pursued as the Commercial Demonstration site, and a preliminary (mini) plan would be prepared.

November 1974 - January 1975

- The draft Commercial Demonstration Plan was developed for Portland's Union Avenue Corridor commercial strip (including its contiguous residential neighborhood) and reviewed with LEAA/NILECJ officials on November 8.
- On November 11-12, the Demonstration framework was presented to Portland representatives from the Planning Bureau, the Portland Police Department, the IMPACT Program, the Regional LEAA Office, Model Cities, and the Mayor's Office (including Mayor Goldschmidt).
- Assistance was provided to the City of Portland in preparation of a grant application to help fund the street lighting improvement portion of the Demonstration Plan. The grant application included sections on the objectives and need for the assistance, the results or benefits expected, the technical approach, the geographic location for the proposed lighting upgrade, and the program management.

February - April 1975

- The revised draft Commercial Demonstration Plan was submitted to LEAA/NILECJ on February 6. In addition, the document was reviewed by, and comments and recommendations secured from, the Portland Planning Bureau, the Union Avenue Boosters, the Urban League, and IMPACT Program representatives.
- The City of Portland applied for HUD-HCD funding, which included \$353,700 earmarked for support of CPTED component strategies.
- A preliminary concept paper was developed to support a grant application to the Administration on Aging (AOA). Funds received from this source were to be used to implement the strategies oriented towards reducing the incentive for crime ("cash off the streets"). A meeting was held with representatives of the Senior Adult Service Center to discuss their role as designated implementing entity.
- The "Union Avenue Corridor Lighting and Night Crime Deterrence Program" grant reapplication requesting funding for streetlighting and the security advisor position was signed by Mayor Goldschmidt and approved by the City Council. Council approval enabled the timely submission of the reapplication to the Columbia Regional Area of Governments (CRAG), to the Oregon Law Enforcement Commission (OLEC), and to the Region. As anticipated, CRAG provided requisite A-95 approval.

On April 17, CPTED representatives met with representatives of (OLEC) to ascertain their concurrence with the reapplication and to initiate discussions toward a coordinated evaluation effort. The application was approved with only minor changes and forwarded to the LEAA Regional Office on April 21.

- The CPTED Onsite Coordinator assumed his responsibilities on March 31. His orientation into the specifics of the demonstration continued with exposure to principals in each of the participating City bureaus and local citizen groups. In addition, the onsite Coordinator was to followup on opportunities for augmenting the demonstration through AOA grant assistance.

May - July 1975

- The concept paper previously developed to support a grant application to AOA was revised and refined. Among other things, the new draft designated the Office of Justice Programs as the subgrantee, and the Senior Adults Service Center as the implementing agency.

- The Portland Planning Department requested a \$25,000 grant from the National Endowment for the Arts to help fund CPTED strategy implementation.
- During June, Portland Mayor Goldschmidt signed, and returned for final administrative processing, a request for HUD funds in the amount of approximately \$353,000 to support the Union Avenue demonstration. During July, word was received that the monies were given final approval. Notification was also received that the Street Lighting and Night Crime Deterrence Application had been approved. The application would provide approximately \$400,000 in LEAA IMPACT funds and approximately \$44,000 in local funds to support the commercial demonstration in the Union Avenue Corridor. These monies essentially provided the core funding support for the Demonstration and the initiation of the program was announced by the City and LEAA.
- During July, meetings were held in Portland with the Director of the Portland Office of Justice Programs, the Portland Community Development group, the Portland Planning group, Police representatives, and other key individuals to determine next steps to implement the Commercial Demonstration. Because of the complex nature of the Demonstration, and the many interactions between government and private interests, it was decided that a management plan, as well as detailed implementation plans for each strategy, would be prepared jointly by representatives of the CPTED team and the concerned City of Portland organization. It was further agreed that a revised Demonstration evaluation plan would be required once decisions were reached regarding strategy details.

August - October 1975

- Portland public officials, private organization representatives, and CPTED team members developed an initial management plan, which outlined responsibilities and functional relationships of the many offices and organizations to be involved in the Union Avenue Corridor project.
- The appointment of Sgt. Gerald A. Blair of the Portland Police Department as Security Advisor for the CPTED and LEAA Portland Lighting and Night Crime Deterrence program signaled the start of fulltime local support of the CPTED project in Portland.
- Public hearings on the 5-year redevelopment plan for the Union Avenue Corridor (UAS) were held by the Portland Bureau of District Planning, with no major opposition to the plan.
- In a meeting with Ms. Betsy Welch, Office of Justice Programs, it was found that no city money was available for evaluating the effects of the "Night Crime Deterrence Grant". As a result, Ms. Welch

requested that OLEC provide funds or drop the evaluation requirement.

- Ms. Joani Azzoni was employed by the Portland Development Commission to take the lead in organizing committees to implement various project strategies.
- The Bureau of Human Resources received preliminary approval from City Council to submit a grant application to the Administration on Aging.
- The Portland Development Commission engaged a local urban designer to prepare a detailed design for redevelopment along the UAC and for the design of the Knott Street miniplaza, with the assistance of CPTED team member L.S. Bell.
- Detailed plans were prepared for the collection of prevaluative baseline data, and the first site visits to collect such data were completed. The CPTED Evaluation team gathered archival data from the Planning and Police Bureaus; recorded the UAC photographically for subsequent comparisons; obtained observational data on pedestrian nighttime traffic along the UAC and in the adjacent residential area; and recorded crime data.

November 1975 - January 1976

- The Security Advisor prepared a workplan that established guidelines for program activities; began preparation of the grant application for submission to AOA; and discussed support of the UAC project with representatives of the Oregon Banking Association, Oregon Automated Clearinghouse Association, Union Avenue Boosters Club, the media, and public agencies in the Portland area.
- The Bureau of District Planning held two public meetings to discuss priorities for expenditures of Housing and Community Development (HCD) funds in the UAC. Acquisition of a site to permit relocation of the North Precinct police station to the UAC was identified as the first priority.
- The Tri-Met Transit Company has now installed seven of the eleven proposed bus shelters in the UAC. In addition, Tri-Met was briefed on the miniplaza concept and agreed to support its implementation by incorporating some of the miniplaza designs into the Knott Street/ Union Avenue transfer point.

- The King Neighborhood Association, which maintains a facility near Union Avenue, agreed to provide office space for the Security Advisor.
- Along with official adoption of the 5-Year Union Avenue Redevelopment Plan, The Portland Development Commission took over the lead role from the Planning Bureau, and appointed Mr. T. Kennedy as Union Avenue Redevelopment Program Coordinator. Included in his orientation was thorough briefing on CPTED activities.
- Over 20 sworn-police enrolled in a security survey course to be conducted by the Security Advisor.
- Detailed designs of the lighting to be installed under the Lighting and Night Crime Deterrence Grant was completed.
- The field work for establishing baseline evaluative data was completed: Crime data stipulated in the Lighting Grant were compiled, a random 15 percent sample of all lots and structures in the Corridor area was photographed; maps, information on local archives, and other related tasks were accomplished.

February - April 1976

- Mr. Kennedy described the proposed plan for installing improved lighting along UAC to business and residents. He was assisted by Sgt. G. Blair, Security Advisor, and Mr. W. Oberhue, Portland Lighting Bureau.
- Mr. T. Kennedy also discussed the HUD-funded Redevelopment Plan with UAC businessmen, who showed considerable interest.
- Redevelopment activities included the support of a Mr. Warren Chung's plans to establish a mini-mall neighborhood shopping center at Dekum and Union Avenue (Residential Service Center), assisted by the PDC in the site acquisition and financial packaging of the project. PDC also assisted Mr. William Chin, owner of the Formosa Restaurants, in developing a rehabilitation package for his restaurant operation on Union Avenue.
- Herfy's a national franchise fast-food chain, purchased a large piece of property on Union Avenue with the intention of opening a restaurant.
- The training program conducted by the Security Advisor for police security officers on survey techniques was completed on schedule with the successful completion of 210 commercial security surveys. Follow-up activities were initiated for commercial establishments that did not comply with survey recommendations.

- Planning for movement of the North Precinct Police station to Union Avenue was abandoned. The move was to be financed under the Public Works bill, which was vetoed.
- Mr. Gary Baden, a consultant to the Economic Development Administration was on site to ascertain the viability of crime prevention programs in economic redevelopment projects.
- CPTED Program representatives were on site, where they conducted a lengthy site tour for NILECJ representative, Mr. Paul Cascarano, provide him an orientation to the crime environment problems and the CPTED design directives being implemented along the UAC. During the visit, a meeting was held between the CPTED representatives, Mr. Cascarano, and Ms. Betsy Welch of the Office of Criminal Justice Programs and Planning to discuss the CPTED Program and its relationship to the projects sponsored by that office.
- Mrs. Jeanie McCormack was appointed the new Director of the Crime Prevention Bureau, and Mr. Jim Richardson accepted a position as Assistant to the Director of the Office of Justice Programs.
- Assistant Vice President of a leading local bank indicated that the banking institutions were ready to proceed with the "cash-off-the-streets" program.
- The baseline evaluative data that were obtained during the last quarter were compiled and analyzed.
- Discussions were held with Dr. Anne Schneider of the Oregon Research Institute regarding a possible subcontract to retrieve data on UAC residents from victimization surveys conducted by her group.
- A meeting was held with Mr. M. Henniger, representing the Portland, Oregon, HCD evaluation component, to discuss HCD and CPTED evaluation requirements. Mr. Henniger noted that HCD requires a statistical program analysis, and since CPTED is primarily concerned with an impact evaluation, he could see no reason for conflict.
- An updated and expanded version of the Commercial Demonstration Plan underwent formal internal review.

May - July 1976

- Candidates for the position of a new CPTED Onsite Coordinator were identified and interviewed; Mr. Kenneth O'Kane was selected to fill the position.

- CPTED team representatives met, both onsite in Portland and at a workshop in Chicago, with numerous City and UAC representatives to discuss and develop a Comprehensive Implementation Plan for Union Avenue, thus providing a unified demonstration focus between the CPTED and Union Avenue Redevelopment Programs.
- Dr. Richard M. Titus, Government Project Monitor, was accompanied by CPTED representatives on a site visit to Portland. The site visit provided Dr. Titus with an opportunity to review the UAC Redevelopment Plan and meet with representatives of the Portland Redevelopment Commission, Bureau of Planning, HUD Regional Office, Office of Justice Programs, and the Security Advisor and members of local business and financial institutions.
- Work continued toward completion of the baseline evaluative data.
- The final draft Commercial Demonstration Plan was submitted to LEAA/NILECJ.

August - October 1976

- The new CPTED Onsite Coordinator assumed responsibilities. Along with other CPTED team members, he held numerous meetings to gain local support of, report on the progress of, and finalize activities of the Portland demonstration along UAC.
- A time-phased implementation plan was developed for the Union Avenue Redevelopment Program, which included the CPTED Management Plan, Residential Service Center, Residential Activity Center, Street Lighting, Security Advisor Services, and Residential Rehabilitation Guidelines Criteria strategies/activities.
- Mayor Goldschmidt reconfirmed his intention to apply approximately \$4.5 million in transferred Federal highway funds to Union Avenue Redevelopment, supporting both CPTED and Redevelopment plans for the Corridor.
- The first Sunday Market -- an open-air sale of handmade goods -- was a success, with approximately 500 attendees throughout the day.
- The Portland Police Bureau decided to continue funding the Security Advisor position, funds for which expired September 30.
- The baseline evaluative data package was completed and a draft RFP for conducting the evaluation phase was reviewed internally.
- UA "cleanup day" held -- sponsored by Boosters with Police Bureau staff assistance. Many merchants turn out.

November 1976 - January 1977

- The City installed all street lighting in and around the UAC.
- At a joint public hearing/meeting of the Portland Planning and Development Commissions, approval was given to the third-year community development block grant program, in which \$380,000 were budgeted for UAC activities for fiscal year 1977-78. Support for the Union Avenue Program was voiced by both the staff members and citizens.
- The Northeast Business Boosters (NEBB) formally organized. They elected a president and board of directors, and decided to meet on a regular basis. Over 100 people who were in attendance at reception sponsored by the NEBB heard the Mayor speak favorably about UAC redevelopment activities.
- The PDC opened and staffed a site office along Union Avenue.
- The Portland Police Bureau announced that the Union Avenue Corridor area experienced a 29-percent reduction in burglaries versus a 9-percent reduction citywide.
- Several cooperating City bureaus undertook "site hardening" experiments on three houses. Based upon favorable evaluation, this strategy would be expanded into the ongoing housing rehabilitation program.
- A major national department store chain expressed interest in developing a warehouse/office complex along Union Avenue. The engineering consultant retained by the PDC submitted a favorable feasibility study, which would be reviewed by the prospective developer from a CPTED perspective.
- City bureaus discussed and agreed that the Public Works Bureau should be the lead agency in designing and coordinating the \$4.5 million highway improvement program.
- A more detailed evaluation plan drafted.
- LEAA/NILECJ staff received a detailed presentation based upon the report, "Implementation Status of Commercial Demonstration."

February - April 1977

- The CPTED Onsite Coordinator continued to meet with many UAC and City representatives to report on and coordinate the progress of activities.

- A Union Avenue redevelopment progress report that included CPTED, was presented to the Mayor and his Economic Development Advisory Committee. As a result, economic and industrial development activities proposed for the Union Avenue area were given a higher priority.
- A local economist and the City Economic Development Director were brought in to analyze the requirements to make the Residential Service Center (Woodlawn Neighborhood Shopping Center) financially feasible. The economist's update of the previous market study would enable plan specification and approvals to be finalized.
- A national department store chain presented its ideas for a new facility to the NEBB, who responded favorably towards the proposal. Local press articles reported this development as a "shot in the arm" for Union Avenue. The development would be a building of 50,000 square feet, which would employ over 100 persons at an annual payroll of over \$400,000. The private investment would involve over \$1.5 million.
- The NEBB agreed to sponsor the Cash-Off-the-Streets (COTS) strategy. Efforts continued to finalize the support of area banks and utility companies.
- The Security Advisor completed all followup inspections on the 176 commercial buildings and found that 52 were in total compliance with the recommendations issued in February 1976; for an overall compliance rate of 54.6 percent. (These figures compared with a 33-percent compliance rate found during followup inspections conducted in August 1976).
- The City Public Works Bureau hired a fulltime project coordinator for the 4.5 million highway improvement program. Final approval of the funds occurred.
- Mayor Goldschmidt reassigned several city Bureaus, including the Police Bureau, which was assigned to Commissioner Charles Jordan. The Mayor initially retained control of the Crime Prevention Bureau -- a civilian agency -- but an April meeting of the City Council merged the agency with other crime prevention functions under the Police Bureau.
- Workplans were devised for performing a basic process and gross impact evaluation.

- A draft questionnaire was prepared and submitted to key individuals concerned with the Commercial Demonstration. Based on their comments, the questionnaire was finalized for the interviewing procedure and sampling strategy for UAC businessmen. The Onsite Evaluator began these structured in-person interviews the last week of April. To date, he had 100-percent agreement by the UAC businessmen to his request for an interview.
- One UAC resident was interviewed with a draft set of questions from which an interview questionnaire would be compiled. After finalization, this questionnaire would be used to telephone interview a random sample of approximately 100 UAC residents.
- The Onsite Evaluator began collecting observational data of pedestrian activity level in the UAC. A structured observation run was devised that required him and his driver to travel the length of Union Avenue twice during the course of an hour. In addition, during this hour, observations were made of pedestrian activity level on two "safe streets for people" and at one UAC redesigned park. These observation runs were made on a random time schedule, every other week, for five consecutive nights. The data would then be plotted and analyzed.
- CPTED Evaluation team members were on site, where they met with numerous City and UAC representatives to discuss the evaluation efforts and secure local support.

May - July 1977

- The City's Administrator of the Office of Planning and Development resigned. CPTED team officials met with City Commissioner Charles Jordan, Mike Lindberg, the new Administrator of the Office of Planning and Development, and other City staff to fully review the current status and the future of the CPTED Program. The response by the City officials was most positive. Followup meetings were held with Commissioner Jordan; Mr. Luis Scherzer, Chairman of the Board of Directors, Portland Development Commission; Mr. Thomas Kennedy, Director of the Union Avenue Redevelopment Office; Mr. Dave Hunt, Director of the Portland Development Commission; and other key city staff. As a result of those meetings, Commissioner Jordan assigned several members of his staff to update information on resources available within the community.

- Interim "left-turn lanes" were installed at five key intersections along Union Avenue to aid traffic flow, and relieve congestion. Traffic volume counts were begun to assist in preliminary designs for the \$4.5 million street improvement.
- An open-air "farmers market" was started to provide a source of fruit and vegetables for low-income persons.
- The Housing Authority awarded a \$1.7 million construction contract for an 80 one-bedroom unit, four-story housing project for the elderly. All suggestions made during the CPTED review were incorporated.
- CPTED team member L.S. Bell visited the demonstration site to analyze problems and opportunities with the cash-off-the-streets program. In addition, he provided building security technical assistance for St. John's Business District.
- After extensive negotiations with City officials, a large west-coast retail department store chain announced its desire and made an offer to purchase two-blocks of land at Union Avenue and Mason Street, to be used for constructing the chain's distribution center, employing over 100 low- and moderate-skilled persons.
- Members of the CPTED Evaluation team successfully interviewed a geographically stratified random sample of 97 Union Avenue Corridor (UAC) residents. Fifty percent of the sample were men and 50 percent were women, with approximately the same distribution between Blacks and Whites. The data received were prepared for computer input, and preliminary analyses were begun. Draft summary results of these interviews indicated that residents and businessmen had heterogeneous attitudes toward UAC. Yet, on the average, these persons were positive about UAC and its future.
- Three months of 1976 UAC crime reports were retrieved from the police department files. In addition, permission was granted for the CPTED Evaluation team to access Portland Business License Division files.

August - October 1977

- Dedication ceremonies were held for the "Eliot II" Housing Project (80 units for the elderly). Those persons present, including Mayor Goldschmidt, spoke favorably about the housing project, the neighborhood, and Union Avenue improvement activities. Extensive press coverage took place.
- "Safe street" dedication plans were postponed due to inclement weather and a request that the ceremony be combined with that for a nearby park due for Spring 1978 completion.
- The Technical Advisory Committee (TAC) for the \$4.5 million street improvement (Union Avenue) requested that CPTED be an integral part of the design.

- A new branch of a savings and loan operation was opened along UAC, making check cashing and depositing more convenient and helping with the COTS effort.
- Vice President and General Manager of the department store chain presented to the NEBB the details of and ideas and proposals for the company's planned distribution center. Based upon the NEBB's favorable reaction, the Portland Development Commission engaged a land reuse appraiser and started preparing a detailed urban renewal plan for the site. Negotiations continued.
- Staff from Commissioner Jordan's office updated resource data, and the UAC situation. Also released was a plan for expanding overall crime prevention activities, citing CPTED accomplishments that could be replicated elsewhere in the city.
- The GPM visited the site, met with local officials, and toured and viewed construction accomplishments. At a subsequent meeting in Washington, D.C., local community development staff met with CPTED team members to discuss Demonstration progress.
- With respect to evaluation:
 - The same evaluative questionnaire that was used for the Spring 1977 interviews was administered to a sample of 15 NEBB and 23 non-NEBB businessmen. A sample of 50 had been planned originally but because many businessmen were on vacation, only a smaller sample was available. These data were prepared for computer analysis and added to the computer file containing the data from the spring businessmen interviews.
 - An independent random sample of 80 UAC residents were interviewed, using the same questionnaire used in May 1977.
 - Progress continued on the collection of the observational data. Contact was made with the U.S. Weather Bureau in Portland to obtain exact temperature and weather information corresponding to each day and time an observation was made.
 - Crime data were retrieved from the Portland Police Department files, which completed the crime data retrieval for this evaluation. These data represented all target crimes that occurred along the Union Avenue Corridor for October 1, 1974, through September 30, 1977.

- Sufficient financial data about the UAC business community were gathered from the City's Business License Division to assess any change in the economic vitality of the area since the early 1970s.
- "Portland Curbs Crime Through Urban Design," by Larry S. Bell and Kenneth C. O'Kane, was written, reviewed, and approved for publication in the November issue of Planning magazine. The article details CPTED and the Union Avenue Corridor.
- An article appeared in Portland's Skanner, a northeast weekly paper concerned with minority-related events. The front page article explained CPTED, the Union Avenue demonstration, and favorably cited reduced crime statistics and an improving Union Avenue environment.

November 1977 - January 1978

- Commissioner Charles Jordan visited Washington DC, where he met with members of the CPTED team, LEAA/NILECJ, and others. A progress report was given.
- An off-street parking committee was formed to resolve business parking once on-street parking is removed from Union Avenue.
- The PDC hired a staff member whose primary responsibility is to complete the Union Avenue revitalization promotional brochure.
- Final negotiations took place between the City and the major retailer that is planning to locate its distribution center along UAC. Individual City Council members informally approved the project, as well as the necessary city support.
- A complete feasibility study for a motel complex was not favorable in terms of economic return. Even with a sizable public subsidy, the motel room demand is too low to provide an adequate return.
- Design for the \$4.5 million street improvement project for Union Avenue Corridor was presented informally to the City Council.
- The City's Office of Justice Programs released an evaluation of crime prevention efforts thus far (citywide) and cited a lower burglary rate for those who have participated in the program.
- Commissioner Charles Jordan appeared on a CPTED panel at a National League of Cities Conference in San Francisco and spoke favorably about CPTED and crime prevention in Portland.

- Evaluation neared completion:

- The data that had been retrieved from the Portland Business License Division were analyzed. These data included an inventory for the period July 31, 1971, through September 30, 1977, of all ongoing businesses at year's end, dates of business openings and closings, percentage of business transacted in Portland, location in the UAC (on-off Union), and gross receipt figures for 1974, 1975, and 1976. Initial analyses indicated that there has been an overall significant increase in ongoing business activity throughout UAC since 1971.
- Collection of observational data was completed. These data, along with weather data received from the U.S. Weather Bureau in Portland, were prepared for time-series analyses to determine if there has been an increase in UAC general pedestrian activity level.
- UAC resident interview data, collected in late October, were analyzed and compared with the Spring residential interviews; and the data obtained during November interviews of 50 UAC businessmen were analyzed and compared with interviews conducted during the Spring and Summer of 1977. After final analyses, it was found that, in general, both business and residents are positive about the UAC.
- Key person interviews stated that business-community leaders were unanimously positive about UAC's present and future, while police opinion was mixed.
- It was found that the security surveys were associated with a significant decrease in commercial burglaries; residential burglaries also dropped but the relationship to CPTED strategies was less clearcut; there was no crime displacement from the commercial to the surrounding residential areas.
- The NEBB, Commissioner Jordan, and Mayor Goldschmidt's staff all received CPTED progress reports and discussed ways to keep the CPTED and UAC neighborhood stabilization efforts going. On-site CPTED team presence to be terminated as of February 28.

APPENDIX C

Crime Report Retrieval Form

DATA SHEET FOR UAC INCIDENT REPORT

[1] Offense

____ 1. assault ____ 2. com. burg. ____ 3. com. rob. ____ 4. purse. ____ 5. rape ____ 6. street rob. ____ 7. res. burg.

rep. date	time	occurred date	time	location of occurrence
[2-7]	[8-11]	[12-17]	[18-21]	[22] (0=off Union, 1=on Union, 9=unknown)

Sex
[23] (1=female)
(2=male)
(9=unknown)

Race
[24] (1=Black)
(2=Caucasian)
(3=other)
(9=unknown)

Date of Birth
[25-26] (Equate to years, 99=unknown)

Suspect

[27] Sex _____ (1=female, 2=male, 9=unknown)

[28] Race _____ (1=black, 2=Caucasian, 3=other, 9=unknown)

[29-30] Date of Birth _____ (Equate to years, 99=unknown)

APPENDIX D

Businessman Interview Questionnaire

BUSINESSMAN INTERVIEW

Date: _____

1. What type of business is this?

2. What hours are you open for business?

Monday _____

Tuesday _____

Wednesday _____

Thursday _____

Friday _____

Saturday _____

Sunday _____

3. When did you start this business at this address? Month _____

Year _____

4. Prior to that time were you in business at another location in UAC?

yes _____ no _____

If yes, how long? _____

5. Do you rent or own the space at this location?

____ 1. Rent

____ 2. Own

____ 9. N/A

If own, approximately how much do you think this space would rent
for per month? _____

6. Do you have any intention of moving your business out of UAC in the next year or two?

- ☐ 1. yes
- ☐ 2. probably
- ☐ 3. maybe
- ☐ 4. no
- ☐ 8. N/A
- ☐ 9. DK

7. Now I'd like to ask you some questions about how well your business has been doing for the past few years. I realize that this is private information. As such I will ask for this information in an indirect manner. Using your total gross sales for 1970 as a base year, and treating that figure as a unit of 100, would you please tell me what your annual total gross sales have been for each year since 1970? .. If you are not sure of the exact figure, just estimate as best you can. (Don't have respondent rush the answer)

- ☐ 1970
- ☐ 1971
- ☐ 1972
- ☐ 1973
- ☐ 1974
- ☐ 1975
- ☐ 1976
- ☐ 1977 (projected)
- ☐ N/A
- ☐ DK

8. Of all the things listed on this card what are the three factors most harmful to the successful operation of your business?

Hand respondent card

- ☐ 1. physical appearance of your business
- ☐ 2. insufficient parking
- ☐ 3. present crime rate in UAC
- ☐ 4. inadequate police protection
- ☐ 5. physical appearance of Union Avenue
- ☐ 6. bad state of the economy in general
- ☐ 7. insufficient street lighting
- ☐ 8. traffic patterns along Union Avenue
- ☐ 9. current insurance rates

Are there other factors that are not on the card which you feel are more harmful than any of the three you picked?

- ☐ 1. yes
- ☐ 2. no
- ☐ 3. DK

If yes, what factors? _____

9. Do you know of any physical changes that have taken place in UAC during the past year?

- ☐ 1. new street lights
- ☐ 2. Derelict and abandoned structure clearances
- ☐ 3. New bus shelters
- ☐ 4. some streets paved and new curbing
- ☐ 5. side walk repairs
- ☐ 6. park improvements
- ☐ 7. mini-plaza
- ☐ 8. other _____
- ☐ 9. not aware of any changes

10. What do you feel these changes are trying to accomplish? (check as many as mentioned)

- ☐ 1. reduce crime
 - ☐ 2. reduce fear of crime
 - ☐ 3. improve quality of life for UAC residents
 - ☐ 4. increase business confidence in UAC
 - ☐ 5. improve UAC's reputation
 - ☐ 6. improve natural surveillance
 - ☐ 7. increase access control and territoriality
 - ☐ 8. improve appearance of UAC
 - ☐ 9. DK
 - ☐ 10. Other _____
-

11. (Skip if unaware of physical changes)

How have the physical changes in UAC affected your business? Have they improved business, hurt business, no change, too early to tell.

___ 1. improved business

___ 2. no change

___ 3. hurt business

___ 4. too early to tell

___ 9. DK

If answer is "too early to tell, #4, ask: How do you think these changes will eventually affect your business?

12. Approximately what percent of your current customers are residents of this neighborhood? (UAC)

___ %

___ 9.

13. The percentage of customers you have that are local residents may or may not have changed since 1970 (or since your business started). Do you feel there has been an increase, a decrease, or no basic change in the proportion of your customers who are local residents?

___ 1. increase

___ 2. no change

___ 3. decrease

___ 4. not applicable, not the type of business that serves locals

___ 9. DK

14. How many residents in this neighborhood would you say have limited or changed their shopping habits in the past few years because of fear of crime in UAC? Do you feel that most of them have changed their shopping habits, some of them have changed their shopping habits, hardly any of them have changed their shopping habits, or none of them have changed their shopping habits?

- ☐ 1. most of them
- ☐ 2. some of them
- ☐ 3. hardly any of them
- ☐ 4. no one
- ☐ 9. DK

15. How safe do you think your customers feel while shopping in UAC during the day? Do you think they feel very safe, reasonably safe, somewhat safe, very unsafe, or don't you have customers in UAC?

- ☐ 1. very safe
- ☐ 2. reasonably safe
- ☐ 3. somewhat safe
- ☐ 4. very unsafe
- ☐ 5. don't have customers in UAC, N/A
- ☐ 9. DK

16. How safe do your customers feel while shopping in UAC during the night? Do you think they feel very safe, reasonably safe, somewhat unsafe, very safe, or you don't have customers in UAC.

- ☐ 1. very safe
- ☐ 2. reasonably safe
- ☐ 3. somewhat unsafe
- ☐ 4. very unsafe
- ☐ 5. don't have customers, N/A
- ☐ 9. DK

17. Do you think the people that live near here would report it to the police if they saw some suspicious or criminal activity around your business when you are closed?

- ☐ 1. yes
- ☐ 2. some would, some would not
- ☐ 3. no
- ☐ 9. DK

18. Generally speaking how would you characterize your attitude toward the police? Would you say that you feel very favorable, favorable, neutral, unfavorable or very unfavorable?

- ☐ 1. very favorable
- ☐ 2. favorable
- ☐ 3. neutral
- ☐ 4. very unfavorable
- ☐ 9. DK

19. During the day (6am - 6pm) about how often do you think police cars pass within sight of your business?

0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - or more 9 = DK

20. During the night (6pm - 6am) about how often do you think police cars pass within sight of your business?

0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - or more 9 = DK

21. Was your business involved in the security surveys performed by the Portland Police (Sgt. Blair) in UAC? That is, did a police officer inspect your building and make suggestions for improving your security?

___ 1. *yes

___ 2. **no

___ 9. DK

*If yes, to what extent did you follow the recommendations for improving your security?

___ 1. completely

___ 2. almost completely

___ 3. partially

___ 4. not at all

*Did anyone come around or call to find out what to what extent you followed the recommendations?

___ 1. yes

___ 2. no

___ 9. DK

**If no, why not?

___ 1. weren't asked

___ 2. refused service

___ 3. other _____

22. Are there lights outside your business, not counting street lights, that are regularly turned on at night?

___ 1. yes

___ 2. no

___ 3. NA

___ 9. DK

23. Are there lights inside your business that are regularly turned on at night?

- ☐ 1. yes
- ☐ 2. no
- ☐ 3. NA
- ☐ 9. DK

24. Do you have a burglar alarm or other means of alerting the police in case of a breakin when your business is closed?

- ☐ 1. yes
- ☐ 2. no
- ☐ 3. NA
- ☐ 9. DK

If no, do you have any plans to install one?

- ☐ 1. yes
- ☐ 2. no
- ☐ 3. NA
- ☐ 4. DK

25. Do you have a silent alarm or other means of alerting the plice in case of a hold-up during business hours?

- ☐ 1. yes
- ☐ 2. no
- ☐ 3. NA
- ☐ 9. DK

If no, do you have any plans to get one?

- ☐ 1. yes
- ☐ 2. no
- ☐ 3. NA
- ☐ 4. DK

26. The next two questions are about the types of protection you have at your business location. Is there a gun, pistol, rifle or shotgun, on the premises for the protection of the business?

___ 1. yes

___ 2. no

___ 3. NA

___ 9. DK

If no, do you have any plans to get one?

___ 1. yes

___ 2. no

___ 3. NA

___ 9. DK

27. Is there some other kind of weapon at your business location that you use for protection (even if it has other uses)?

___ 1. yes

___ 2. no

___ 3. NA

___ 9. DK

28. Have you displayed any crime prevention stickers on the doors, windows, or elsewhere at your business location?

___ 1. yes

___ 2. no

___ 3. NA

___ 9. DK

29. How has the crime problem in UAC changed since 1970 (or since you started your business)? Has it become increasingly less of a problem, more of a problem, sometimes less-sometimes more, or no change?

- ☐ 1. increasingly less
- ☐ 2. increasingly more
- ☐ 3. sometimes less-sometimes more
- ☐ 4. no change
- ☐ 9. DK

30 How would you rate the present level of crime in UAC, in terms of the extent of a problem it is? (read alternatives)

- ☐ 1. severe problem
- ☐ 2. severe to moderate problem
- ☐ 3. moderate problem
- ☐ 4. moderate to slight problem
- ☐ 5. slight problem
- ☐ 6. no problem

31. To your knowledge did any of the following crimes occur in January, February, or March of 1977 to your business or to persons in or within a block of your business.

- ☐ 1. breakin at your business yes ☐ no ☐
If yes, how many times ☐?
- ☐ 2. hold-up at your business yes ☐ no ☐
If yes, how many times ☐.
- ☐ 3. pursesnatch within block yes ☐ no ☐
If yes, how many times ☐?
- ☐ 4. street assaults within block yes ☐ no ☐
If yes, how many times ☐?

(continued on the following page)

5. hold-up on the street yes____ no____

If yes, how many times____?

6. vandalism at your business yes____ no____

If yes, how many times____?

32. During January, February, and March of 1977 were there any organized meetings of businessmen in this area(UAC) to discuss ways of preventing crime in the Union Avenue Corridor Area?

____1. yes

____2. no

____3. DK

If yes, how many meetings____?

If yes, how many did you attend____?

33. To what extent have you had a problem hiring and/or in keeping employees because of fear of crime during the past few years?
Has it been a ... (read responses)

____1. severe problem

____2. moderate problem

____3. slight problem

____4. no problem

____9. DK

34. How safe do you and your employees feel while working here during the day? Would you say... (read responses)

____1. very safe

____2. reasonably safe

____3. somewhat safe

____4. unsafe

____9. DK

35. How safe do you and your employees feel while working here during the night(or would you feel if you were to work here at night)?
would you say you feel... (read responses)

- ☐ 1. very safe
- ☐ 2. reasonably safe
- ☐ 3. somewhat unsafe
- ☐ 4. very unsafe
- ☐ 9. DK

36. Are there some areas of UAC where you do avoid walking or would avoid walking during the day because of potential crime?

- ☐ 1. no
- ☐ 2. yes

which sections? (probe for name of intersection)

_____ number mentioned(complete after interview)

37. Are there some areas of UAC where you do avoid walking or would avoid walking during the night because of potential crime?

- ☐ 1. no
- ☐ 2. yes

which sections? (probe for name of intersection)

_____ number mentioned(complete after interview)

38. For each of the crimes I read to you, please tell me if you think your chances of being a victim in the Union Avenue area has increased, decreased or stayed about the same during the past six months.

	increase	decrease	no change	DK
1. business broken into	1	2	3	9
2. business hold-up	1	2	3	9
3. street assault	1	2	3	9
4. street hold-up	1	2	3	9
5. vandalism, property destruction	1	2	3	9

39. How often are you concerned that any of the following things might happen to your business or to you while you are in UAC? Are you concerned most of the time, some of the time, almost never, or never?

	most times	sometimes	almost never	never	DK
1. break-in and burglary of business	1	2	3	4	9
2. hold-up of business	1	2	3	4	9
3. beaten up on street	1	2	3	4	9
4. hold-up on street	1	2	3	4	9
5. vandalism, property destruction	1	2	3	4	9

40. In 1970 how did UAC compare with other commercial area of Portland in terms of economic vitality? Was it better than most, somewhat better, the same, somewhat worse, or worse than most other commercial areas of Portland?

- ☐ 1. better
☐ 2. somewhat better
☐ 3. same
☐ 4. somewhat worse
☐ 5. worse
☐ 9. DK

41. How does UAC presently, (April, 1977) compare with other commercial areas of Portland in terms of economic vitality?

- ☐ 1. better
- ☐ 2. somewhat better
- ☐ 3. same
- ☐ 4. somewhat worse
- ☐ 5. worse
- ☐ 6. DK

APPENDIX E

Resident Interview Questionnaire

UAC RESIDENTS INTERVIEW

(1-3)	Interviewee: _____
	Date: _____
	Time: _____
(4)	Interviewer: _____
<u>Neighborhood Consciousness</u>	
(5-7)	1. How long have you lived in this neighborhood? _____ (equate to months) _____
(8)	2. In the past year or so, do you think this neighborhood has gotten to be a better place to live, a worse place to live, or has it stayed about the same? _____ 1) better _____ 2) about the same _____ 3) worse _____ 9) DK
(9)	3. In some neighborhoods, people do things together and help each other; in other neighborhoods, people mostly go their own ways. Would you say your neighborhood is one in which people mostly go their own ways, or one in which people help each other? _____ 1) help each other _____ 2) 1/2 and 1/2 _____ 3) go their own ways _____ 9) DK
(10-11)	4. How many families in this neighborhood do you know well enough to ask a favor of if you needed something? _____ # of families _____ 99) DK

Now I would like to read you several things which affect how people feel about their neighborhoods. As I read each one of these, please tell me whether you think that it is very good, good, fair, poor, or very poor for the area in which you live.

(1)vg (2)g (3)f (4)p (5)vp (9)DK

(12) _____ 5) schools and education

(13) _____ 6) parks and playgrounds

(14) _____ 7) street lighting

(15) _____ 8) upkeep of buildings and yards

(16) _____ 9) condition of streets, that is, street repair and street trash

(17) _____ 10) police community relations

Quality of Life

The next questions are specifically concerning your life here in the UA area.

(18) 11. How nice a place is this area to live in? Would you say it's

- _____ 1) very nice
- _____ 2) nice
- _____ 3) just okay
- _____ 4) not a nice place
- _____ 9) DK

(19) 12. To what extent does the crime level in the UAarea affect your daily life? Would you say, overall, it has a

- _____ 1) very strong influence
- _____ 2) strong influence
- * _____ 3) moderate influence *read only these responses
- _____ 4) very little influence
- _____ 5) no influence
- _____ 9) DK

(20) 13. Five years from now, do you think the UAarea will be a better place to live, a worse place, or about the same as it is now?

- _____ 1) better
- _____ 2) about the same
- _____ 3) worse
- _____ 9) DK

Crime/Use of UAC

(21)	<p>14. How many people in this neighborhood do you think are concerned about preventing crime? Would you say...</p> <p>_____ 1) everyone</p> <p>* _____ 2) most everyone</p> <p>* _____ 3) some *read only these responses</p> <p>_____ 4) not very many</p> <p>_____ 5) none</p> <p>_____ 9) DK</p>
(22)	<p>15. If you were to estimate the likelihood of a crime being committed in the UAC, compared to other areas of Portland, would you say it's...</p> <p>_____ 1) much less likely _____ 9) DK</p> <p>_____ 2) somewhat less likely</p> <p>_____ 3) about the same</p> <p>_____ 4) somewhat more likely</p> <p>_____ 5) much more likely</p>
(23)	<p>Now I am going to ask you several questions about your use of Union Avenue. How many times per week would you say you shop or eat on Union Avenue <u>during the daytime</u>?</p> <p>16. _____ frequency</p> <p>(if zero, "almost never," "very seldom," etc.) How safe would you feel if you did? Would you say...</p> <p>(if more than zero) How safe do you feel while on Union Avenue <u>during the daytime</u>? Would you say...</p>
(24)	<p>_____ 1) very safe</p> <p>_____ 2) reasonably safe</p> <p>_____ 3) somewhat <u>unsafe</u></p> <p>_____ 4) very <u>unsafe</u></p> <p>_____ 9) DK</p>

	How many times per week would you say you shop or eat on Union Avenue <u>during the nighttime</u> ?
(25)	17. _____ frequency
	(if zero, "almost never," "very seldom," etc.) How safe would you feel if you did? Would you say...
	(if more than zero) How safe do you feel while on Union Avenue <u>during the nighttime</u> ? Would you say...
(26)	_____ 1) very safe _____ 2) reasonably safe _____ 3) somewhat <u>unsafe</u> _____ 4) very <u>unsafe</u> _____ 9) DK
	How many times per week do you <u>walk</u> around your neighborhood at night either to socialize with neighbors or to just walk?
(27)	18. _____ frequency
	(if zero, "almost never," "very seldom," etc.) How safe would you feel if you did? Would you say...
	(if more than zero) How safe do you feel while walking during the nighttime? Would you say...
(28)	_____ 1) very safe _____ 2) reasonably safe _____ 3) somewhat <u>unsafe</u> _____ 4) very <u>unsafe</u> _____ 9) DK
	<u>Victimization</u>
(29-30)	19. In the past six months, that is, from May 1st through October 31st, have you or any other member of your family had a crime committed against you or them in the UA area? _____ 0) no _____ yes: how many crimes were committed against family members? _____ _____ 9) DK

Fear/Anxiety about Crime

(31)	<p>20. When you leave your home, even for a few minutes, how often do make certain that all of the doors are locked? (<u>Read responses</u>)</p> <p>_____ 1) always</p> <p>_____ 2) most times</p> <p>_____ 3) sometimes</p> <p>_____ 4) never</p> <p>_____ 9) DK</p>
(32)	<p>21. In general, how worried are you that your house might be broken into? Would you say...</p> <p>_____ 1) very worried</p> <p>_____ 2) somewhat worried</p> <p>_____ 3) not at all worried</p> <p>_____ 9) DK</p>
(33)	<p>22. In general, how worried are you about being assaulted or robbed on the street? Would you say...</p> <p>_____ 1) very worried</p> <p>_____ 2) somewhat worried</p> <p>_____ 3) not at all worried</p> <p>_____ 9) DK</p>
	<p><u>Protection</u></p> <p>I would now like to read you a list of things which people have at home to protect themselves. Just answer yes (1) or no (0) when I read them to you.</p>
(34)	_____ 23. special locks on doors
(35)	_____ 24. special locks on windows
(36)	_____ 25. a burglar alarm
(37)	_____ 26. a gun that could be used for protection
(38)	_____ 27. specially trained or guard dog
(39)	_____ 28. dog for protection
(40)	_____ 29. have you engraved any of your valuables with your name or some identification in case they are stolen
(41)	_____ 30. do you ever take anything with you to protect yourself when you go out at night?

(42)

31. If someone were to commit a crime in the UA area, how likely is it that they would be seen? Would you say...

- ☐ 1) very likely
- ☐ 2) somewhat likely
- ☐ 3) somewhat unlikely
- ☐ 4) very unlikely
- ☐ 9) DK

(43)

32. If someone were to commit a crime in the UA area, how likely is it that they would be caught? Would you say...

- ☐ 1) very likely
- ☐ 2) somewhat likely
- ☐ 3) somewhat unlikely
- ☐ 4) very unlikely
- ☐ 9) DK

Attitudes about Police/Crime

(44)

33. How would you describe your attitude toward the way the police are doing their job in the UA area? Would you describe your attitude as...

- ☐ 1) very favorable
- ☐ 2) somewhat favorable
- ☐ 3) somewhat unfavorable
- ☐ 4) very unfavorable
- ☐ 9) DK

(45)

34. How would you rate the present level of crime in the UA area? In terms of the extent of the problem, is it a...

- ☐ 1) severe problem
- ☐ 2) moderate problem
- ☐ 3) slight problem
- ☐ 4) no problem
- ☐ 9) DK

Physical Changes in UAC

(46)	<p>35. Do you know of any physical improvements that have taken place in the Union Avenue area during the past year or so?</p> <p>_____ 0) no (Turn page, go to #37)</p> <p>_____ 1) yes</p> <p>_____ 9) DK</p>
	If yes, what improvements?
(47)	_____ new street lights
(48)	_____ derelict and abandoned structure clearances
(49)	_____ new bus shelters
(50)	_____ streets paved and/or new curbs
(51)	_____ sidewalk repairs
(52)	_____ park improvements
(53)	_____ mini-plaza
(54)	_____ other _____
(55)	<p>36. How have these physical changes affected the quality of life in the UA area?</p> <p>* _____ 1) improved living conditions</p> <p>* _____ 2) had no effect *read only these responses</p> <p>* _____ 3) made living conditions worse</p> <p>_____ 4) too soon to tell</p> <p>_____ 9) DK</p>
(56)	<p>(If answer is "too early to tell," #4) How do you think these changes will eventually affect the quality of life in the UA area? Will they...</p> <p>_____ 1) improve it</p> <p>_____ 2) have no change</p> <p>_____ 3) make it worse</p> <p>_____ 9) DK</p>

Organizing Against Crime

(57)	37. Approximately how often do you discuss crime with your neighbors? Would you say you discuss crime... _____ 1) a lot of the time _____ 2) some of the time _____ 3) almost never _____ 4) never _____ 9) DK
(58)	38. Within the past six months, have you heard of any organized meetings with other citizens in the UA area to discuss ways of preventing crime? _____ 1) no _____ 2) yes
(59)	If no, have you heard of <u>any</u> crime prevention programs operating in the Union Avenue area? _____ 1) no _____ 2) yes
(60-61)	If yes, how many meetings have you attended? _____
(62)	If yes, have you heard of any other crime prevention programs operating in the Union Avenue area? _____ 1) no _____ 2) yes
(63)	39. What is the likelihood that you will be moving out of the Union Avenue area in the next year or two? Would you say... _____ 1) very likely _____ 2) somewhat likely _____ 3) somewhat unlikely _____ 4) very unlikely _____ 9) DK

Demographic Variables

Finally, I need some background information so we can compare your answers with those of other peoples'.

(64)	<p>40. Now I'd like to ask which one of the following age categories you are in (read responses).</p> <p>_____ 1) under 20</p> <p>_____ 2) 20-29</p> <p>_____ 3) 30-39</p> <p>_____ 4) 40-49</p> <p>_____ 5) 50-59</p> <p>_____ 6) 60 and over</p> <p>_____ 9) NA</p>
(65)	<p>41. How many people reside at your address? _____</p> <p>_____</p>
(66)	<p>42. Are you head of this household?</p> <p>_____ 1) no</p> <p>_____ 2) yes</p>
(67)	<p>43. What is your relationship to the head of the household?</p> <p>_____ 1) head</p> <p>_____ 2) wife of head</p> <p>_____ 3) husband of head</p> <p>_____ 4) child (over 16) of head</p> <p>_____ 5) other relation</p> <p>_____ 6) Non-relative</p>
(68)	<p><u>Interviewer Inferences</u> (Ask if uncertain)</p> <p>44. Sex: _____ 1) female</p> <p>_____ 2) male</p>
(69)	<p>45. Race: _____ 1) Black</p> <p>_____ 2) White</p> <p>_____ 3) Other</p>

APPENDIX F

UAC Observation Forms

OBSERVATION DATA SHEET

Date: _____ Time: _____

Weather Condition: _____ Duration: _____

STREET	PERSONS OBSERVED												ACTIONS/LOCATIONS *					Total No. of Persons Observed	
	ADULT (greater than 18 years)				YOUTH (greater than or equal to 10 years, less than 18 years)				CHILD (less than 10 years)				Cyclist	Entering or exiting car, bus, truck, etc.	At bus stop	In phone booth	Violence		On foot, push, or pull
	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female							
RUSSET																			
LOMBARD																			
STAFFORD																			
HOLLAND																			
BUFFALO																			
MORGAN																			
BRYANT																			
DEKUM																			
PORTLAND																			
HOLMAN																			
ASHLEY																			
AINSWORTH																			
SIMPSON																			
JARRETT																			
JESSUP																			
CHURCH																			
KILLINGSWORTH																			
EMERSON																			
ROSELAWN																			
SUMNER																			
WEBSTER																			
ALBERTA																			
WYGANT																			
GOING																			
PRESCOTT																			
SKIOMORE																			
MASON																			
SHAVER																			
FAILING																			
BEECH																			
FREMONT																			
IVY																			
COOK																			
FARGO																			
MONROE																			
MORRIS																			
STAUNTON																			
GRAHAM																			
KNOTT																			
RUSSELL																			
BRAZEE																			
SACRAMENTO																			
THOMPSON																			
TILLAMOOK																			
SAN RAFAEL																			
HANCOCK																			
SCHUYLER																			
BROADWAY																			
WEIDLER																			
Total																			

*Represents additional characteristics of persons already identified in age, race, and sex column.

OBSERVATION DATA SHEET

Date: _____ Time: _____
 Weather Condition: _____ Direction: _____

STREET	PERSONS OBSERVED												ACTIONS/LOCATIONS *						
	ADULT (greater than 18 years)				YOUTH (greater than or equal to 10 years, less than 18 years)				CHILD (less than 10 years)										
	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female							
Grand																			
6th																			
7th																			
Madrona																			
8th																			
Durham																			
Oneonta																			
Winona																			
Dean																			
Claremont																			
13th																			
15th																			
17th																			
18th																			

Date: _____

Time: _____

Weather: _____

Woodtown Park

	Adult				Youth				Child				TOTAL
	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female	
Area I: Open area Swimming Pool													
Area II: Open area Baseball Basketball													
Area III: Open area Basketball play ground													

OBSERVATION DATA SHEET

Date: _____ Time: _____
 Weather Condition: _____ Direction: _____

STREET	PERSONS OBSERVED												ACTIONS/LOCATIONS *					Total No. of Persons Observed
	ADULT (greater than 18 years)				YOUTH (greater than or equal to 10 years, less than 18 years)				CHILD (less than 10 years)									
	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female	Black Male	Black Female	White Male	White Female	Control	Entered or left car, bus, truck, etc.	At bus stop	In phone booth	Entered phone booth	
Laurenhair																		
Vancouver																		
Williams																		
Rodney																		
Union																		

APPENDIX G

Key-Person Interview Questionnaire

PORTLAND CPTED KEY-PERSON INTERVIEW

Interviewee _____ Date _____

Knowledge Base _____

1. How would you rate the present quality of life in UAC?

2. How nice a place is UAC to live and work (from the perspective of residents and businessmen)? Is it...

____ Very nice

____ Nice

____ Just o.k.

____ DK

3. Has the quality of life in UAC changed since 1973-74? (If yes, in what ways?)

4. How would you rate the present degree of security ("Target hardness", "access control", surveillability")?

5. Has the degree of security in UAC changed since 1973-74?
(If yes, in what ways?)

6. How motivated are UAC residents to use their neighborhood for daily activities, e.g., shopping and recreation?

7. Has there been any change in residents' use of their neighborhood since 1973-74? (If yes, in what ways?)

8. How attractive an area is UAC? Would you say...

☐ Very attractive
☐ Somewhat attractive
☐ Somewhat unattractive
☐ Very unattractive
☐ DK

9. Has the attractiveness of UAC changed since 1973-74?
(If yes, in what ways?)

10. How much community spirit exists in UAC?

11. Has the level of community spirit in UAC changed since 1973-74? (If yes, in what ways?)

12. What major community problems currently exist in UAC?

13. What reputation does UAC have for crime and fear of crime?

14. Has the reputation for crime and fear of crime in UAC changed since 1973-74? (If yes, in what ways?)

15. How would you describe the current level of crime in UAC?

16. To what extent is UAC's current crime rate a problem to the residents and businessmen who work and live there? Is it a...

- ☐ Severe problem
☐ Moderate problem
☐ Slight problem
☐ Not a problem
☐ DK

17. Has the level of crime in UAC changed since 1973-74?
(If yes, in what ways?)

18. Has the level of fear of crime in UAC changed since 1973-74?
(If yes, in what ways?)

19. What effect has the city's revitalization efforts had on the UAC?

20. In five years, what do you think UAC will be like to live and work in? Do you think it will be...

_____ Better

_____ No change

_____ Worse

_____ DK

APPENDIX H

Evaluation Time Schedule

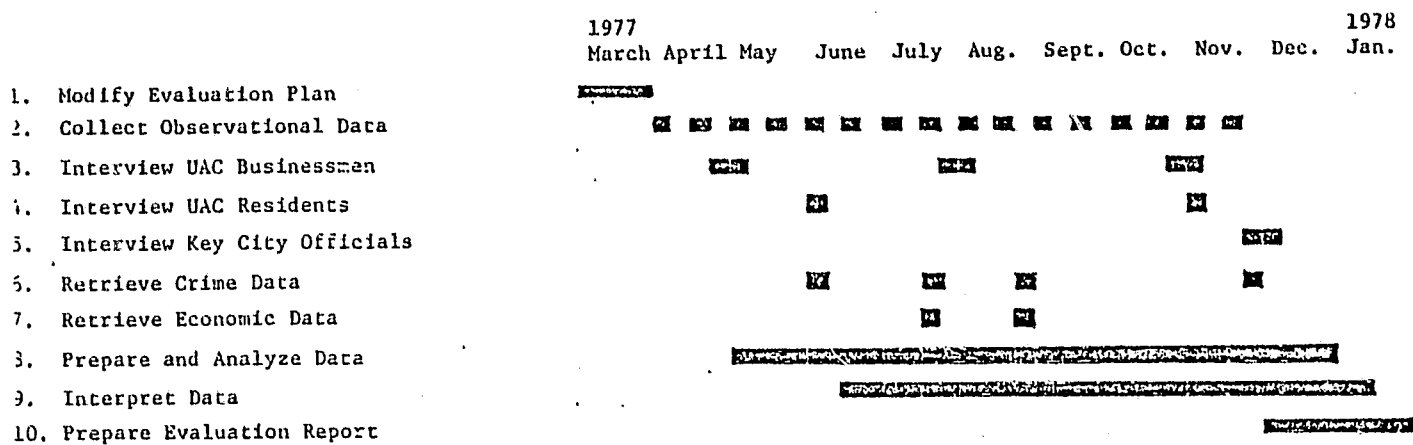


Figure 1. Evaluation Time Schedule

APPENDIX I

Commercial Security Survey Form

PORTLAND POLICE BUREAU COMMERCIAL SECURITY SURVEY

Business Name _____ File No. _____

Address _____ Date _____

Name of Person Contacted _____ Position _____

Type of Premise _____ Phone No. _____

KEY: STND = STANDARD REC = RECOMMENDATION COMM = COMMENTS

<p>1. BUILDING FRONT</p> <table border="1"> <thead> <tr> <th></th> <th>STND</th> <th>REC</th> <th>COMM</th> </tr> </thead> <tbody> <tr><td>DOORS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>LOCKS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>WINDOWS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>LIGHTS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>VENTS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>MISC.</td><td>_____</td><td>_____</td><td>_____</td></tr> </tbody> </table>		STND	REC	COMM	DOORS	_____	_____	_____	LOCKS	_____	_____	_____	WINDOWS	_____	_____	_____	LIGHTS	_____	_____	_____	VENTS	_____	_____	_____	MISC.	_____	_____	_____	<p>4. BUILDING LEFT SIDE</p> <table border="1"> <thead> <tr> <th></th> <th>STND</th> <th>REC</th> <th>COMM</th> </tr> </thead> <tbody> <tr><td>DOORS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>LOCKS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>WINDOWS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>LIGHTS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>VENTS</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>MISC.</td><td>_____</td><td>_____</td><td>_____</td></tr> </tbody> </table>		STND	REC	COMM	DOORS	_____	_____	_____	LOCKS	_____	_____	_____	WINDOWS	_____	_____	_____	LIGHTS	_____	_____	_____	VENTS	_____	_____	_____	MISC.	_____	_____	_____	<p>7. ALARMS</p> <table border="1"> <thead> <tr> <th></th> <th>STND</th> <th>REC</th> <th>COMM</th> </tr> </thead> <tbody> <tr><td>AUDIBLE</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>SILENT</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>OTHER</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>ALARM PERMIT #</td><td>_____</td><td>_____</td><td>_____</td></tr> </tbody> </table>		STND	REC	COMM	AUDIBLE	_____	_____	_____	SILENT	_____	_____	_____	OTHER	_____	_____	_____	ALARM PERMIT #	_____	_____	_____				
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COMMENTS: _____

This report is advisory only and does not purport to list all hazards or the adequacy of present hazard controls.

OFFICER:	NO.	PREC/DIV:	DISTRICT:
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FOLLOW-UP INTERVIEW

First Follow-Up

1. Have you improved your security based upon what you have learned from the survey? Yes ☐ No ☐ What have you done?

2. Were you burglarized since your inspection? Yes ☐ No ☐

3. Was the burglary reported to the police? Yes ☐ No ☐

4. Would compliance with security recommendations have prevented the burglary? Yes ☐ No ☐

5. Have you engraved your property? Yes ☐ No ☐

6. Is the emergency sticker posted? Yes ☐ No ☐

Comments:

Officer	No.	Date	Prec.	District
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Second Follow-Up

1. Have you improved your security base upon what you have learned from the survey? Yes ☐ No ☐ What have you done? ☐

2. Were you burglarized since your inspection? Yes ☐ No ☐

3. Was the burglary reported to the police? Yes ☐ No ☐

4. Would compliance with security recommendations have prevented the burglary? Yes ☐ No ☐

5. Have you engraved your property? Yes ☐ No ☐

6. Is the emergency sticker posted? Yes ☐ No ☐

Comments:

Officer	No.	Date	Prec.	District
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CONTINUED

3 OF 4

APPENDIX J

Residential Security Survey Form

**PORTLAND POLICE BUREAU
RESIDENTIAL SECURITY SURVEY**

OCCUPANT: _____ DATE: _____

ADDRESS: _____ PHONE: _____

OWNER: _____ PHONE: _____

Single Family Residence ☐ Apartment ☐ Other ☐ No. of Floors _____

Has Residence been burglarized previously? No ☐ Yes ☐ No. of Times _____

Date of Burglary _____ Point of Entry _____

KEY: STND = Standard REC = Recommendations COMM = Comments

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COMMENTS: _____

This report is advisory only and does not purport to list all hazards or the adequacy of present hazard controls.

Occupant	Officer	PREFINCT	Dist.	

FOLLOW UP INTERVIEW

Scheduled Date: _____

Actual Date: _____

1. Have you improved your home's security based on what you learned from the security inspection? No _____ Yes _____
If yes, what have you done? _____

 - If no, why not? _____
 2. Were you burglarized since your inspection? No _____ Yes _____
 3. Was the burglary reported to the police? No _____ Yes _____ If not, why not? _____

 4. Was the burglar arrested? No _____ Yes _____ Don't know _____
 5. What time of day did the burglary occur? Day _____ Night _____ Don't Know _____
 6. How did the burglar enter your home?
_____ Door (Garage, Front, Back?) _____
_____ Window (Upstairs, Downstairs?) _____
_____ Other (Specify) _____
 7. Was the entrance locked? No _____ Yes _____
 8. Was the entrance visible from the street? No _____ Yes _____
- This residence is in: _____ Total Compliance _____ Partial Compliance _____ No Compliance _____

Officer: _____ /Dist. _____

FOLLOW-UP INTERVIEW

Scheduled Date: _____

Actual Date: _____

1. Have you improved your home's security based on what you learned from the security inspection? No _____ Yes _____
If yes, what have you done? _____

 - If no, why not? _____
 2. Were you burglarized since your inspection? No _____ Yes _____
 3. Was the burglary reported to the police? No _____ Yes _____ If not, why not? _____

 4. Was the burglar arrested? No _____ Yes _____ Don't know _____
 5. What time of day did the burglary occur? Day _____ Night _____ Don't Know _____
 6. How did the burglar enter your home?
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 7. Was the entrance locked? No _____ Yes _____
 8. Was the entrance visible from the street? No _____ Yes _____
- This residence is in: _____ Total Compliance _____ Partial Compliance _____ No Compliance _____

Officer: _____ /Dist. _____

APPENDIX K

Time-Series Analyses for Reported Crime Data

Time-series Analyses for Reported Crime Data

Thirty-six months of UAC reported crime data were retrieved from the Portland Police Department files for (a) Commercial Burglary, (b) Residential Burglary, (c) Commercial Robbery, and (d) Street Crime (combined total of pursesnatch, street robbery, street assault, and rape). Each of these data sets were analyzed as a time-series following the procedure described by McCain, McCleary, and Cook.* In accordance with this procedure, the following sequence was employed for each of the four data sets:

1. A complete data set (36 monthly frequencies) was submitted to an SPSS linear regression program with crime frequency as the dependent variable, and predictor variables for slope, change in level, and change in slope. the variable for slope was represented by a vector coded 1,2,3..., 36 for each consecutive month. The variable for change in level was represented by a vector coded with "0's" for months prior to the intervention, and coded with "1's" for months after the intervention. Finally, the variable for change in slope was represented by a vector coded with "0's" for months prior to the intervention and with 1,2,3..., for the consecutive months following the intervention. Residuals were punched from this analysis.
2. These residuals were submitted to the CORREL program of TMS (Bower, Padia, & Glass, 1974) which produces autocorrelations for the first $n/2$ lags and partial autocorrelations for the first six lags. It generates the autocorrelations and partials for difference orders 0-4. Inspection of these autocorrelations and partial autocorrelations allows the researcher to choose the best ARIMA (p,d,q) model. If at this step, a "white noise" model cannot be ruled out, then the analysis reverts to an ordinary

*McCain, L. J., McCleary, R., & Cook, T. D. "The statistical analysis of interrupted time-series quasi-experiments." Unpublished manuscript. Psychology Department, Northwestern University. August, 1977.

least-squares regression to test the effects of the intervention. This will occur when the chi-square statistic for the overall distribution of autocorrelations is not significant, and if there are no significant individual lags (ones exceeding twice their standard error). If the white noise model (ARIMA(0,0,0)) is ruled out due to significant autocorrelations and/or a significant overall distribution, then the most appropriate ARIMA (p,d,q) model is identified to fit the error structure of the residuals. In addition, by looking at the 12th lag autocorrelation, a decision should be made regarding the necessity of including a seasonable component to the ARIMA (p,d,q) model (this is a concern when an expected cycle would have a period of 12).

3. If the white noise model is not appropriate, the raw data is submitted to the TSX program of TMS, with the ARIMA (p,d,q) model identified from the the CORREL output. In addition, the researcher specified at what point/s the intervention took place and what t-tests should be performed. The TSX program then iterates through an internally (or externally) controlled number of increments, related to the specific ARIMA (p,d,q) model being tested. From these iterations, the one that has the minimum error variance is chosen as having the optimal PHI or THETA values; this again depends on the ARIMA (p,d,q) model being tested in the computer run. Tests for significant changes in level and/or slope are provided for each of the iterations, but are not as yet treated as valid.
 4. The specific PHI or THETA values that were chosen as optimal in the above step are submitted to the TSX program with raw data; in addition, the option that punches residuals is accessed.
 5. The residuals from step 4 are submitted to the CORREL program, so as to test the white noise model. If at this step the white noise model cannot be ruled out, a conclusion is drawn that the ARIMA (p,d,q) model utilized in step 3 is an appropriate one, and thus, the t-values from step 3 are treated as statistically valid. If, on the other hand, the white noise model is ruled out, the researcher must go back to step 2 and identifies a new ARIMA (p,d,q) model for retesting in steps 3-5.
- (a) Commercial Burglary. The commercial burglary data were submitted to the SPSS regression program so as to generate residuals. These residuals were submitted to CORREL. Inspecting the autocorrelations and partial autocorrelations, a decision was made that no differencing of the data was necessary; thus, "d" would equal "0". While the first lag was not significantly large (-.0744; SE = .1667), the second lag was significant (-.3593; SE = .1676). But the pattern of the autocorrelations and partials was not clearly interpretable. Thus, a decision was made to test both a second-order autoregressive model (2,0,0) and a second-order moving average model (0,0,2). In

addition, the twelfth lag was not significant ($-.0561$; $SE = .2132$), indicating no seasonal pattern in the data.

Next, both the ARIMA (2,0,0) and the ARIMA (0,0,2) models were tested in TSX with 16 "pre" data points and 20 "post" data points. For the ARIMA (2,0,0) model, PHI_1 and PHI_2 values of $-.10$ and $-.40$ respectively, yielded the lowest error variance (16.40). For the ARIMA (0,0,2) model, THETA_1 and THETA_2 values of $.10$ and $.80$ respectively, yielded the lowest error variance (12.49). These PHI and THETA values were resubmitted to TSX with their respective ARIMA (p,d,q) models and residuals were punched.

The residuals from both models were then submitted to CORREL. The residuals from the ARIMA (2,0,0) model produced a nonsignificant set of autocorrelations ($\chi^2(14) = 10.93$, n.s.), but two autocorrelations ($-.3077$ and $-.3087$) and one of the partials ($-.3192$) were somewhat large. The residuals from the ARIMA (0,0,2) model, on the other hand, produced a nonsignificant set of autocorrelations ($\chi^2(14) = 7.06$, n.s.) and had no sizable autocorrelations or partials. Thus, a judgment was made that the ARIMA (0,0,2) model best fit the error structure of the commercial burglary data set.

The t -tests associated with the ARIMA (0,0,2) model with $\text{THETA}_1 = .10$ and $\text{THETA}_2 = .80$ indicated that there was a significant change in level ($t(32) = 2.57$, $p < .01$) and a significant change in slope ($t(32) = -5.18$, $p < .001$) following the intervention.

- (b) Residential Burglary. The residential burglary data were submitted to the SPSS regression program to generate residuals. These residuals were submitted to the CORREL program. Inspecting the autocorrelations and partials for difference order "zero", it was apparent that the lags did not dampen out in a desired manner. On the other hand, for differencing order "one",

the autocorrelations did show a continually dampening pattern; thus, "d" would equal "1". The white noise model for the residuals was ruled out as the chi-square statistic was marginally significant ($p < .10$), and the second lag was highly significant ($-.5736$; $SE = .1745$). Neither the first nor twelfth lags were significant ($-.1816$ and $-.0162$, respectively). Again, the pattern of the autocorrelations and partials was not clearly interpretable so a decision was made to test both a second-order autocorrelation model (2,1,0) and a second-order moving average model (0,1,2).

Next, both the ARIMA (2,1,0) and the ARIMA (0,1,2) models were tested in TSX with 16 "pre" data points and 20 "post" data points. For the ARIMA (2,1,0) model, PHI_1 and PHI_2 values of $-.20$ and $-.70$, respectively, yielded the lowest error variance (29.05). For the ARIMA (0,1,2) model, THETA_1 and THETA_2 values of $.30$ and $.60$, respectively, yielded the lowest error variance (29.19). These PHI and THETA values were resubmitted to TSX with their respective ARIMA (p,d,q) models and residuals were punched.

The residuals from both models were then analyzed by the CORREL program. The output indicated that the error structure modeled by the ARIMA (0,1,2) model could be interpreted as white noise ($\chi^2(14) = 13.92$, n.s.), but that this conclusion was not a clear-cut one. Nonetheless, a judgment was made that this model provided the best fit for the residential burglary data set.

The t -tests associated with the ARIMA (0,1,2) model, with $\text{THETA}_1 = .30$ and $\text{THETA}_2 = .60$, indicated that there was a significant change in level ($t(32) = 1.98$, $p < .05$), but not a significant change in slope ($t(32) = .53$, n.s.) following the intervention.

- (c) Commercial Robbery. The commercial robbery data were submitted to the SPSS regression program to generate residuals. These residuals were submitted to

the CORREL program. Inspection of the autocorrelations and partials indicated no significant lags, and that the entire distribution of autocorrelations was not significant ($\chi^2(14) = 8.47$, n.s.). In addition, the twelfth lag was small ($-.0066$). Therefore, the white noise model could not be ruled out, which, in turn, meant that the ordinary least-squares regression could be validly used with this data set.

The t -tests associated with the regression model indicated that there was no significant change in level ($t(32) = .01$, n.s.) and no significant change in slope ($t(32) = .96$, n.s.) following the intervention.

- (d) Street Crime. The street crime data were submitted to the SPSS regression program to generate residuals. These residuals were submitted to the CORREL program. Inspection of the autocorrelations and partials indicated no significant lags, and that the entire distribution of autocorrelations was not significant ($\chi^2(14) = 10.95$, n.s.). In addition, the twelfth lag was small ($-.1069$). Therefore, the white noise model could not be ruled out, which, in turn, meant that ordinary least-squares regression could be validly used with this data set.

The t -tests associated with the regression model indicated that there was no significant change in level ($t(32) = -1.09$, n.s.) and no significant change in slope ($t(32) = -.49$, n.s.) following the intervention.

END