**¿Is more light better security?**

**The Role of Public Lighting in Urban Safety and Fear Perception from a CPTED Perspective**

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**Resume:**

The following article describes the relationship between urban lighting and the prevention of the feeling of insecurity and crime from the perspective of the CPTED (Crime Prevention Through Environmental Design) methodology mostly in women. The following article describes the relationship between urban lighting and the prevention of the feeling of insecurity and crime from the perspective of the CPTED methodology (Crime Prevention Through Environmental Design). It also discusses the White Paper on Public Lighting and Crime Prevention published by Dr. Randy Atlas from USA.

**Keywords:**
Public Lighting, CPTED, Fear Perception, Women Crime Prevention.

# 1.INTRODUCTION:

There is perceived and objective safety in urban security. For CPTED the appropriate Lighting means more safety and it is the outcome of a correct CPTED Diagnosis.

Crime prevention through environmental design (CPTED) is a methodology that originated more than 50 years ago in the United States. C.R. Jeffery, criminologist and ecologist, first coined the acronym CPTED in his first book published in 1972.  From that moment until today the CPTED methodology has evolved from a first, second and third generation expanding in several countries around the world under the leadership of the International CPTED Association (www.cpted.net) and with the important support of the promulgation of the ISO CPTED 22341 standard in 2021.

According to the ISO CPTED 22341 standard, a CPTED diagnosis is a socio-environmental snapshot that describes a situation of crime or violence in each territory at a given moment in time with specific communities associated with the phenomenon.

With a good CPTED diagnosis, the relevance of the public lighting variable in the CPTED strategy can be defined.


# 2. SMART CITIES PERSPECTIVE

From the perspective of Smart Cities, a smart city must be safe, both objectively and subjectively.

It is important to consider the perception of insecurity as much as victimization in a territory and this is not often the case when conducting urban security diagnoses. It is important to consider the perception of urban insecurity because it influences the spatial decisions made by urban users. If they feel fear, neighbors will already visit a park or walk long distances to avoid spaces they feel unsafe even if there is no objective evidence that crimes have occurred in that place.

# 3. CRIME AND URBAN VIOLENCE

Crime is a complex phenomenon influenced by many social and environmental variables. Prevention is any strategy that seeks to reduce current levels of crime and perceptions of insecurity through actions that anticipate these phenomena.

## 3.1   Introductory concepts

**a) Citizen Security**

Although crime and security issues have become increasingly important in recent years in the region, it is necessary to clarify the concept of security and its different meanings. From a broad perspective, security is related to the set of systems for protecting the life and property of citizens from risks or threats caused by various factors, both psychosocial and associated with urban development. Conceptualized, security is linked to the social values of respect for the life, physical integrity and patrimony of others, their economic, political and social freedoms. The achievement of citizen security requires the responsibility of both the state and its various agencies, as well as that of citizens in general. In this sense, the active participation of citizens in overcoming the problem of security, through their community organizations, is essential to increase the levels of prevention and people's satisfaction.

The concept of citizen security has been commonly understood in two fundamental dimensions: first, as threats to people and property arising from criminal activity, particularly violent robbery, theft and various forms of aggression; and second, as the dangers related to the occurrence of catastrophes and disasters resulting from earthquakes, floods, landslides and other natural disasters.

**b) Social prevention**

Social prevention is based on non-criminal interventions on potential offenders, aimed at attenuating their criminal propensity, based on the classical theories of the etiology of crime, according to which criminal action is explained by the existence of various factors (family, school, friends, partner, employment, drugs, alcohol, etc.). In other words, the aim is to act on the structures of criminality and the creation of bonds of social solidarity that, by favoring the prevention of illicit behavior, increase the quality of life of citizens and its results can only be achieved in the medium and long term.

**c) Situational Prevention**

Situational prevention has become a fundamental axis of public policy and research since the early 1980s in various countries around the world. This coincided with a favorable

political and academic situation in the United Kingdom, the United States and Australia, the countries where it has expanded the most since then.

Specifically, the development of a situational approach to crime prevention, with theoretical foundations and empirical research, is strongly linked to the work of the Urban Planning Unit of the Home Office, United Kingdom, in the early 1980s, and especially to the work of criminologist Ronald Clarke.

In criminological terms, situational prevention represents a path towards:

- The prioritization of crime prevention over control.
- An emphasis on alterations to the physical environment.
- The relevance of the informal social control process.
- The aggression rather than the aggressor as the first focus of attention and situated in a spatial context.

For a long time, criminologists associated with the Chicago school (1920) and later others linked to British research have identified the importance of informal control and the environment in the study of crime patterns. In this context Hough defines situational prevention as:

- Strategies aimed at dealing with a specific crime pattern.
- They involve the management, design and transformation of the immediate environment in which these crimes occur. Examples include the placement of lighting in public spaces to increase natural surveillance.
- The objective of these strategies is to reduce the opportunity for these crimes to occur.

Within this scheme, the reduction of criminal opportunity can take three interrelated and overlapping forms (Clarke, 1992):

- It increases the effort linked to the commission of a crime by making it more difficult to obtain the criminal objective.
- It increases the risk, real or perceived, of detection or apprehension of the offender.
- It reduces the reward for committing the crime. In some cases, this will involve removing the targets.

**d) CPTED (Crime Prevention through Environmental Design)**

One of the areas where the value of opportunity theory has been demonstrated is in planning, urban development and architectural design. In Canada, the United States and other countries around the world, this approach is known as Crime Prevention Through Environmental Design (CPTED).

The concept of CPTED, coined in 1972 by C. Ray Jeffery, is based on the idea that crime occurs in certain spaces because of the locational opportunities offered by the physical environment. This makes it possible to posit that it is possible to alter the physical environment in such a way as to decrease the probability of such crimes occurring.

According to Jeffrey (1972):

"The urban environment can influence criminal behavior and behavior in general in two ways; physically, by providing the physical environment to which individuals respond, socially, by providing the social relationships to which individuals respond. The most negative physical characteristics of the urban environment are noise, pollution and overcrowding. The social characteristics are alienation, loneliness, anxiety, and dehumanization" (Jeffrey, 1972).

First generation CPTED proposes four basic concepts: natural access control, natural surveillance, maintenance and territorial reinforcement. The first three are basically instrumental and are common to all the other three concepts.

### d.1) Natural access control

Natural access control is a design strategy aimed at reducing criminal opportunity. It promotes the design of architectural elements as thresholds to create in potential assailants the perception that there is a risk in choosing that area because it has a specific user. The main physical recommendations it considers are connecting direct accesses with observable areas; preventing the placement of accesses in unobserved areas; designing spaces that orient users, giving natural indication of exit or entry; and, providing a limited number of access routes.

### d.2) Natural surveillance

Natural surveillance is a design strategy that seeks to increase the visibility of a space through appropriate location, window design, lighting and landscape design. It seeks to increase the ability of urban dwellers to observe activity occurring in the environment, which provides the opportunity to modify inappropriate behavior or report it to the police or property owner. When natural surveillance is used to its fullest potential, it increases the possibility of inhibiting crime by making the offender's behavior easily identifiable.

### d.3) Maintenance

The concept of maintenance of urban spaces refers to the need to have management, cleaning and landscaping plans for public spaces. According to the CPTED program it is very important that community members and authorities together work to maintain the public spaces.

### d.5) Community Participation

Most of the CPTED projects that have been carried out in the LAC region consider the inhabitant of the urban space as the "Native Environmental Expert" of their sense of environmental security and therefore should be a key factor in all the components of a strategy including four phases: Diagnosis, Design, Implementation and Evaluation. It is considered that this native has an innate wisdom regarding his environment and that with

appropriate methodologies he can make available to the achievement, effective local strategies in the reduction of crime and insecurity indicators, based on the initial theory of Paulo Freire, which among other aspects states that men are able to make sense to be people and live in community. This awareness implies the capacity to contextualize their existence and that of their peers, which generates awareness and radicalism that situates and adapts the human being to reality.

**e) Perception of insecurity**

There are various theories that support the perception of insecurity in the face of crime. These include the theories of incivility, victimization, physical vulnerability, social vulnerability and social networks. Although some of these theories are partially related either in their causal mechanisms or in the indicators that have been used to test them, they all have distinctive elements. The perception of insecurity in the face of crime is subjective and is connected in every human being with the survival instinct and fear of death. Depending on the territory and the affected community, they may differ with respect to the occurrence of crime, which is an objective fact.

This phenomenon of the perception of fear also has an important political dimension, since the community's perception of fear of crime is often exacerbated in times of elections to mobilize the electorate, especially through the media.
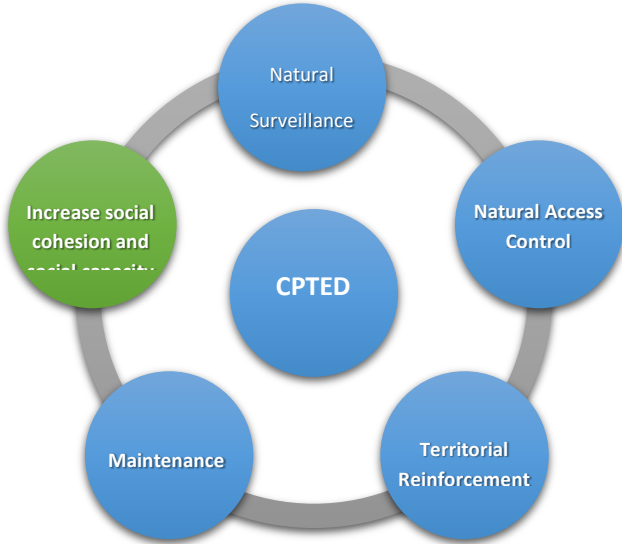
## 3.2. CPTED FIRST GENERATION

The first generation of CPTED is mainly focused on reducing criminal opportunities through the application of 4 basic principles, which are:

-Natural surveillance
-Natural access control
-Territorial reinforcement
-Maintenance

## 3.3. CPTED SECOND GENERATION

The second generation of CPTED is an approach that integrates the social architecture of communities into intervention areas. A fifth principle is added to the previous four, namely community participation.

## 3.4. CPTED Third Generation

Third generation CPTED extends both the situational approach of traditional CPTED and the social/neighborhood ecology approach of second generation CPTED by creating a new theory that integrates human motivation, aspirations and needs into the concept of neighborhood livability.

## 4. ICA Umbrella Initiative

The ICA Umbrella Initiative started in year 2017 under Dr. Rau leadership and it's an ICA policy that seeks to articulate CPTED groups in an organic way globally. CPTED groups can connect with ICA using MOU or an affiliation letter. The ICA Umbrella Initiative has been very successful and is expanding ICA and CPTED globally.

# 5. Crime against women

- Crime against women is one of the highest in the world and includes not only sexual assault, but also femicide and domestic violence.
- The CPTED (Crime Prevention Through Environmental Design) methodology has also developed concrete tools and interventions with groups of women of different ages.
- The CPTED (Crime Prevention Through Environmental Design) methodology has also developed concrete tools and interventions with different age groups.

**Women's perception of insecurity**

- The evidence shows that women's perceptions of urban insecurity are higher than men's.
- In Latin America and the Caribbean, there is more evidence of a relationship between urban lighting and a reduction in insecurity than there is for a reduction in crime.

**La Cisterna Intermodal Project, Chile, 2022.**

- The perception of insecurity of passers-by, especially women, from the Intermodal Station to the CISTERN in Chile is studied using the CPTED method.
- Insecurity map and lights
- A spatial relationship between critical levels of fear and the absence of public lighting is observed in women and is also associated with the spatial condition of edge.

**PERCEPCIÓN AMBIENTAL**
**CONSOLIDADA - MUJERES**

ESCALA

MUY SEGURO · MUY INSEGURO

RESULTADO OBTENIDO POR ENCUESTA DE PRECEPCIÓN DE INSEGURIDAD
DESARROLLADA EN ABRIL-MAYO-JUNIO 2022

**Photo 1. Map of insecurity and Lighting in La Cisterna transport station, Chile.**

From 2016 to 2018, the ESU survey in Quebrada la Cruz, in Coyhaique, Chile, measured the perception of fear of neighbors before and after the installation of Safe Route lights.

**Photo 2. Quebrada La Cruz Project in Patagonia, Chile.**

The perception of insecurity in Quebrada La Cruz has been significantly reduced since the installation of the lights.

**Perception of insecurity: % last three years**

- 60,2%
- 51,9%
- 48,1%
- 45,5%
- 39,8%
- 54,5%

Sí
No

2016 · 2017 · 2018
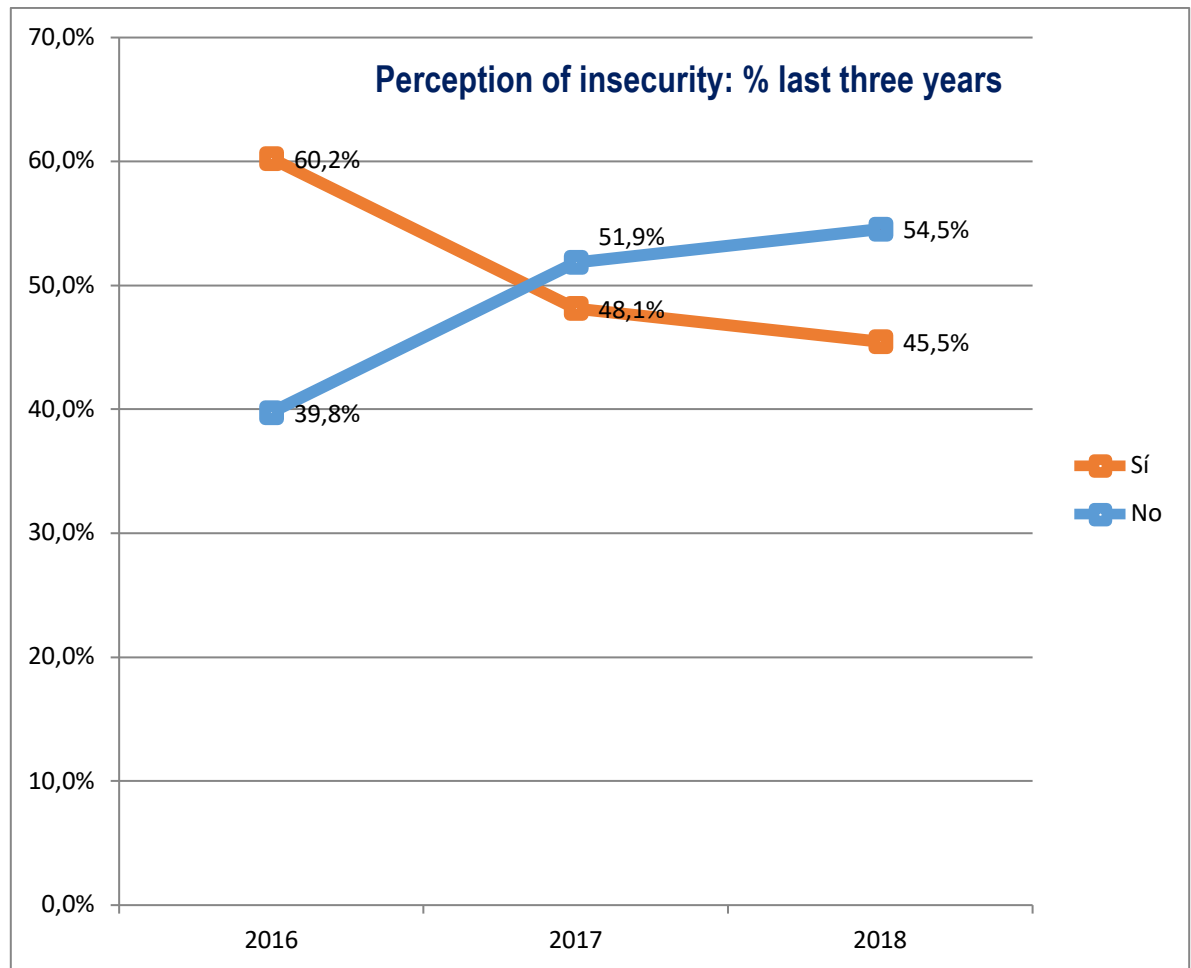
**Photo 3. Decrease of Fear Perception in Coyhaique, Quebrada La Cruz Project.**

# 6. Dr. Randy Atlas Lighting White Paper

Dr. Randy Atlas, ICA Director for USA wrote an article called the White Paper for Urban Lighting. In this text he recommends different aspects regarding urban lighting projects for crime prevention.

He highlights that it is important that security lighting, and CPTED for that matter, is now part of the strategy to protect critical infrastructure in USA. The Security Lighting Guide states, "The U.S. military and national security agencies throughout the world have long recognized the critical importance of security lighting to aid in the protection of their citizens, critical installations, and infrastructure…since the terrorist attacks on September 11, 2001, the number and types of facilities considered critical and receiving upgrades in security lighting have expanded to include such elements as bridges, tunnels, communication hubs, transportation transfer points, and international borders." (P.2) (Source: Atlas. Randy 2021)"

**Key Tenets of Security Lighting**

For Dr. Randy Atlas security lighting is installed to help protect people and property from criminal and terroristic activities, and to create a perception of a reasonably secure environment. To understand the principles of security lighting, it is necessary to consider key security tenets. (P. 6)

> **6.1 Responsibility**
> - In North America, the burden of security and safety is generally the responsibility of the individuals who have primary control over a given property. With the rights of control comes the responsibility of control. (P.6)
>
> **6.2 Anticipating the Threat**
> - Security lighting's principal effect on crime is to affect behavior of would-be criminals.
>
> **6.3 Time**
> - Time is the criminal's enemy. The longer a criminal act takes in planning, execution, and escape, the more likely it is that the criminal will be captured.
>
> **6.4 Target Hardening**
> - Light can harden a target in a public space so that the perpetrator decides not to attack (deterrence).
>
> **6.5 Fight or Flight**
> - The basic decision made by persons when threatened is often called fight or flight. Properly installed and maintained lighting can play an important role in helping people make this basic decision in an accurate and timely manner. (P.7)
>
> **6.6 Security Elements**
> - Security elements can be active or passive deterrents.

Dr. Macarena Rau, ICA President did also a safety audit night march in Brussels with the following results:

- "I went on a reconnaissance walk at night in the center of Brussels and, as a woman thermometer, I noticed that the lighting levels in the historic center were adequate, but not in the residential areas".
- It was very lonely, and the zebra effect of light appeared on the streets with reduced visual fields that increases my fear perception.

**Photo 4. Zebra effect in the streets of downtown Brussels.**

Some of the main findings in Brussels downtown was:

- Light without human presence.

- For pedestrians, especially women, to feel safe, it is very important not only to have lighting, but also to have eyes on the street, as Jane Jacobs suggested.

- For women, it is very important to have the eyes of other women on the road in addition to the presence of lighting.

Dr. Macarena Rau also described a project done in Mexico with UN Women.  In Guadalupe, Mexico, in 2021, women prefer to be seen by other women (murals), with lighting, pedestrian crossings and games for children.



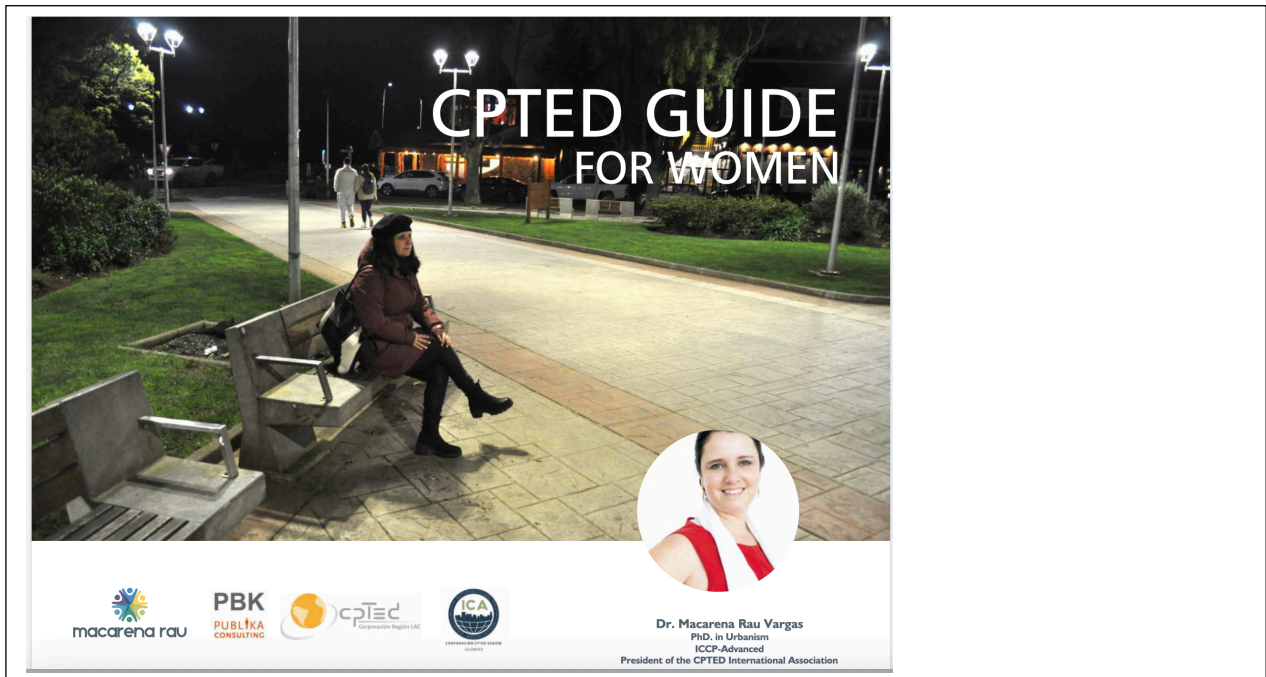Photo 5.  CPTED Project in Zacatecas with UN Women in México.

Photo 6. With all the practice and theoretical information Dr. Macarena Rau ICA President, wrote the first CPTED Guide for Women that can be download for free in: App Academia https://academia.edu/resource/work/107250584

# 7. Conclusions

Some of the most relevant conclusions for the research about women perception of insecurity and public lighting are:

- More light means more safety, if it is the right lighting to respond to an urban safety diagnosis aimed at a specific population group with defined characteristics.
- Lighting must be a variable that is better articulated with other relevant variables of safe urban design.
- It is always advisable to carry out an evaluation of the results or impact of an urban lighting project.
- Women are the best urban thermometers for lighting CPTED interventions.

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