Are shopping centers risky places?

Vania Ceccato, Örjan Falk, Pouriya Parsanezhad & Väino Tarandi

School of Architecture and the Built Environment (ABE)
KTH Royal Institute of Technology, Stockholm, Sweden

2nd september 2021

Suggestion for reference:

‘Going shopping’ is perceived to be an activity filled with great pleasure (Bamfield, 2012)

Shopping centers
More than shopping

Shopping centers have evolved from a group of stores to large enclosed malls with an eclectic number of services and functions, including sports, culture and entertainment.

The challenge for shopping malls is to create an environment that is at the same time entertaining and safe (Kajalo & Lindblom, 2016).
Aim & objectives

Aim
we propose a conceptual model to study crime in shopping centers

We first discuss the nature of crime in a shopping centre in Stockholm, Sweden using data recorded by the security companies and three-dimensional visualization using BIM (Building information modelling) to detect areas that run higher risk of crime

Objectives

1. to create a BIM model that allows crime mapping and three-D visualisation
2. to detect areas that run higher risk of crime (types of crime/time) using BIM
3. to assess places in the shopping centre that are in most need of intervention through fieldwork inspection and CPTED principles
Previous work


CAD + GIS
Data surveys

The conceptual model

Spaces that are *criminologically relevant* to & perceived safety in shopping centres

**Functional spaces** (store, restaurant/cafe, library, cinema)
**Public spaces** (large corridors, food court, toilet, garage)
**Transitional areas** (escalators, stairs, tunnels, elevator)
**Entrances/exits** (doors, e.g. traditional, revolving, sliding)
**Immediate surroundings** (square, parking lot, mixed land use)

Ceccato (2016)
The conceptual model

Spaces that are *criminologically relevant* to perceived safety in shopping centres

**Ceccato (2016)**

- **Functional spaces**: (store, restaurant/cafe, library, cinema)
- **Public spaces**: (large corridors, food court, toilet, garage)
- **Transitional areas**: (escalators, stairs, tunnels, elevator)
- **Entrances/exits**: (doors, e.g. traditional, revolving, sliding)
- **Immediate surroundings**: (square, parking lot, mixed land use)

**Scale of analysis**

- **Macro**
- **Meso**
- **Micro**
The conceptual model

Spaces that are *criminologically relevant* to perceived safety in shopping centres

**Scale of analysis**

- **Macro**
- **Meso**
- **Micro**

**Functional spaces** (store, restaurant/cafe, library, cinema)
**Public spaces** (large corridors, food court, toilet, garage)
**Transitional areas** (escalators, stairs, tunnels, elevator)
**Entrances/exits** (doors, e.g. traditional, revolving, sliding)
**Immediate surroundings** (square, parking lot, mixed land use)

Ceccato (2016)
The conceptual model

Spaces that are *criminologically relevant* to & perceived safety in shopping centres

**Macro**

**Meso**

**Micro**

**Scale of analysis**

- **Functional spaces** (store, restaurant/cafe, library, cinema)
- **Public spaces** (large corridors, food court, toilet, garage)
- **Transitional areas** (escalators, stairs, tunnels, elevator)
- **Entrances/ exits** (doors, e.g. traditional, revolving, sliding)
- **Immediate surroundings** (square, parking lot, mixed land use)

Ceccato (2016)
The conceptual model

Spaces that are *criminologically relevant* to perceived safety in shopping centres

**Functional spaces** (store, restaurant/cafe, library, cinema)
**Public spaces** (large corridors, food court, toilet, garage)
**Transitional areas** (escalators, stairs, tunnels, elevator)
**Entrances/exits** (doors, e.g. traditional, revolving, sliding)
**Immediate surroundings** (square, parking lot, mixed land use)
The conceptual model

Spaces that are *criminologically relevant* to perceived safety in shopping centres

**Functional spaces** (store, restaurant/cafe, library, cinema)

**Public spaces** (large corridors, food court, toilet, garage)

**Transitional areas** (escalators, stairs, tunnels, elevator)

**Entrances/exits** (doors, e.g. traditional, revolving, sliding)

**Immediate surroundings** (square, parking lot, mixed land use)

Scale of analysis

Ceccato (2016)
The conceptual model

Spaces that are *criminologically relevant* to crime & perceived safety in shopping centres

1. **Functional spaces**
   - A store

2. **Public spaces**
   - Food court

3. **Transitional areas**
   - Stairs

4. **Entrances/exits**
   - Revolving exits

5. **Immediate surroundings**
   - Transportation hub
Method & data

Our approach:

Visualisation of crime records on
BIM – Building Information Modelling
&
Crime Prevention Through Environmental Design

Data: 17 months of records from security company in the Shopping center, in a total of 5780 records

Tools: Revit 2013, Solibri v. 9.6, in-House tool Crime2IFC

- fieldwork inspection → suggestion for improvements
MACRO-SCALE
The shopping center
Records security company PDF-XML

XML files & data pre-selection

Filter crime Codes-keywords

Matching crime to location-model

Populating the open-format BIM

Building in pdf format

Drawing the object-oriented model

Visualisation

Time

Space

Fieldwok

Suggestions for crime prevention
RESULTS

Are shopping centers risky places?

What, when and where?
Which are the **most common events**?

- **Public disturbance & vandalism**: 68%
- **Theft, robbery & shoplifting**: 16%
- **Violence & threats**: 17%

Jan 2014 - May 2015
N=5768 events

11.2 cases per day

about 1 event per open hour
When do most events happen?

- Public disturbance & Vandalism

- 23:00-24:00: 20%
- 1:00-2:00: 15%
- 2:00-3:00: 10%
- 3:00-4:00: 5%
- 4:00-5:00: 0%
- 5:00-6:00: 0%
- 6:00-7:00: 0%
- 7:00-8:00: 0%
- 8:00-9:00: 0%
- 9:00-10:00: 0%
- 10:00-11:00: 0%
- 11:00-12:00: 0%
- 12:00-13:00: 0%
- 13:00-14:00: 0%
- 14:00-15:00: 0%
- 15:00-16:00: 0%
- 16:00-17:00: 0%
- 17:00-18:00: 0%
- 18:00-19:00: 0%
- 19:00-20:00: 0%
When do most events happen?
When do most events happen?

- Thefts & Robbery
- Public disturbance & Vandalism
- Violence & threats
Average 358,000 visitors a week (trading hours, 2014)

Weekdays-Weekend variations

Days of the week

Events/10,000 visitors
Seasonal variations

Events of crime and public disturbance

- Shoplifting-theft-robbery
- Violence & Threats
- Public disturbance & Vandalism

Events/10 000 visitors
Where do most events happen?

64% of all events happen in 10% of micro-places in the shopping center

N= 5010 - 86% of events were mapped out of 5768
Meso-level: Main retail floor

Main corridor

Food court

entrance
Where do most events happen?

The size of the cylinder corresponds to the absolute number of crimes per type & location.
The most common crime type per location

There is a crime specialisation by place type.

The size of the cylinder corresponds to the relative number of crimes per type & location.
Crime prevention requires crime profiles in time & space

- By crime type
Violence & threats

17%

Hours of the day

15% 14% 14% 13% 13% 16% 15%

Days of the week

January February March April May June July August September October November December

Months of the year
Crime specialisation

• By time
Violence & threats
Public disturbance & vandalism
Thefts, robbery & shoplifting

Weekends
All week

Violence & threats
Public disturbance & vandalism
Thefts, robbery & shoplifting
Are shopping centers risky places?

64% of all events happen in 10% of micro-places in the shopping center

- The food court
- Entrance(s)
- Particular premises

Transmission Management
- handlers
- Controllers, guardians
There are 3 types of places most in need:

- **Public spaces**
- **Entrances**
- **Functional spaces**

For each type:
- The food court
- Entrance(s)
- Particular premises
The food court

More than formal social control, security of the food court can be improved by dealing with issues of design ---- permeability and territoriality
Stores

Crime prevention measures have to be business specific!
Some problems require a **multi-pronged approach**, in collaborative schemes!
Safety perceptions in the shopping center

Fig. 9.3 Representation of (a) where shopping visitors witnessed crime and (b) where they felt unsafe in the shopping mall
In the shopping mall ...

young people may want a central place to gather, while the old want freedom from noise, jostling and fear, one shop may wish to sell fast food, while its neighbours may not wish to be buried beneath boxes of half-eaten chicken legs.

(Ekblom, 1995, p. 45)
Thank you!

Suggestion for reference:

Further reading:


And also:

