Assessing guardianship opportunities at underground stations
Introduction

Contents
- Objective
- Guardianship
- Transport nodes
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Objective
To assess the opportunities for guardianship as provided by the characteristics of the environment at underground stations.

Research questions
• Different environmental characteristics may affect opportunities for guardianship
• Guardianship opportunities may be affected differently in different places
• Guardianship is a function of the environment transport nodees are embedded in.
Guardianship

Citizen participation and crime (Pennell et al., 1985)
Property crime in neighborhoods (Massey et al., 1989)
Surveillance in public space (Painter and Tilley, 1999)
Property crime in neighborhoods (Reynald, 2011)
Burglary levels and risks of crime (Wilcox et al., 2007)

Social disorganization theory - “social control” (Shaw and McKay, 1942)
Routine activity theory - “suitable guardians” (Cohen and Felson, 1979)
Jacobs (1961) - “eyes on the street”
Guardianship

- **Persons**
  - “handlers”, “place managers”, “supervisors”, “passersby”
  (Eck, 1994, Hollis-Peel et al., 2002)
  passengers, shop owners, employees, drivers, passersby, residents, guards...

- **Objects**
  - station’s layout, CCTVs, illumination, corners, overview, levels...

- **Guardians** are those persons that can execute the role of guardianship, their availability and willingness to monitor
  (Reynald, 2011)
At transport nodes

Opportunities for guardianship

• Varying layout
• Dynamic place over time
• Different types of individuals
• Surrounding land-uses and activities

Visibility = Paul sees others

Surveillance = Others see Paul

Visibility = Paul sees others

Surveillance = Others see Paul
Case Study

Stockholm
At transport nodes

Stockholm
At transport nodes

Stockholm
At transport nodes

Stockholm
At transport nodes

Stockholm
At transport nodes

Stockholm
At transport nodes

Stockholm
Data

Fieldwork observations

- Dependent variables: *Surveillance & Visibility possibilities*
- Independent variables: *environmental attributes*

<table>
<thead>
<tr>
<th>Platform</th>
<th>Transition</th>
<th>Lounge</th>
<th>Exit/Entrance</th>
</tr>
</thead>
</table>
Stepwise Regression

Model 1
- Dependent: Guardianship opportunities
- Independent: Physical Environment (factor 1)

Platform
- Surveillance
- Visibility
- Attributes
- Platform
- Significant variables

Transition
- Surveillance
- Visibility
- Attributes
- Transition
- Significant variables

Lounge
- Surveillance
- Visibility
- Attributes
- Lounge
- Significant variables

Exits
- Surveillance
- Visibility
- Attributes
- Exits
- Significant variables

Results Step 1
- Total Station
  - Av. Surveillance
  - Av. Visibility
  - Significant attributes
  - Significant variables

Result Step 2
- Significant variables

Model 2
- Dependent: Guardianship opportunities
- Independent: Physical Environment

Surroundings
- Av. Surveillance
- Av. Visibility
- Attributes
- Surrounding
- Significant variables

Station and Neighborhood
- Av. Surveillance
- Av. Visibility
- Significant attributes
- Significant variables

Result Step 3

Result Step 4
Results

Average surveillance at stations
(source: fieldwork data, 2010)

Crime rates at stations
(per 1 000 passengers)
(source: SL)

1 000
## Results

### Guardianship Model 1

<table>
<thead>
<tr>
<th></th>
<th>Platform</th>
<th>Transition</th>
<th>Lounge</th>
<th>Exits</th>
<th>Total Station</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surveillance</strong></td>
<td>NR² = 47.4 H-L = .947 +View*** +Crowed** +PassFlow*</td>
<td>NR² = 59.5 H-L = .607 +Illumination* -Corners* -Hidings* +View** +Mirrors**</td>
<td>NR² = 46.0 H-L = .867 -ViewPlatform** +Open* +View* -Underground* -CCTV*</td>
<td>NR² = 68.0 H-L = .067 Corners** +View***</td>
<td>NR² = 56.9 n=16 H-L = .382 TCorners* +LOpen* -ECorners*** +EView** +CCTV*</td>
</tr>
<tr>
<td><strong>Visibility</strong></td>
<td>NR² = 65.8 H-L = .351 -Corners** -Blocking* -Crowed** +PassFlow*</td>
<td>NR² = 33.1 H-L = .230 -Hidings*** +Guards**</td>
<td>NR² = 31.7 H-L = .764 -Corners** -Hidings*** +View** +SecuVis** +Crowed* +PassFlow*</td>
<td>NR² = 61.2 H-L = .793 -Corners** +Open** +View** +SecuVis** +Crowed* +PassFlow*</td>
<td>NR² = 57.1 n=11 H-L = .705 -PCrowed* -LhidC* -ESecuVis*</td>
</tr>
</tbody>
</table>

Significance: * 10% level (.05), ** %5 level (.01), *** 1% level (.005)
Results

1 Mix of both formal and informal characteristics
good visibility, overviews, few dark corners and hiding places, as well as good
surveillance by formal and informal guardians

2 Increased opportunities for guardianship
at less-crowded stations with visible tools for guardianship

3 Guardianship opportunities differ by section
different types of guardians have a different effect

4 Surrounding environment not contributing as expected
Minor effect on explaining opportunities for guardianship at underground
stations
Conclusions

• Opportunities for guardianship are **higher at safer underground stations**

• **Opportunities of guardianship** are influenced by the environment present.

• **Different places** at underground stations show **different aspects** of guardianship opportunities to be effective

• Presence of **guardians** and location of **tools** for guardianship plays a role
Conclusions

Suggestions for further research

• Relation to crime rates

• Presence of people and guards in transport nodes

• ”Hotspots of guardianship”

• Investigate types of guardianship
Average surveillance at stations
(source: fieldwork data, 2010)

Crime rates at stations
(per 1,000 passengers)
(source: SL)

3
2
1

Thank You!