



## **SPAZI URBANI SICURI**

Strategie e azioni per un approccio integrato alla qualità insediativa

## **SAFE URBAN SPACES**

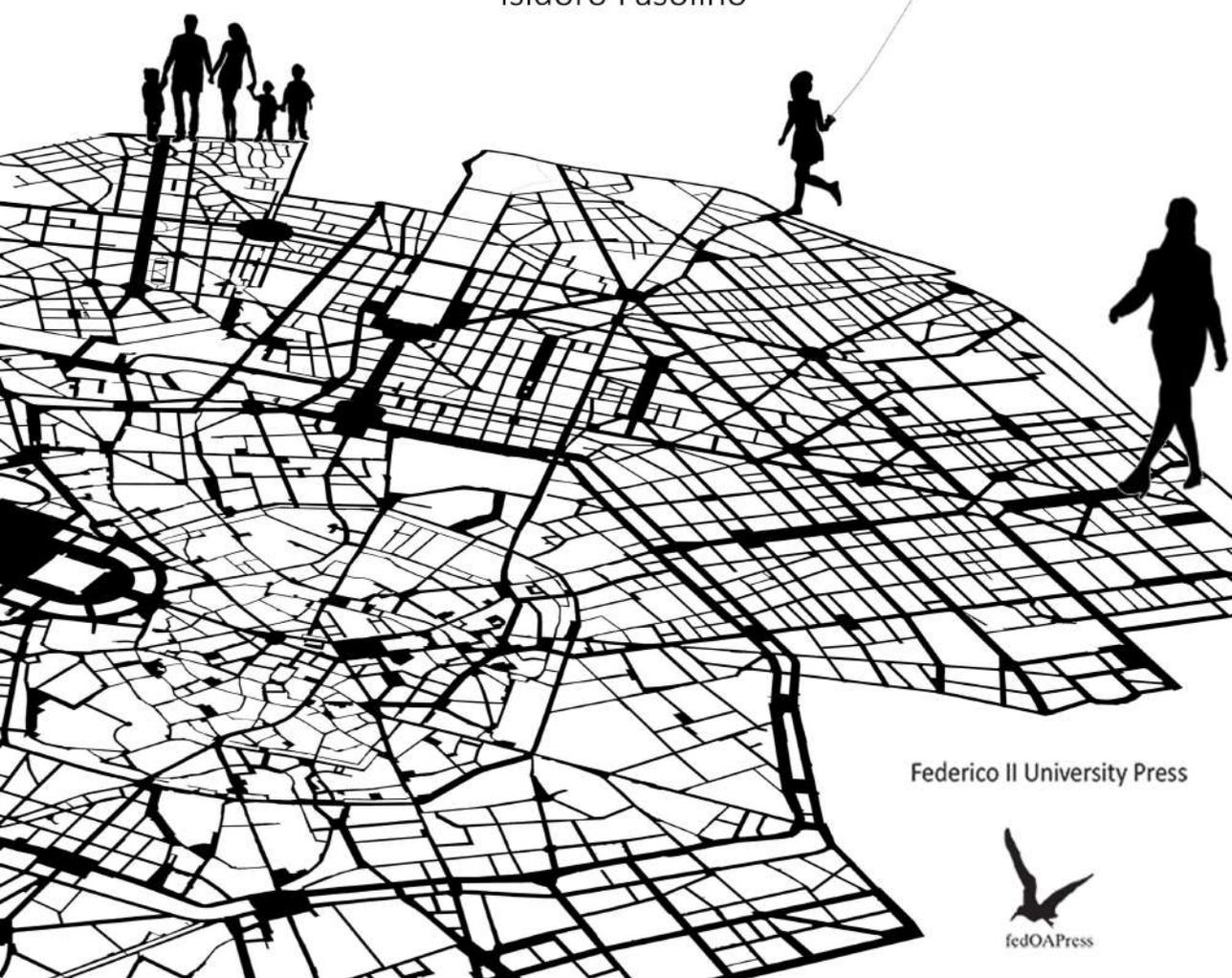
Strategies and actions for an integrated approach to settlement quality



a cura di | edited by



Francesca Coppola  
Michele Grimaldi  
Isidoro Fasolino



Federico II University Press





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# *Safe urban space*

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## **"Safe Cities" project. Analysis and urban design for the cities security**

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### **Abstract**

The issue of urban security, at the centre of city agendas especially in relation to terrorism, involves Urban Design and therefore the shape of the city. A study carried out by the University of L'Aquila on medium-sized Italian cities addresses this issue using a four-stage methodology corresponding to four frameworks: 1) Knowledge Framework, 2) Analytical Framework, 3) Strategic Framework and 4) Design Framework. This methodology was applied to the case study of the city of Pescara, in Abruzzo (It), which presents criticalities in relation to crime (national rankings show that it has a relevant crime index).

The methodology also followed the Routine Activity Approach, which integrates socio-economic conditions with crime types and rates. Thus, Crime mapping and Space Syntax Analysis were integrated into the traditional socio-economic analyses.

The study concludes with an in-depth study of intervention strategies, differentiated into three groups: 1) Planning, 2) Urban Design and 3) Space Management. These strategies were applied to the case study in order to obtain a Masterplan with the actions to increase urban security.

**Keywords:** urban security; crime mapping; urban design.

### **1. Introduction**

The paper describes the preliminary results of a research project of the University of L'Aquila, called *Safe Cities* project<sup>1</sup>, on the theme of social security in cities and the principles and criteria

1 The *Safe Cities* research originates from a thesis entitled *Safe city. La città sicura. Elementi di urban design per la città di Pescara (Safe city. Elements of urban design for the city of Pescara)*, Supervisor: Prof. Donato Di Ludovico, Co-Supervisor: Prof. Roberto Mascarucci, Arch. Donato Piccoli, Ing. Luana Di Lodovico. Graduating student: Gregorio Di Muzio.

of urban design and planning aimed at increasing it. The aim is to identify a method of intervention in existing degraded urban areas with a significant crime index, developed through innovative urban design techniques that support large-scale urban regeneration and transformation projects.

In particular, the research refers to the definition of Urban design proposed by Ali Madanipour, for whom it refers both to the design of cities and settlements as a whole and to the design of certain parts of urban areas, i.e. it is a multi-level practice. According to Madanipour, the design of cities and settlements, i.e. the macro-scale, focuses on the major issues of spatial organization and functions, while the design at the micro-scale of parts of cities focuses on the public face of architecture, public space, and more detailed design considerations at that scale. These two dimensions are interacting and belong to the same process of design and composition of urban space. Urban space, in practice, becomes the common theme, the glue, of the two scales / dimensions of Urban design (Madanipour, 2014) and in the context of our research we can consider it as the main cross-scale element of design towards a Safe city.

The theme of urban safety, as expressed in our research, is also measured by the integration of the dimensions of Urban Design as identified by Carmona: (1) the morphological dimension, which concerns the shape of the settlements; (2) the perceptual dimension, which concerns our interaction with the environment that occurs through perception stimulated by sight; (3) the social dimension, an essential understanding of the relationship between people (society) and their environment (space); (4) the visual dimension, connected to the aesthetic appreciation of the urban environment is kinaesthetic; (5) the functional dimension, which concerns spaces and their use and how urban designers can produce better ones; (6) the temporal dimension, which concerns the ways in which spaces are used and how they change over time (Carmona *et al.*, 2003).

The theme of urban security, as declined in our research, is also measured by the integration of the dimensions of Urban Design as identified by Carmona: (1) the morphological dimension, which concerns the shape of settlements; (2) the perceptual dimension, which concerns our interaction with the environment that takes place through perception stimulated by sight; (3) the social dimension, essential the understanding of the relationship between people (society) and their environment (space); (4) the

visual dimension, which is related to the aesthetic appreciation of the urban environment and kinaesthetic; (5) the functional dimension, which concerns spaces and their use and how Urban designers can produce better ones; (6) the temporal dimension, which concerns how spaces are used and how they change over time (Carmona *et al.*, 2003).

The scientific literature on the topic of social security of the city and related Urban Design techniques, which nowadays also addresses the topic of terrorism (Blomberg & Sheppard, 2007; Glaeser, 2002), is quite extensive and deals up to the scale of the building (Banerji & Ekka, 2016; Piroozfar *et al.*, 2019; Bolici & Gambaro, 2020). Indeed, it is a topic that has always been present in city planning (think for example of the transformation of Paris by the prefect Haussmann in the mid-19th century), and research has also produced substantial reporting and manuals on it (ODPM, 2004; Polimi-lau-Rer, 2007; Cardia & Bottigelli, 2011) which in some cases deepen Green Environmental Design and the role of new technologies (UNICRI, 2011), in others also address defence against natural disasters (UNHSP, 2007), and in others address urban planning in highly problematic contexts (Twinam, 2017; CLC, 2019).

Our research work addresses the issue of urban security in the particular context of medium-sized Italian cities, which have been little investigated in these terms but which in some cases have significant crime rates and significant problems of urban and social decay in certain districts. In particular, the research focuses on the case study of the city of Pescara, in Abruzzo Region (It), which can be considered a significant case in that it presents a process of metropolisation still underway in a Region characterised by small and very small towns, but which above all presents, according to the main rankings, worrying crime indicators. In the context of Pescara, the design application focused on a particularly critical and conflictual district to which design criteria oriented towards increasing urban security were applied.

Section 2 describes the methodology applied regarding the territorial and urban analysis and Urban Design of a neighbourhood in the city. Section 3 describes the socio-economic conditions and problems of the case study (knowledge and analysis). The Section 4 describes the application of the crime mapping methodology to the case study. Section 5 describes the strategies and the masterplan for improving the urban security of the district used as a case study. The paper closes with Section 6 dedicated to Conclusions.

## 2. The methodology

The methodology applied to the urban scale, consists of four blocks: 1) Knowledge Framework, 2) Analytical Framework, 3) Strategic Framework and 4) Design Framework (Fig. 1). The Knowledge Framework gathers the traditional information on urban systems, to which is added that relating to the size, type and geolocation of crime episodes. The Analytical Framework is composed of three main elaborations: the vulnerability and social risk assessment at the sub-urban level, the Crime Mapping / Kernel density (identifying Hotspots, areas with a high density/probability of crime), the Configurational Analysis / Space Syntax Analysis. The Strategic Framework, which originates from a map of critical urban security issues derived from the Analytical Framework, identifies intervention strategies differentiated into three groups: 1) Planning, 2) Urban Design and 3) Space Management, to which correspond significant sub-groups of strategies. These groups and sub-groups of urban strategies have been substantiated by Urban Projects (Design Framework) based on Urban Design techniques and practices supported by new technologies, which integrate and modify the design actions of classical methodologies such as CPTED (Crime Prevention Through Environmental Design) or the UNI CEN/TR 14383-2 standard.



Fig. 1 – The methodology of the *Safe Cities* research project. Source: D. Di Ludovico.

### 2.1 The theme of city security

Safeguarding the security of a city through Urban Design is a very complex issue involving many different actors, knowledge and skills. In general, it involves the following aspects:

- The quality of life, as a primary right of human settlement.
- Environmental crime prevention, which refers to the following criminological theories (Cardia & Bottigelli, 2011):
  - The Rational Choice Perspective, which is based on intentional behaviour to obtain an advantage of some kind. Fundamental to this theory is the way in which crimes are carried out (Clarke, 1997).
  - The Routine Activity Approach, which analyses crime

- rate trends and cycles. This approach focuses on the circumstances under which predatory criminal acts are carried out. In particular, it is hypothesised that the dispersal of activities outside households and families increases opportunities for crime and thus generates higher crime rates (Cohen & Felson, 1979; Felson, 2008).
- Crime Pattern Theory. The crime patterns is «formed by the rich complexities of criminal events formed by law, offender motivation and target characteristic arrayed on an environmental backcloth. Each element in the criminal event has a historical trajectory shaped by past experience and future intention, by the routine activities and rhythms of life, and by the constraints of the environment. Patterns within these complexities, considered over many criminal events, should point us towards understandings of crime as a whole» (Brantingham & Brantingham, 2008, 78).
  - CPTED (Crime Prevention Through Environmental Design), concerns the environmental prevention of crime and stems from the theories of Jane Jacobs (1961) and Oscar Newman (1973). In particular, the concept of Crime Prevention Through Environmental Design was coined by Ray Jeffery (1977) «expands upon the assumption that the proper design and effective use of the built environment can lead to a reduction in the fear of crime and the incidence of crime, and to an improvement in the quality of life. This translates to many practical and useful applications» of architectural design and space management concepts (Crowe, 2000, 1). At the end of the 1980s the traditional conception of CPTED underwent a wide revision which, thanks to the introduction of new concepts in prevention policies, led to the birth of the approach called *Safe City* on which this paper is based. The new way of approaching the problem of security in the urban environment combines the principles of CPTED with a broader reflection on the functions of the city and the way citizens use spaces and services. (Cardia & Bottigelli, 2011).
  - The standard, in particular the UNI CEN/TR 14383-2 (document TR 14383-2, adopted by CEN in 2007 and implemented in Italy as a UNI standard in 2010), which specifically concerns *Crime prevention – Urban planning*.

These theoretical-practical aspects point to a number of factors, which cannot be considered secondary and which contribute to threatening the security of the city:

- The actual risk of being a victim of intimidation, aggression or other violent acts.
- The unease caused by the breakdown of traditional codes of civil behaviour.
- Lack of care for the territory and places.
- The perception of insecurity, a factor unrelated to real insecurity, linked to environmental factors such as the squalor of urban space, unclear paths.
- Fear in its various components (Cardia & Bottigelli, 2011).

In our research, the above-mentioned factors of urban security are related to the socio-economic characteristics of the places analysed, as envisaged by the Routine Activity Approach. This analysis, integrated with the Crime Mapping methodology (Kelley, 1967; Ummarino, 2013), allows to highlight the criticality of public spaces and more generally of the settlement, calling into question the methods of urban planning and design and therefore the CPTED and the UNI CEN/TR 14383-2 standard.

### **3. The city of Pescara. The case study, knowledge and analysis**

The city of Pescara, located on the Adriatic coast, with a population of 119,217 in 2017 (119,800 in 2019), is the most populous city in the Abruzzo Region. Figure 2 on the left compares some statistical data of Pescara with the main Italian cities (Rome, Milan, Palermo, Florence). This comparison shows that its population density, which is on average high, in relation to the surface area is comparable with these cities, a feature that also affects population dynamics. Figure 2 on the right shows the comparison to the cities of Abruzzo. In this case it is evident that Pescara's territorial density is considerably higher than the others (e.g. Pescara's density is about 24 times that of L'Aquila).

Key descriptive elements for urban security also derive from the *Il Sole 24 Ore* study of 107 Italian provinces on the Quality of Life. Figure 3 represents Pescara's position for the 6 parameters taken into consideration. In 2018 the province of Pescara ranks 69th for *wealth and consumption* (71th in 2020), 70th position for *business and work* (28th in 2020), 83rd position for *environment and services* (66th in 2020), 38th position for *demography and society* (4th in 2020), 93rd position for *justice and security* (44th in 2020), 7th position for *culture and leisure* (34th in 2020) and finally 64th position for the total index (43th in 2020). It is evident that one of the worst indices affecting quality of life is *justice*

and security, although it has been improving in recent years (IlSole24Ore, 2018a; IlSole24Ore, 2020a).



Fig. 2 – Comparison of population and density. Left, between Italian cities; right, between Abruzzo cities. Source: Istat.

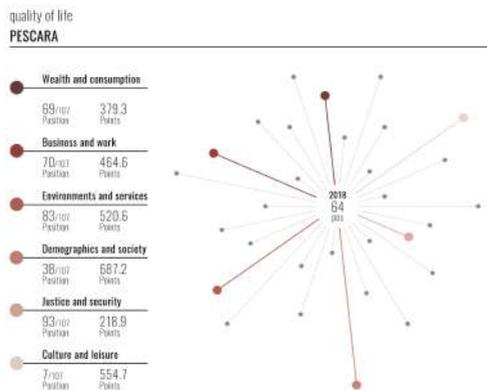


Fig. 3 – Quality of life in the Province of Pescara. Source: IlSole24Ore, 2018a.

The socio-economic description of the city of Pescara was carried out on the basis of municipal level ISTAT data, analysing the dynamics of the following indices in the three censuses 1991, 2001 and 2011 describing social vulnerability (Fig. 4), taking as reference the related ISTAT study on the Index of Social and Material Vulnerability (ISTAT, 2015) and the Routine Activity Approach (Felson, 2008):

- % of large family (6 and more members), which tends to decrease over the period considered.
- % of the population in crowded conditions, which tends to decrease over the period.
- % of elderly people living alone, which increases significantly over the period.
- % of families with potential care difficulties, which decreases over the period.
- % of young people out of the labour market and training, which increases over the period.

- Early exit from the education and training system, which decreases over the period (%of illiterate and literate population aged 25-64 without educational qualifications).
- Unemployment rate, decreasing over the period.
- Youth unemployment rate, decreasing over the period.

The trends in these indices show that the environmental factors affecting security tend on average to improve over the period 1991-2011, painting an essentially favourable picture of a safer urban environment.

Similarly, an analysis based on the ISTAT census sections of the city of Pescara for the year 2011 was carried out, with the aim of representing the distribution of socio-economic phenomena in the municipal area (Fig. 5). The indices taken into consideration are similar to the previous ones, and in particular are:

- Illiteracy (illiterate and literate population aged 25-64 with no educational qualification).
- Unemployment (males aged 15 and over unemployed or looking for their first job).
- Large families (resident households with 6 and more members).
- State of repair of buildings (% of residential buildings in a poor state of repair).
- Foreigners (% of resident foreigners and stateless persons).
- Empty dwellings (% of empty dwellings)

From the maps in Figure 5 it can be seen that the above-mentioned geo-referenced indices, represented with a scale of colours in which the darker one corresponds to a phenomenon that may have a greater social impact, describe the phenomena quite clearly. In fact, in the urban context there are areas in which these phenomena are denser and which will later be seen to correspond to those with a higher density of criminal events.

Alongside the socio-economic analyses, the research also used data from the *Il Sole 24 Ore* Crime Index survey. Figure 6 shows how the Province of Pescara in 2018 (*IlSole24Ore*, 2018b) was in 22nd position out of 107 (in first position is Milan, which has the highest index of complaints per 100,000 inhabitants). In 2020 (elaboration on 2019 data) the province of Pescara moved to 29th position, improving its ranking (*IlSole24Ore*, 2020b).

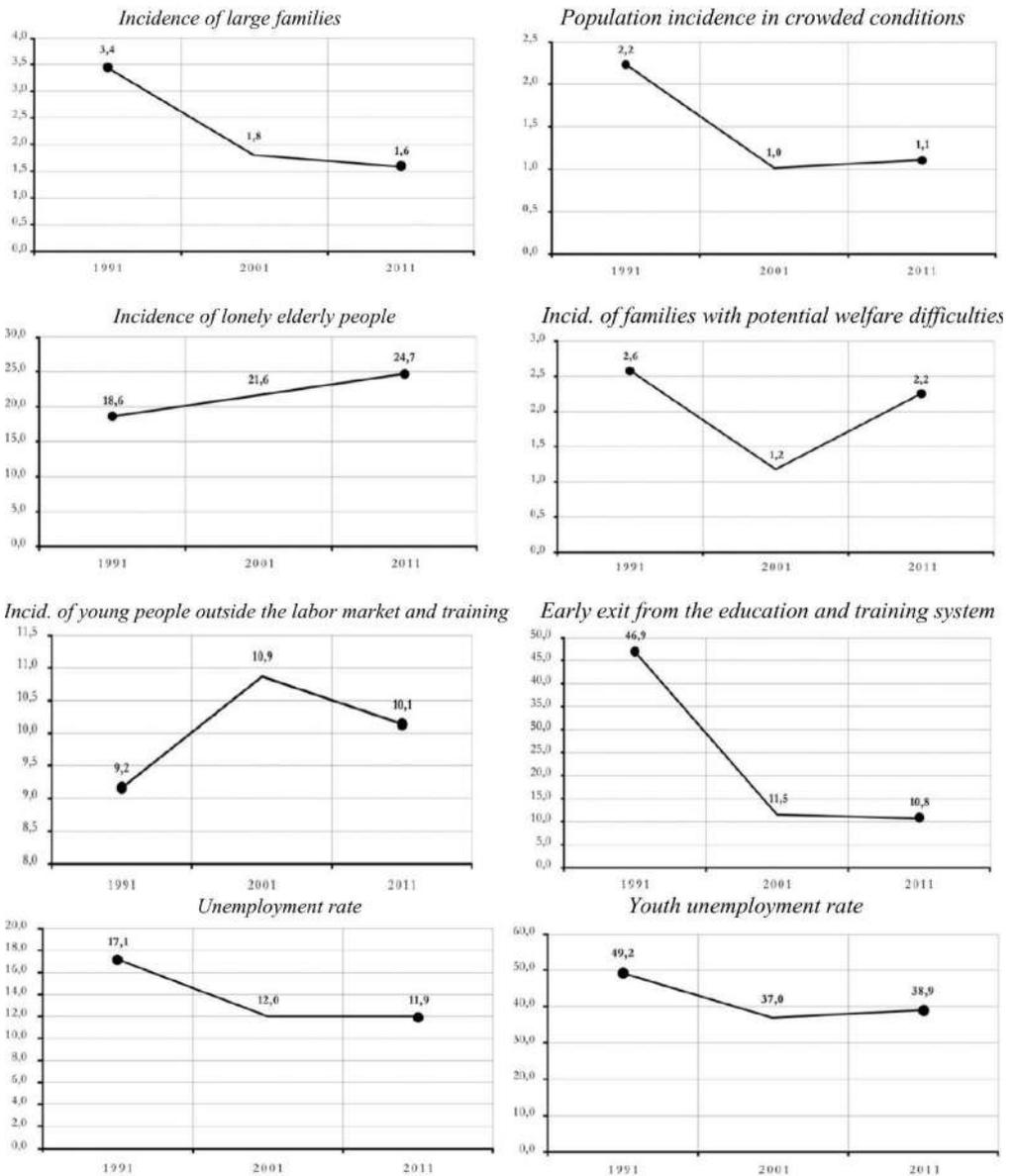


Figure 7 shows a comparison of this index among the four provinces of the Abruzzo Region in 2018 (IlSole24Ore, 2018b). The province of Pescara is in the worst position (22nd). The province of Teramo is in 46th position, that of Chieti in 76th and that of L’Aquila in 98th. This order does not change in the 2020 survey (IlSole24Ore, 2020b).

Fig. 4 – Socio-economic factors in the period 1991-2011 of the City of Pescara. Source: Istat.

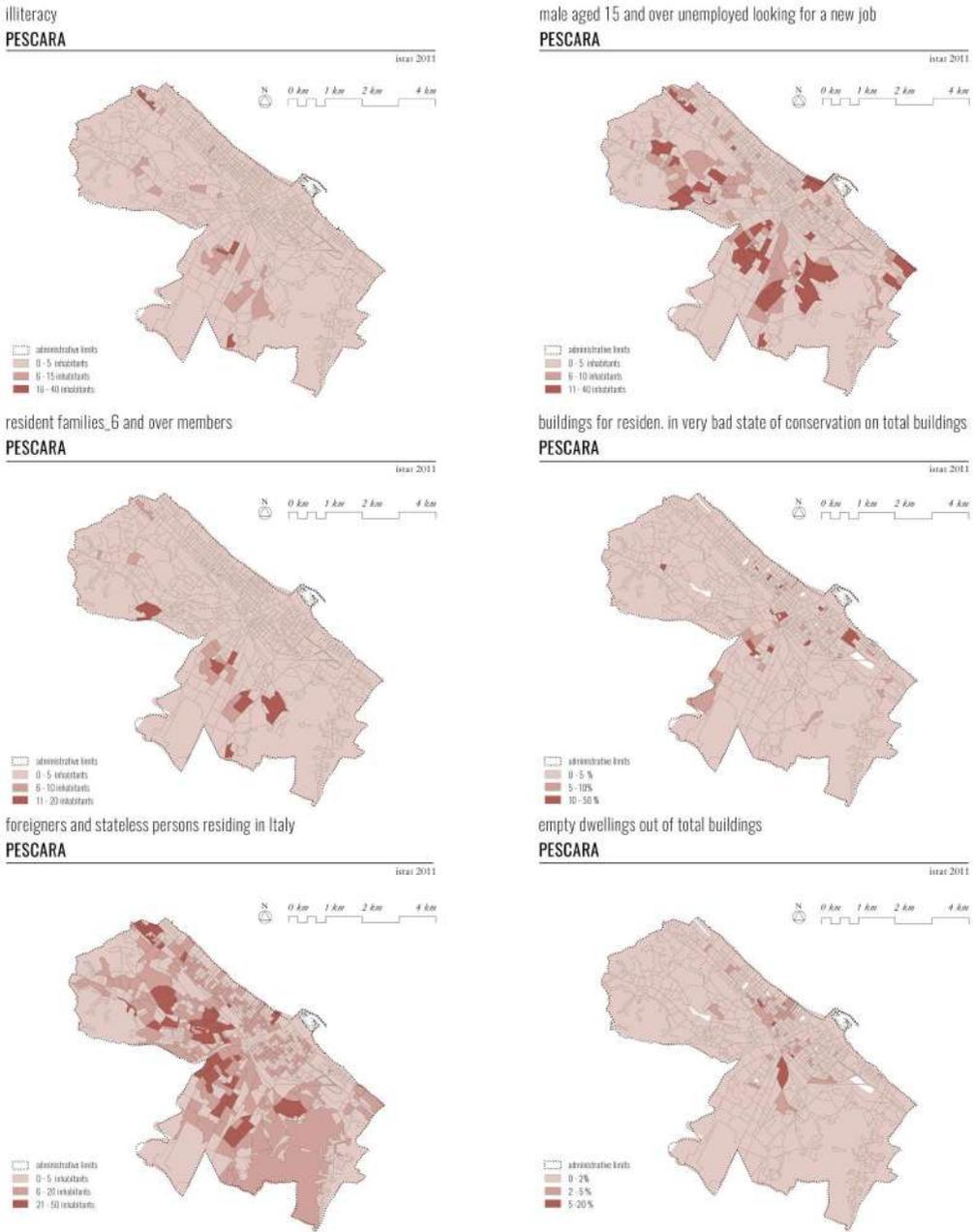


Fig. 5 – Factors affecting social status in the census areas of the City of Pescara. Source: Istat.

**Ranking**

**Position**

**22** Calculated on the number of complaints every 100 thousand inhabitants

---

**Complaint**

13.469

---

**Complaints every 100 thousand**

4.217,13

---

**Variation % 2017-2018**

-6,70



Calculated on the number of complaints every 100 thousand inhabitants

---

**Thefts**

28 pos

---

**Home burglaries**

55 pos

---

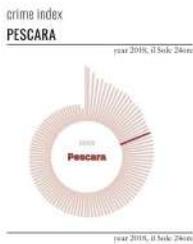
**Robberies**

18 pos

---

**Narcotic**

85 pos



**Ranking**

**Position**

**22** Calculated on the number of complaints every 100 thousand inhabitants

---

**Complaints**

13.469

---

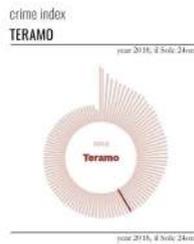
**Complaints every 100 thousand inhabitants**

4.217,13

---

**Variation % 2017-2018**

-6,70



**Ranking**

**Position**

**46** Calculated on the number of complaints every 100 thousand inhabitants

---

**Complaints**

10.587

---

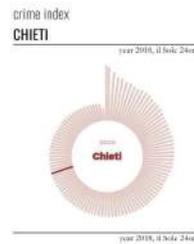
**Complaints every 100 thousand inhabitants**

3.406,22

---

**Variation % 2017-2018**

6,51



**Ranking**

**Position**

**76** Calculated on the number of complaints every 100 thousand inhabitants

---

**Complaints**

11.329

---

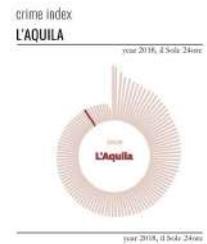
**Complaints every 100 thousand inhabitants**

2.928,03

---

**Variation % 2017-2018**

-1,48



**Ranking**

**Position**

**98** Calculated on the number of complaints every 100 thousand inhabitants

---

**Complaints**

7.408

---

**Complaints every 100 thousand inhabitants**

2.482,99

---

**Variation % 2017-2018**

3,53

Another fundamental knowledge element for understanding urban dynamics concerns planning. On this aspect, the methodology envisaged a specific phase within the Knowledge Framework, which analysed the strategies of existing plans with particular reference to those concerning urban security. In this context, it was useful to analyse the studies of the Municipality of Pescara *Verso Pescara 2027* (Towards Pescara 2027). These studies contain reflections on the structures and prospects for governing the city's territory and have made it possible to identify a sort of *map of ideas* on urban strategies and policies for the city and its metropolitan context. These studies have produced the basis for action planning, especially on the issues of mobility and transport (CitPes, 2016; CitPes, 2017). Strategies are also identified that concern the security of the city's peripheries, for which the tools of urban design are to be used. However, these are spot operations, which do not address the issue of security in a systemic way.

Fig. 6 – Crime index of the province of Pescara 2018. Source: *IlSole24Ore*, 2018b.

Fig. 7 – Crime index of the provinces of the Abruzzo region, year 2018. Source: *IlSole24Ore*, 2018b

#### 4. The application of Crime Mapping

The analytical phase of the methodology was applied by integrating a Knowledge Framework with an Analytical Framework (Fig. 1). The knowledge base covered physical, socio-economic, urban and spatial planning aspects. The analytical base deepened the socio-economic aspects and related them to a study on crime events (Routine Activity Approach, Section 2.1). The first step of the study was the collection of geolocalised information on crime events differentiated by type. This collection was prepared by researching web newspapers in the period 2016-2018. This information, allowed to carry out an analysis of the spatial distribution of illicit human facts with statistical-geographical techniques. In fact, they were used to highlight the areas most affected by criminal events, applying the technique of crime mapping, a method of analysis in support of urban planning and design to curb the phenomena of deviance/degradation, aimed at the application on an urban scale of CPTED and in the application of situational prevention theories. The possibility of distinguishing geographical areas according to a particular index (of presence or probability) makes it possible to study a given phenomenon and assess which other factors (social, structural, urban, geographical, etc.) may influence its frequency and intensity.

Crime mapping can be defined as the analysis and description of the spatial distribution of crime events, i.e. their mapping and geographical analysis (geographical trends, densification, etc.). Its origin can be traced back to the mid-19th century. For example, in 1829, Guerry published maps showing the distribution of violent crime and thefts in the various *départements* of France. In 1862, Mayhew's map «The Intensity of Criminality» (Kelley, 1967) is one of the first examples of crime mapping in its most modern sense (Ummarino, 2013).

Crime mapping of the city of Pescara was carried out using GIS techniques of raster analysis. Figure 8 represents the map with the distribution of crime events detected on web newspapers for the period 2016-2018, and differentiated into robberies, drug dealing, prostitution, homicides, thefts and assaults.

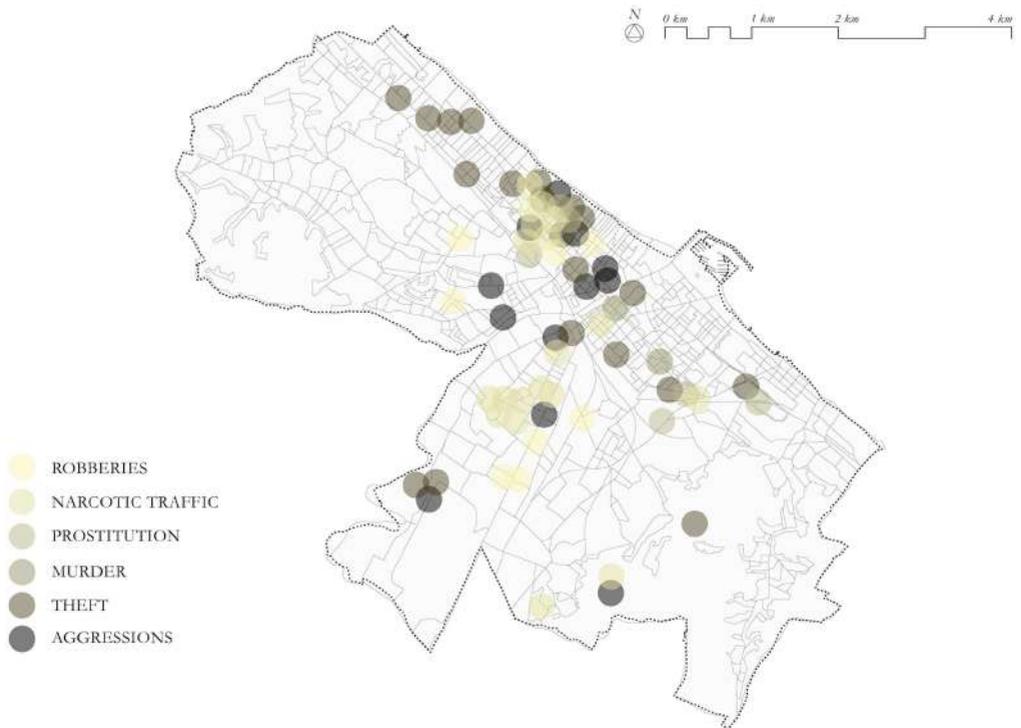
To this distribution, which covers the whole municipality, the Kernel density algorithm was applied, which was used to identify the so-called *Hotspots*, areas with a high density of criminal phenomena. After a series of steps (choice of cell size, choice of radius, reclassification of results according to ranges of values, etc.)

the analysis produced a map of the density of criminal events (Fig. 9), the reading of which allows the identification of Hotspots.

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## CRIME MAPPING

years 2016/2017/2018.



Alongside this analysis, Space Syntax Analysis, or rather configurational analysis, has also been applied to the city, with which an attempt is made to overcome one of the main issues of spatial planning in relation to urban security, namely the poverty of knowledge of the relationships established between the design of the urban grid and the forms of spatial and social control that it contributes to defining (Piccoli, 2015).

Configurational analysis is a complex of techniques for analysing urban space, developed since the mid-1980s by Bill Hillier. In the configurational theory, the urban space represents the element on which the physical characteristics of the city (streets, squares, buildings) meet and relate to those linked to the human activities established in it. On the operational level, the configurational analysis considers the urban space as the input variable, while the output variable is represented by the way the space is

Fig. 8 – City of Pescara Crime Mapping. Source: G. Di Muzio.

used by those who live in it. In our research it is expressed through four elaborations: (1) Choice map, (2) Connectivity map, (3) Integration map and (4) Total depth (Fig. 10), with which the spatiality of urban settlement was analysed (Hillier, 2007).

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**KERNEL DENSITY**

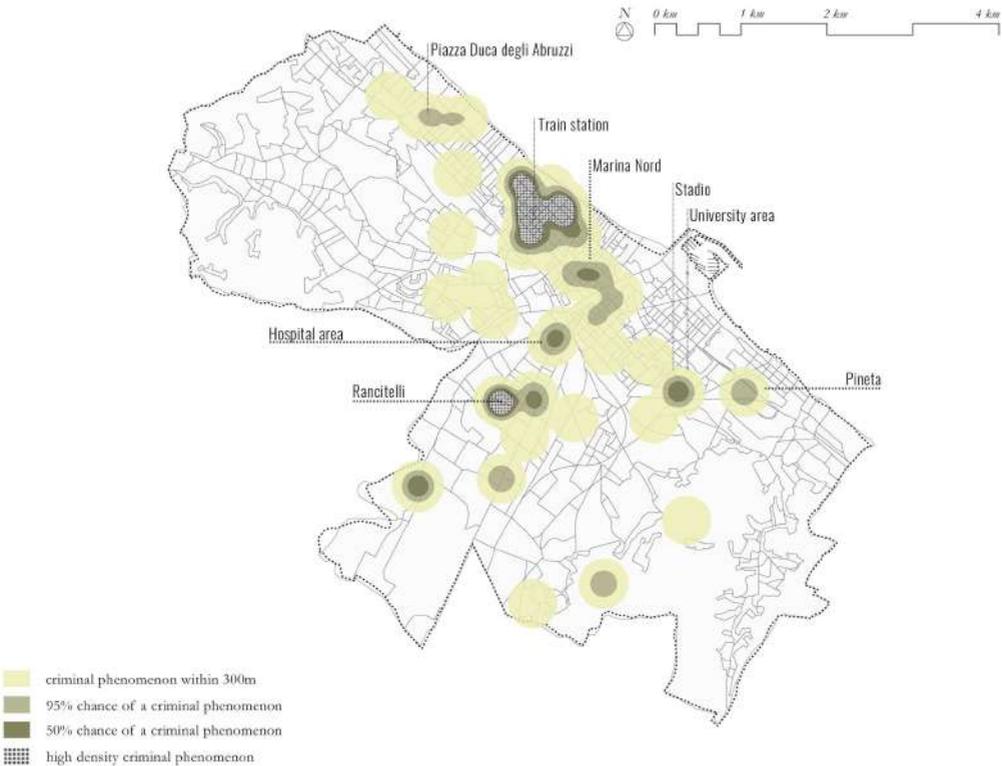


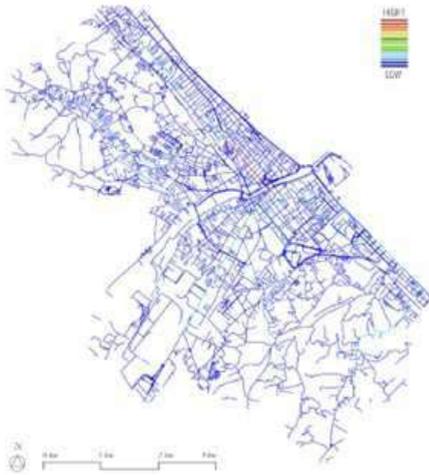
Fig. 9 – Kernel density analysis of criminal events in the city of Pescara. Identification of Hotspots. Source: G. Di Muzio.

- Choice map: shows how the Lines with the highest values of the choice index correspond, with good approximation, to the degree of accessibility of the analysed system (accessibility to be understood as the frequency of a road (the Lines) in falling within the paths of minimum topological length, among the possible localisations of the analysed system).
- Connectivity map: shows how many roads connect to the designated road, inferring the most frequented roads.
- Integration map: measures how integrated (or central) a road

is to the network.

- Total depth map: in the Space Syntax when we talk about *distance* we talk about *topological distance* which is referred to as Depth. The sum of the Depths of a Line with all other Lines in the Axial Map is called the Total Depth. The values tend to become very large the larger the urban structure analysed.

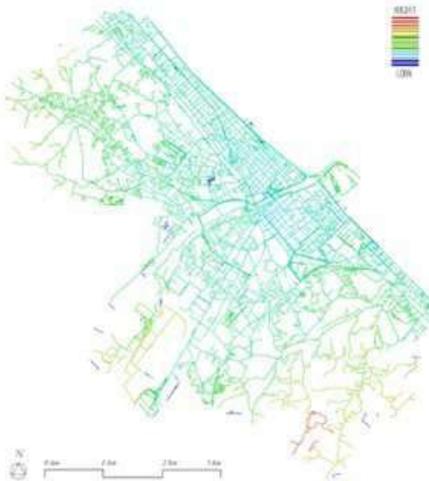
**Choice map**



**Connectivity map**



**Integration map**



**Total depth map**



Fig. 10 – City of Pescara Configurational analysis. Source: G. Di Muzio.

Among the maps of Figure 10, those of greater interest for our research are the Connectivity map and the Integration map. Low connectivity and low integration lines (roads) (tending to blue) are found in the densely populated peripheral urban areas where Hotspots have been identified, further characterising them as areas to be addressed in terms of mobility design. However, there are exceptions, such as the two Hotspots identified in the central area of Pescara city where connectivity is medium-high and integration low.

### **5. Strategies and Master Plans aimed at improving urban security**

The Knowledge Framework and the Analytical Framework are followed by the Strategic Framework, as indicated in the methodology (Fig. 1). The Strategic Framework identifies the intervention strategies differentiating them into three groups: 1) Planning, 2) Urban Design and 3) Space Management, to which correspond significant sub-groups of strategies (Fig. 11). These groups and sub-groups of urban strategies, have been substantiated by Urban Projects based on Urban Design techniques and practices supported by new technologies, which integrate and modify the design actions of classical methodologies such as CPTED (Di Ludovico & Properzi, 2012; Di Ludovico, 2016, 2017).

The three aforementioned thematic groups for which strategies are identified, derive from a reinterpretation of the intervention levels provided by the UNI CEN/TR 14383-2 standard *Crime prevention – Urban planning* (CEN European Committee for Standardization), and specifically introduce the following elements that have been applied to the design simulation (Cardia & Bottigelli, 2011):

- Conscious spatial planning. Legislation and scientific literature show that some settlement patterns can contribute to security, thanks to their ability to generate a quality environment that can resist the spread of criminal phenomena. On the contrary, some characteristics, such as fragmentation, monofunctional districts, isolation, contribute to creating negative conditions for a safe environment. Some of the main issues related to a correct planning concern the social balance and therefore the social mix, the adaptation to the organisation of the existing environment, the morphological integration of building types in the context, the continuity with the existing urban structure,

the guarantee of accessibility to avoid enclaves, etc. Accessibility is one of the most important planning issues because a comprehensive road network is essential to support the movement flows that produce vitality, spontaneous surveillance and thus greater security in the city. In order to ensure continuity of movement, it is important to avoid discontinuities in the road network and pedestrian routes. Lack of accessibility can also contribute to social segregation and create isolated areas where social problems are concentrated. When planning the accessibility of an area, it is necessary to consider its connections with existing functions in the city: jobs, services (schools, hospitals, post offices, etc.), commerce, leisure facilities. It is also necessary to take into account the needs for public services (including social and crime prevention services).

Also of interest, is the functional mix. In traditional planning practice, which assigns specific functions to different areas (zoning), there is a tendency to keep different land uses separate (residential, office, commercial, industrial, institutional, etc.). This approach creates mono-functional districts with unused streets and public spaces at certain times of the day or days of the week, reducing spontaneous surveillance. However, the mix of functions cannot be applied everywhere and requires a careful assessment of the mutual compatibility of the planned activities. Public facilities and services (schools, churches, sports grounds, post offices, etc.) are particularly effective in creating vitality.

Finally, another issue related to planning is density (Christens & Speer, 2005; Browning *et al.*, 2010): urban density and spontaneous surveillance are correlated. Adequate density is necessary to ensure a sufficient number of people to support the activities that generate vitality. It also produces more flows and movements, which provide natural surveillance of the streets. In low-density areas, where activities are lacking and flows are weak, security in streets and public spaces cannot be based on spontaneous surveillance alone, but needs structural forms of control (district surveillance, video surveillance), such as neighbourhood sense, land use intensity, existing residual spaces, newly designed infrastructure, existing infrastructure.

- Urban design. A good urban design can make public spaces more liveable and increase citizens' confidence. On the other hand, a poorly designed urban design can produce empty spaces, dingy environments, generate fear and attract uncivi-

lised behaviour and criminal acts. By applying security criteria to urban design, we can increase spontaneous surveillance, enhance the sense of responsibility of users, improve the control of police and private security, and better organise the management and maintenance of spaces. It is also important that urban design techniques are complemented by appropriate architectural design techniques that address aesthetics.

Another element of urban design is visibility, which allows people to see their way and thus avoid dangerous situations, but also to be seen while crossing the public space, thus making spontaneous control possible. Good visibility also facilitates the work of the police and other forms of surveillance. In addition, landscape, vegetation, views from buildings into the public space, lighting, bus stops, access to car parks and metro stations, transparency of shop fronts and visibility of building entrances are all aspects that help to improve the visibility of a public space.

Also at the level of urban design the interacting theme of accessibility returns. Here it is important that streets, transport stops and interchanges, parking spaces, pedestrian and bicycle paths are designed with the personal security of the users in mind.

Finally, the sense of place for citizens, its identity, and thus the so-called *place making* through which citizens develop a sense of belonging and identification, is also important. There is evidence that people tend to respect and protect the places they feel are their own (PPS, 2018).

- Space management. Well-managed places convey security. A well-managed place sends a clear message of situational control and security, which deters crime and reassures users. In addition, good management reduces feelings of insecurity by addressing the consequences of crime or vandalism.

As good management of a place is prepared at an early stage of planning, by making appropriate choices, the different actors and users should be involved from the planning and urban design phase.

The maintenance of public spaces includes the functions of street cleaning (collection of household waste, removal of bulky waste, separate collection), repair and maintenance (replacement of damaged furniture, repair of road surfaces, etc.) by the managers, with the support of other public and private services.

From a security point of view, good maintenance management helps to prevent phenomena that lead to the depreciation of a space and are a source of alarm for users and an incentive for vandalism or criminal behaviour.

The elements described in the three previous points, which concern strategic aspects but also actions and therefore interventions of Urban Design, were applied to a proposal for intervention on one of the Hotspots (Fig. 8), the Rancitelli district.

The Rancitelli district, which is the subject of the urban regeneration project aimed at improving security, presents several critical issues (Fig. 12). The main problems in the area are: high land consumption, resulting in a scarcity of public spaces and a higher risk of conflicts between inhabitants; discontinuity of routes, degradation of public spaces, low sense of territoriality (introverted, repetitive or stick-built residential buildings located in wide open spaces create an environment without identity, where people feel estranged), absence of cultural activities, accessibility (lack of accessibility contributes to social segregation and creates isolated areas where social problems are concentrated) and crime. Through the above strategies (Fig. 11), decisive actions were proposed to try to cope with and improve the urban quality aspects of the study area. In the first phase, related to Urban Planning, attention was paid to the definition of the routes, with the creation of a ring for public transport that crosses the Rancitelli district, in order to promote vitality within the district and greater spontaneous control, the reconnection of the cycle track circuit through also the establishment of bike sharing stations.

In the second phase, related to Urban Design, addressed the specific criticalities of the district (Fig. 12) related to the perception of security in public space. The design of cultural spaces, the creation of coworking spaces, the requalification and replacement of residential buildings in a poor state of preservation, the attention to the materials used (avoiding materials that deteriorate easily, break or require complex maintenance because they trigger degradation processes), the improvement of visibility in public spaces, (eliminating or redesigning all obstacles that hinder our view), the improvement of the accessibility of public spaces, are all strategies (Fig. 13) aimed at improving urban quality, and therefore security. Finally, in the last phase, the Management of Spaces, actions are defined such as maintenance of the spaces, the creation of a city district network for sharing events, definition of the different modes of surveillance together with the definition of times and calendars

of activities. Measures to create vitality in the district, to develop a greater sense of belonging to the area and the perception of a safe space, foreseen in a preliminary Masterplan proposal (Fig. 14).

### the STRATEGIES



Fig. 11 – The three themes of the Safe City strategies. Source: G. Di Muzio.

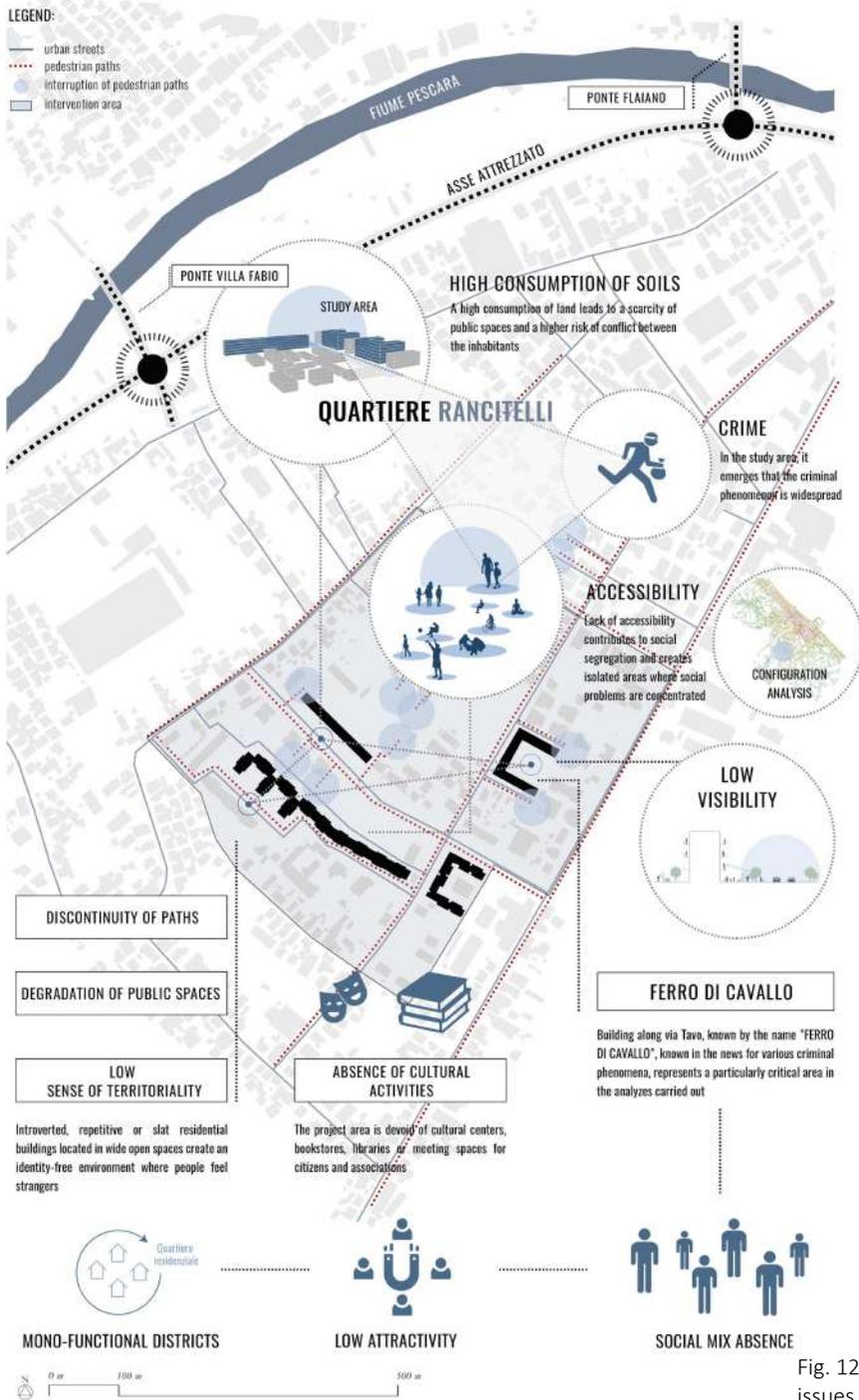


Fig. 12 – Critical issues in the Rancitelli district Hotspot. Source: G. Di Muzio.

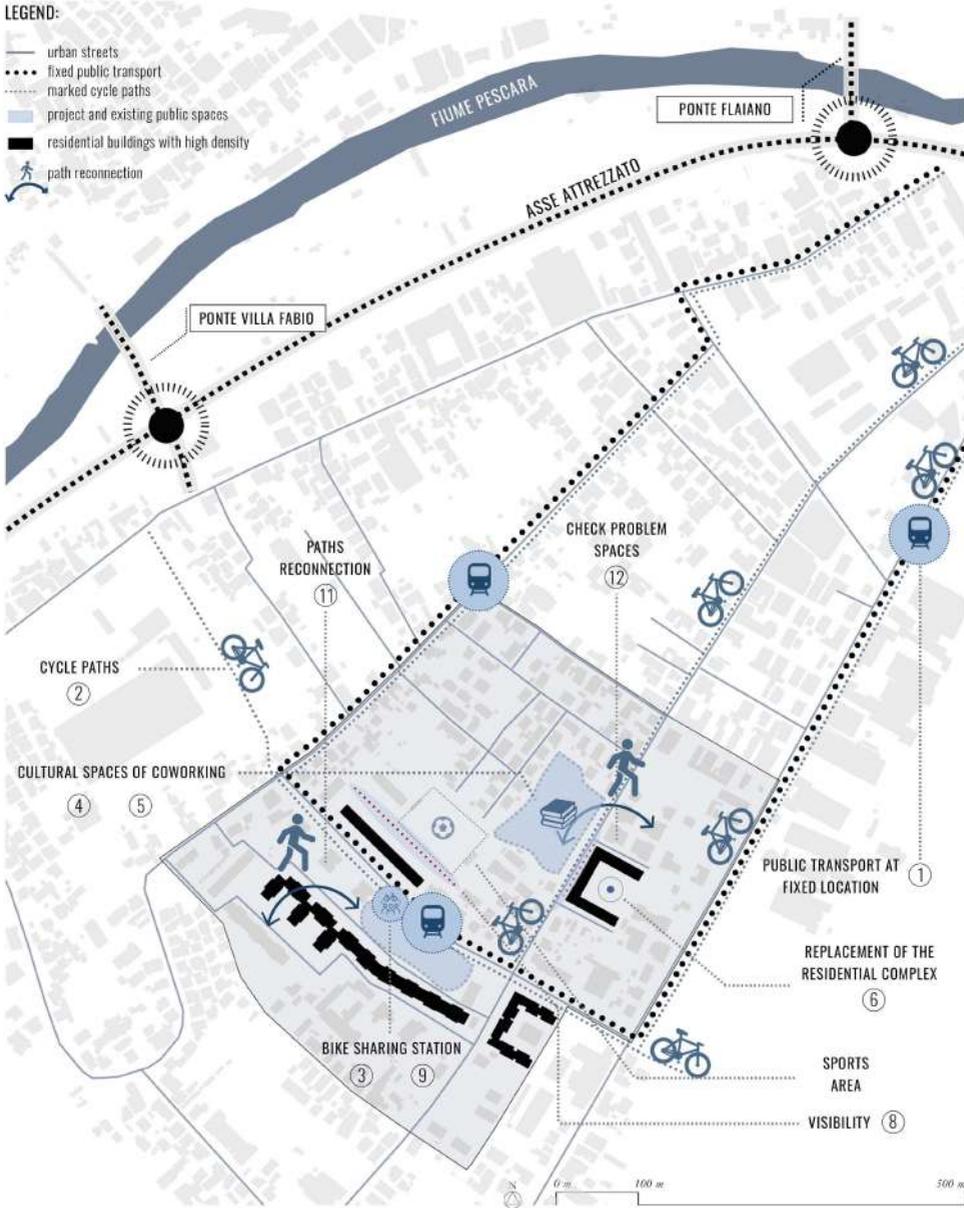


Fig. 13 – Recovery strategies in the Rancitelli district hotspot. Source: G. Di Muzio.



## 6. Conclusion

The paper described the preliminary results of a research project of the University of L'Aquila, called *Safe Cities*, which deals with the issue of social security in cities and the principles and criteria of urban design and planning aimed at increasing it.

The research sought to identify a method of intervention in existing degraded urban areas with a significant crime index, developed through innovative urban design techniques. In particular, the level taken into consideration was that of medium-sized cities, with significant crime rates and significant problems of urban and social decay in some neighbourhoods. The case study taken into consideration is the city of Pescara in Abruzzo (It). The city of Pescara (Abruzzo) can be considered a significant case in that it presents a process of metropolisation still underway in a region characterised by small and very small cities, but which above all

Fig. 14 – Masterplan in the context of the Rancitelli district Hotspot. Source: G. Di Muzio.

presents, according to the main rankings, worrying crime indicators. As we have seen, the project simulation concerned a particularly critical and conflictual district.

The methodology applied consists of four consequential frameworks: 1) Knowledge Framework, 2) Analytical Framework, 3) Strategic Framework and 4) Design Framework. The Knowledge Framework, in addition to collecting traditional information, also collected information related to the size, type and geolocation of criminal episodes. The Analytical Framework applied to the basic information some indicators related to vulnerability and social risk, Crime Mapping, Configurational Analysis / Space Syntax Analysis. The Strategic Framework identified intervention strategies aimed at increasing urban security by differentiating them into three groups: 1) Planning, 2) Urban Design and 3) Space Management. These three components have become the basis of the Design Framework based on Urban Design techniques and practices supported by new technologies, which integrate and modify the design actions of classical methodologies such as CPTED (Crime Prevention Through Environmental Design) or the UNI CEN/TR 14383-2 standard. The strategies and actions differentiated in the above three groups were applied to the case study of the Rancitelli District, an area that the analyses identified as a Hotspot, with a high concentration of criminal events.

The application of the methodology has highlighted some limitations. First of all, the enormous difficulty in obtaining geo-referenced and punctual information on criminal events, which makes Crime Mapping much less accurate. Then, the need to deepen the relationship between the characteristics that derive from socio-economic analysis, and those of Crime Mapping and Space Syntax; the experimental application has in fact highlighted inconsistencies that must be further integrated. Another limitation derives from the low level of integration between Planning, Design and Management, which are often autonomous processes and which instead, to make the methodology more effective, must be integrated as in our experimental attempt.

These limitations can be overcome by connecting to institutional databases (e.g. of the Police) and using new information technologies, such as Big data analytics tools. The next steps of the research will address these aspects.

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Uno dei principali requisiti per il buon funzionamento delle città, e per la loro sostenibilità, è che esse siano dotate di strade e spazi pubblici sicuri. Tale circostanza è ribadita dagli obiettivi di sviluppo sostenibile dell'Agenda 2030, in particolare dal Goal 11 con il quale si promuove la creazione di città sicure, oltre che inclusive, resilienti e sostenibili.

La sicurezza in città è ostacolata quotidianamente dal verificarsi di reati predatori o episodi di inciviltà che condizionano la percezione di insicurezza innalzando la paura.

La crescente domanda di sicurezza avanzata dai cittadini impone un cambio di prospettiva rispetto agli approcci sino ad ora adottati per far fronte a tale problematica.

L'obiettivo di rendere la città più sicura non può essere perseguito esclusivamente con azioni di controllo o di tipo repressivo o con sporadici e generalizzati interventi di matrice sociale. È necessario affrontare la problematica in una prospettiva multidisciplinare e multilivello, seguendo un *approccio integrato* che inglobi in sé considerazioni, competenze, strategie ed azioni di natura urbanistica, architettonica, sociologica, criminologica, giuridica e politica.

Alla luce di quanto osservato, la raccolta si configura come occasione per riflettere, in maniera più attenta, su una tematica di particolare complessità, integrando saperi e punti di vista differenti che possano guidare l'urbanistica verso la predisposizione di azioni specifiche, eventualmente da poter contemplare nel Piano Urbanistico Comunale, per l'adeguamento, nel tempo, degli spazi urbani a criteri di sicurezza.

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