

Social inequalities in the metropolitan area of Rome. A multidisciplinary analysis of the urban segregation of the “formerly-Bastogi” compound

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Abstract

Background. This study tries to evaluate, through a multidisciplinary approach, the relationship between urban structure, isolation and distribution of social determinants of health, in the so-called “formerly-Bastogi, a compound, with more than 1,500 inhabitants, located in north-western Rome, Italy.

Methods. The architectural-urban analysis, conducted through site visits and evaluations of urban situation, showed how strongly the compound is isolated from the neighbourhoods, and structurally degraded. The socio-demographic analysis, based on the National Census data, showed significant differences in the distribution of the social determinants of health between “formerly-Bastogi” and the surrounding areas.

Results. The area under study appears to be isolated from the surrounding urban space, both because of social and architectural factors. This situation could have some association with inhabitants’ health.

Conclusions. If our preliminary investigation was useful for a diagnosis of the situation, a more complete – qualitative and quantitative – investigation of the context will be needed to plan appropriate multidisciplinary health-promoting interventions.

Introduction

Nowadays, the role of socio-economic status in the development of health inequalities is clearly recognized throughout the international scientific literature (1).

In recent years, with regard to the current debate on health inequalities, the need to consider a wider range of aspects than the pure economic aspects has emerged, adding research also on social, cultural and environmental issues (2-7).

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Urban areas, which include the combination of physical, social, political and narrative characteristics pertinent to a specific place, should be investigated under the light of possible health determinants, focusing our attention on the interaction between economic, socio-cultural, environmental and political-administrative dynamics that evolve within and through each specific urban area (8-11). It is therefore necessary to observe the relationship among inequalities in health, education, economic hardship and housing, placing emphasis on the socio-environmental problems that are typical of the marginalized parts of a city.

The so-called “urban divide” – the creation of an intra-metropolitan duality between neighbourhoods or areas where wealth (tangible or intangible) is produced and enjoyed and neighbourhoods featuring poverty and social exclusion (12, 13) – is closely linked to the study of the effects of a clear separation and segregation at a neighbourhood level. In Italy, the city of Rome is largely defined by spatial segregation (14), and certainly the residential area that is the subject of our study, “*formerly-Bastogi*”, is emblematic. This clear-cut intra-city spatial distinction and its effects on health have been the subject of in-depth analysis by areas of study (that are unfortunately often too specific and limited) such as sociology, anthropology, urban planning, and in recent years public health medicine, using a global health approach, through the study of the social determinants of health and their unequal spatial distribution, as scholars attempt to close the gap on knowledge and analytical skills through the study of urban health (15).

Current European and Italian studies on the issue of urban and social marginality have focused almost exclusively on specific areas and people (e.g. immigrants, the homeless, or the poor in general (16). However, this approach leads us to lose sight of the widespread condition of “multi-

vulnerability” (17), that is typical of all those sections of the population that live under conditions of urban unease, to a greater extent in contexts where, due to the very nature of social relationships, it is sometimes extremely complicated to enter and carry on any kind of study (18). Quite often, in Italy, these situations arise within the large public housing complexes that were built and developed in the late 1970s and early 1980s throughout the nation.

Aims of the study

The general goal of this study is to investigate the relationship between spatial isolation, urban deprivation and the social determinants of health (19). Specifically, formerly-Bastogi is studied through a multidisciplinary framework that confronts this context with the surrounding area, within the Metropolitan Area of the City of Rome (20). Our analysis was based on a urban perspective – which allowed us to observe the area under study in a wider context that includes the surrounding territory – an architectural perspective – allowing for the assessment of the critical aspects within the area – as well as a socio-demographic viewpoint and approach, in a wider Public Health vision.

Methods and materials

In structuring the following analysis, observational methods that are typical of both architectural and epidemiological studies have been used.

Urbanistic and Architectural study

The architectural analysis was articulated following a specific sequence and timing. Indirect analysis was carried out through prior research and retrieval of documents that included: survey of the approved project (site plan, building plans and sections), demographic data, historical documentation,

and excerpts from the two General Urban Development Plans of Rome of 1965 and 2008). Subsequently, the survey allowed for a broader understanding of territorial framework with systemic analysis on: parks, mobility and services, and the environmental situation.

1. Analysis of the regulatory instruments in force

- analysis of the approved project regarding the formerly-Bastogi building complex (site plan, building plans and sections);
- study of the territorial framework on extracts from the General Urban Development Plans of Rome (1965 and 2008). This operation made it possible to assess the adequacy of the building assets with respect to current legislation for the purpose of safeguarding and enhancing both public space and individual buildings;
- on the other hand, a direct analysis was carried out through an evaluation of the social and living conditions as will be shown below.

Analysis of the architectural assets of the site and individual buildings

- map of past and present intended uses;
- property distribution map;
- analysis of the services and facilities;
- survey on the accessibility;
- on-site analysis carried out through inspections (in all, 20 inspections were carried out) with spatial and energetic dimensional measurements (photographs, surveys, thermo-graphic analysis, etc.);
- meetings and questionnaires administered to the inhabitants (a questionnaire on social and living conditions was administered and planning roundtables were held).

Census data extraction and statistical tests

Formerly-Bastogi is located in the area of the XIII Municipality of Rome (21). The comparison between the demographic characteristics of the population of formerly-

Bastogi with those of the other areas of the XIII Municipality was based on the informations extracted from the 15th ISTAT 2011 General Population and Housing Census (ISTAT, Piattaforma LOD). In the analysis, the subdivision in Urbanistic Zones (*Zone Urbanistiche*), UZs of the City of Rome was used; according to this subdivision, carried out in 1977, Rome is made up of 155 UZs (21). The division took place according to criteria of urban homogeneity, based on the socio-economic characteristics of the population.

The UZs corresponding to the XIII Municipality of Rome were therefore taken into consideration: 18e-Casalotti di Boccea, 18f-Boccea, 18c-Fogaccia, 18b-Val Cannuta, 18d-Aurelio Nord, 18a-Aurelio Sud.

Specifically, the data relating to each UZ were extracted regarding gender distribution and makeup, population age, educational and employment status of the inhabitants, state of conservation of the buildings, number of foreign inhabitants, and total number of inhabitants. Information concerning the formerly-Bastogi area was isolated from the dataset of the corresponding UZ (Fogaccia). The Census Sections (CSs) pertinent to the areas of the buildings (sections: 3100056, 3100058, 3100062) were identified thanks to the online tool Bt.Viewer 1.1, made available by the ISTAT (The National Institute for Statistics in Italy), which allows the user to identify the codes related to the CSs of interest and extract data on the variables sought (22).

The ISTAT 2011 Census survey system is based on the compilation of a questionnaire by the respondents. The questionnaire was sent to all the families that were registered in municipal registers as of December 31st, 2010. Unlike other types of census and surveys, the General Census is a periodic research addressed not to a sample but to all the registered population. According to ISTAT, in order to make up for under-reporting, families were identified, as well

as with the Municipal Registry Lists, using also alternative systems. For any further information on the census survey, refer to the specific ISTAT Detection Manual (23).

The units of analysis for the information related to age, gender, level of education, employment status and presence of foreigners are the components of the interviewed families (23). The unit of analysis for the information related to the housing are the buildings, as reported in the Census Manual (23).

Data on the age of the population in the areas pertinent to this study were divided into 4 classes (“≤14 years old”, “15-39 years old”, “40-64 years old”, “≥ 65 years old”); data regarding the level of education were instead subdivided into 3 classes (“university degree or higher level degree”, “high school diploma or lower secondary school diploma”, “elementary school diploma or no qualification”).

As far as the employment status of the population is concerned, the variables “Resident population - total of 15 years or more employed” and “Resident population - total of 15 years and more unemployed and looking for new employment” were specifically extracted.

According to ISTAT, the state of upkeep and maintenance of the buildings refers to that stated by the families in completing the questionnaires on the basis of a scale ranging from “bad” to “excellent”; the information here is divided into two classes (“buildings in a poor and mediocre state of upkeep”, “buildings in good and excellent condition”).

For each Zone of the XIII Municipality and the formerly-Bastogi area, these variables were then detailed and described with regard to gender, age, employment status, educational level, state of buildings, and percentage of foreigners in the resident population.

The relative frequencies for the variables regarding age, gender and presence of

foreigners were calculated by dividing the absolute frequencies by the total census population. The relative frequencies of the variable level of education were calculated considering the population more than 6 years old (Census Variable P46) as the total; indeed, as reported in the Detection Manual (23), the section of the Census interview regarding the level of education is addressed exclusively to people who are more than 6 years of age.

What regard to the employment status, on the other hand, while calculating the relative frequencies, the sum of “employed” and “unemployed/looking for a work” was considered as the total. The sum largely matches with the total workforce (variable n P60). In detail, the sum of employed and unemployed people looking for job corresponds to: 96% of the total workforce of the UZ Casalotti di Boccea, 97% of the total workforce of the UZ Boccea, 98% of the total workforce of the UZ Aurelio Sud, 98% of the total workforce of the UZ Aurelio Nord, 98% of the total workforce of the UZ Val Cannuta, 96% of the total workforce of the UZ Fogaccia, 93% of the total workforce of the formerly-Bastogi area.

The relative frequencies for the variables related to the state of buildings was calculated by dividing the absolute frequencies by the total amount of buildings reported by the Census results.

The variables of the formerly-Bastogi area and the UZ of Fogaccia were compared through the chi-square test. The significance level was set at $P < 0.005$.

We then proceeded with a comparison and analysis of all the UZs of the XIII Municipality and the formerly-Bastogi area with the variables that can be taken into account in the assessment of social deprivation (24, 25), namely: employment status, education level, and the state of conservation and upkeep of buildings. The percentage of foreign or immigrant population was also considered. The comparison between all the

zones was carried out using the chi-square test, applying the Bonferroni correction for comparisons between two single zones/areas. Statistical analysis was performed using the Stata 13.0 software.

Results

Results of the urban and architectural analysis

Spatial Isolation

Located on a hill and surrounded by perimeter walls that run along the area of the residential complex, formerly-Bastogi appears to have been designed to remain well separated from the surrounding urban areas. In order to evaluate the spatial isolation of the Bastogi complex, seven aspects were taken into account.

Legal framework of the research setting

The building complex in this study, known as “formerly-Bastogi”, was built in the early ‘80s, when the Bastogi building company constructed a Residence to be used as temporary accommodation for Alitalia Airlines personnel and for the patients from the *Santa Maria della Pietà* Hospital in progressive dismissal. Towards the end of the 1980s, some associations of citizens with housing problems, having become aware of the existence of such underused complex, began to illegally occupy some buildings of the area under investigation. This event marked the onset of a long negotiation between the City of Rome and some associations of citizens requesting the regularisation of assisted housing and the assignment of these apartments to the occupying families. The city government, with the aim of finding a solution that could

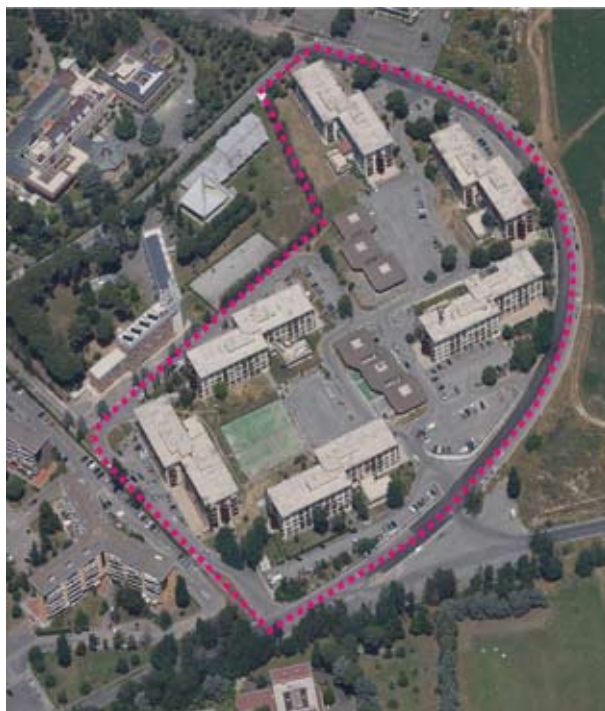


Fig. 1 - Aerial photograph of the formerly-Bastogi area. Source: Images ©2018 Google, cartographic data ©2018 Google (modified by the authors).

be accepted, decided to buy the buildings from the Bastogi Company and in 1992 prepared the reassignment of housing to the occupants by distributing the vacant spaces to 540 families from five private residences (*Roma, Bravetta, Due Torri, Val Cannuta, Fabianella*).

The line of the program carried out by the administrators at that moment was to definitively close the so-called “temporary housing assistance residences”, officially called Temporary Housing Assistance Centres (CAAT, or *Centri di Assistenza Alloggiativa Temporanea*) (26), and move part of these people to the formerly-Bastogi buildings. The housing assignments were proposed on a temporary basis (the city government and municipality assured that the period of stay would last at most a few months), pending final assignment in permanent homes, under the Italian acronym ERP (*Edilizia residenziale pubblica*, public housing) (27).

The objective overcrowding of the buildings, a multitude of problems affecting people who had been assigned these homes, as well as the inadequacy of the accommodation and the perception of a kind of transience extended over the years without any hope of being transferred to the ERP by the municipality, have all been factors that have contributed to aggravate the state of social hardship of these inhabitants, paired with the structural conditions of the buildings and facilities in general.

In 2013, considering the difficult situation that had arisen, the Municipality passed a resolution (28) for the assignment of homes through a “special offer” to the people living in these buildings (this assignment included the assignees of different private residences, which - despite the limits set ten years beforehand - were still open). The provision for the transfer of several families (about 100) coincided with a particularly critical moment in the history of formerly-Bastogi, in which, as in other contexts that had to be

“protected from the market”, also through the so-called Zone Plans (*Piani di Zona*), the assignees, working within a context that lacked legal controls, began to resell the apartments to new families that needed homes (stipulating irregular contracts based on arbitrary sums of money). In this climate of increasing anarchy and lack of control by the local authorities, a parallel activity of illegal buying and selling of apartments developed.

Currently, the “cloud” that has always enveloped these buildings makes it impossible to accurately establish the legal status of the formerly-Bastogi compound, as there are no reliable lists of assignees and only a part of the actual residents is included in the registry. In addition to official assignees, we can find long-term occupants, occupants owning an illegal document of acquisition, as well as regular apartment owners and tenants. Clearly, resolving this situation today is a rather difficult challenge, considering above all that we are not dealing with an isolated situation within the city of Rome.

Therefore, the tragic singularity of the formerly-Bastogi complex is currently due to the impossibility of attributing any legal status to this area. The building complex does not fall within the classification of Temporary Housing Assistance Centres (it has in fact been excluded by recent provisions concerning CAAT), or that of illegally occupied buildings (the buildings are only in part illegally occupied) and it can’t fall under permanent housing projects, or ERPs (the apartments are not compliant with current legislation and norms). No administrative legal provision can be implemented, due initially to the hybrid and indeterminate nature of the former Bastogi residential complex, which represents a sort of “Neverland” par excellence, in a literal and non-symbolic sense. This is a physical area that is owned by the municipality and city of Rome (“Roma Capitale”) (28) yet it does not fall under any official classification.

Architectural analysis

The people who live in the formerly-Bastogi area find themselves in an area of 5 hectares (12.36 acres), a place defined by decay and neglect.

The building complex began with urban planning and use defined as “private services” (zone M2 of the old City Plan of Rome of 16/12/1965), rather than what was termed as “expansion reserved for economic and public housing” (zone E3 of the same PRG), reason for which the complex has neither the vocation nor the requisites suitable for proper housing for families.

However, as a matter of fact, this area is a district for residential use only, consisting of six, five-storey identical buildings built close each other, spatially segregated from the outside by a high perimeter wall, in turn surrounded by a large ring road without sidewalks. Therefore, this is a sort of island in the city (Fig. 1).

Furthermore, the area configuration and the distribution of buildings defines interstitial spaces that are not clearly identifiable. The areas outside the residential complex are more than half made up of an asphalted driveway surface, and about a third of the area is uncultivated and degraded green areas. The remaining part is home to two unusable football pitches and small paved areas.

Furthermore, the use of these spaces highlights the total absence of a functional or practical mix, to the detriment of the housing and living conditions. At the centre of this complex there are 6 small buildings, 130 square meters each, occupied by informal activities, with the exception of a nursery school and a centre for disabled and handicapped people, run by local institutions.

The ground floors of these buildings, originally designed as common spaces, currently lack any practical function and have fallen into total disrepair. The only exceptions are one space where two nuns

live, carrying out voluntary work, and another area where there is a boxing gym.

As far as the residential areas inside the buildings are concerned, there are 4 floors of 1240 square meters intended for residential living, which consist of what were once single rooms with a bathroom (of 26 sqm each), now used as apartments for families (despite the minimum endowment of the city of Rome, according to the Ministerial Decree 5/07/1975, of 28 square meters) (29), sometimes unfortunately merged into larger apartments. These conditions are exacerbated by the inadequate technological-building conditions: the lack of suitable thermal insulation as the prefabricated concrete panels have no insulation, obsolete windows that are not sealed and equipped with single glass panes; and, lastly, cooling systems are absent, as well as any heating system. There is no gas line, so gas cylinders are used, and the apartments often lack running hot water. There are frequent infiltrations of air and water, and condensation and moulds are very common. Moreover, there are also numerous problems regarding pipes and drains, caused by the lack of regular maintenance.

Urban Context

Through a systemic reading of the Regulatory Plan of Rome (NPRG Rome, 14/03/2008) we can see exactly how, moving from the central urban zones of the XIII Municipality to the peripheral zones (like the formerly-Bastogi complex), there is a progressive disappearance of the parts of the city that are in good condition, leading to an increase of degraded parts.

The Plan is divided into “Settlement System”, “Environmental System” and “System of Services and Infrastructures”(30) (Fig. 2).

This so-called “Settlement System” is subdivided into 4 types of “Cities” - these “types” are fundamental in order to understand the territorial differences, which, starting from those better condition, are:

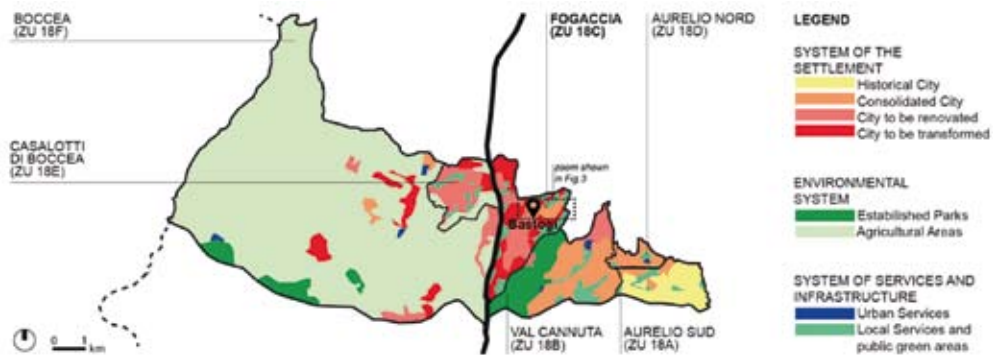


Fig. 2 - Maps of the XIII Municipality showing the Systems of the 2008 General Urbanistic Plan of Rome.

“Historical City”, “Consolidated City”, “City to be renovated” and “City to be transformed”.

While the first two are the parts of the city that are quite saturated and therefore complete, with the “Historical City” given greater attention than the “Consolidated City”, due to the recognition of its historical and qualitative value, the other two (in particular the latter) are parts of the city that need to be repaired and renewed,

also because of the presence of “illegal settlements” (which arose in contrast to the old PRG) or “spontaneous living” (which arose outside the old PRG, and therefore in the absence of planning).

From the table (Tab. 1) we can clearly see the gradual shift from the Historical and Consolidated Cities of the more central Urban Zones (based on the table, e.g. Aurelio Sud, Aurelio Nord and Val Cannuta) to the “City to be restored” and the “City to be

Tab. 1 - This table highlights the distributions of surface areas and percentages (in brackets) of the urban boundaries of the Urban Zones of the XIII Municipality, ordered from the periphery towards the centre. The columns regarding Fogaccia are highlighted.

		Boccea	Casalotti di Boccea	Fogaccia*	Val Cannuta	Aurelio Nord	Aurelio Sud
System of living (City Planning)	Historical City	- (0%)	- (0%)	- (0%)	- (0%)	- (0%)	1.91 km ² (61.1%)
	Consolidated City	0.82 km ² (1.7%)	- (0%)	0.54 km ² (10.7)	2.79 km ² (38%)	1.19 km ² (73.7%)	0.89 km ² (28.4)
	City to be Renewed	1.35 km ² (2.8%)	1.7 km ² (50.3%)	1.76 km ² (35%)	0.84 km ² (11.4%)	- (0%)	- (0%)
	City to be transformed	2.6 km ² (5.4%)	0.92 km ² (27.2%)	2.12 km ² (42%)	- (0%)	- (0%)	- (0%)
Environmental System	Established Parks	1.54 km ² (3.2%)	- (0%)	- (0%)	2.64 km ² (35.7%)	- (0%)	- (0%)
	Agricultural Areas	41.32 km ² (85.8%)	0.76 km ² (22.5%)	- (0%)	- (0%)	- (0%)	- (0%)
System of Services and Infrastructures	Urban level services	0.53 km ² (1.1%)	- (0%)	- (0%)	0.36 km ² (4.9%)	0.32 km ² (10%)	- (0%)
	Public Parks and Local Services	- (0%)	- (0%)	0.62 km ² (12.3%)	0.73 km ² (10%)	0.40 km ² (12.3%)	0.33 km ² (10.5%)

transformed” of the more peripheral areas (e.g. Fogaccia).

The formerly-Bastogi residential complex, which began as a private service building in the old PRG plan, is now part of the “Consolidated City”, however it is surrounded by fragmentary and uncontrolled housing (low houses formerly held by squatters or what were called “ex-spontaneous” living) that has created districts strongly lacking in primary urbanization (sewers, adequate roads, lighting, water, electricity and gas networks, equipped green areas) and secondary urbanization (services).

With regard to the “Environmental System”, the data refer to the macro areas of greenery or parks. These are the “Established Parks” as the Nature Reserve of the “Tenuta dell’Acquafredda” in Val Cannuta and the “Agricultural Areas” such as the Agro Romano, a vast rural area surrounding Rome, which covers a large part of Boccea and Casalotti di Boccea. From the “System of Services and Infrastructures” we can see how these are more concentrated in the most central urban areas (Aurelio Nord, Aurelio Sud and Val Cannuta).

The apparently high percentage of services found in Fogaccia refers to the numerous public parks in the urban area, only 3% of which is actually properly equipped

with services, whereas the remaining 97% is made up of abandoned and degraded areas.

Local public services are hardly reachable and not sufficient, in the surrounding there are just churches and sports facilities. The lack of services of common interest is evident, worsened by the complete absence of services that could carry out tertiary functions area. The distance between formerly-Bastogi and the first comprehensive service road is 1 km away, with the exception of a single supermarket, located 800 meters from the residence (Fig. 3).

Furthermore, traffic is a factor that contributes decisively to the isolation of the area from the urban context. Although the formerly-Bastogi area is served by several bus lines and is just 2 km from the metro service (metro A Battistini), any travel is strongly discouraged due to the absence of pedestrian pavements in most of the road sections. People generally travel by car, using the road system with local, urban and main roads. Moreover, the infrastructure is made up of narrow and inadequate road sections, and consequently a high level of traffic.

Making the living conditions even worse, there is a clear lack of squares and meeting places.



Fig. 3. - Aerial photograph of the area surrounding formerly-Bastogi. Images ©2018 Google, cartographic data ©2018 Google (modified by the authors).



Fig. 4 - Map of the XIII Municipality in Rome and the surrounding areas. UZs: “Zone Urbanistiche”

Results of the Census data extraction and statistical analysis

Proceeding from west to east and from the periphery to the centre, the zones included within the XIII Municipality are: Boccea, Casalotti di Boccea, Fogaccia, Val Canuta, Aurelio Nord, Aurelio Sud. The territory of the XIII Municipality, northwest of City of Rome, is similar to a triangle oriented along a northwest-southeast axis, whose base is represented by the more peripheral Zone of Boccea. The apex of the triangle corresponds to the Zone of Aurelio Sud, bordering with more central Zones, such as Trastevere and Borgo, as well as the Vatican City State. The formerly-Bastogi area is located inside the Fogaccia Zone (Fig. 4).

Comparison between formerly-Bastogi and Fogaccia

According to the ISTAT 2011 Census, there are 1,033 people residing in formerly-Bastogi, including 951 people more than 6 years old. The 2011 Census reports the employment status of 395 people, constituting the 93% of the total reported workforce (424 people).

Of the 1,033 people living in formerly-Bastogi, 548 (53.1%) are females and 485 (46.9%) males; the gender does not show significant differences ($P = 0.49$) compared to Fogaccia (females 51.9%, males 48.1%). The ISTAT 2011 Census reports that in the

formerly-Bastogi area there are a total of 6 buildings.

Regarding the distribution of age groups in formerly-Bastogi and Fogaccia, there are significant differences ($P < 0.00001$). The formerly-Bastogi area, compared to Fogaccia, has a greater component made up of children (> 14 years, formerly-Bastogi 20.3%, Fogaccia 14.7%) and under forty (15-39 years, 34.1% against 30%), while the elderly population appears to be less represented (Bastogi 8%, Fogaccia 16.9%).

Significant differences ($P < 0.00001$) also exist between the two areas with regard to the distribution of all the variables that can be taken into account in the assessment of social deprivation. Compared to Fogaccia, formerly-Bastogi has a smaller percentage of employed people (42.6% compared to 61%) and graduates (2.9% compared to 10.6%). On the other hand, it has a higher percentage of the population with an elementary school qualification or no educational qualifications (32.4% compared to 25%), the unemployed population (Bastogi 10.8%, Fogaccia 5.8%), and buildings in a poor or mediocre state of preservation (Bastogi 100%, Fogaccia 5.7%). Lastly, the percentage of foreign population is significantly higher ($P < 0.00001$) in the formerly-Bastogi area (18.1%) compared to Fogaccia (10.4%) (Tab. 2, Tab. 3).

Tab. 2 - The table shows the distributions of absolute frequencies and percentages (in brackets) of the formerly-Bastogi area and the Urban Zones of the XIII Municipality, ordered from left to right according to an order from the periphery to the centre. The columns related to formerly-Bastogi and Fogaccia have been made shady to favour the comparison between the two.

		Bastogi	Boccea	Casalotti di Boccea	Fogaccia*	Val Cannuta	Aurelio Nord	Aurelio Sud
Total Population		1,033	6,902	16,039	26,686	31,109	17,645	23,694
Gender	Males	485 (46.95%)	3,462 (50.16%)	7,605 (47.42%)	12,832 (48.09%)	14,343 (46.11%)	7,891 (44.72%)	10,563 (44.58%)
	Females	548 (53.05%)	3,440 (49.84%)	8,434 (52.58%)	13,854 (51.91%)	16,766 (53.89%)	9,754 (55.28%)	13,131 (55.42%)
Age	<14	210 (20.33%)	1,208 (17.50%)	2,427 (15.13%)	3,936 (14.75%)	4,245 (13.65%)	1,996 (11.31%)	2,852 (12.04%)
	15-39	352 (34.08%)	2,139 (31.0%)	4,971 (31.0%)	8,113 (30.4%)	8,016 (25.8%)	3,961 (22.4%)	5,307 (22.4%)
	40-64	388 (37.56%)	2,620 (38.0%)	5,919 (36.9%)	10,122 (37.9%)	11,505 (37.0%)	6,375 (36.1%)	8,842 (37.3%)
	>65	83 (8.03%)	935 (13.5%)	2,722 (17.0%)	4,515 (16.9%)	7,343 (23.6%)	5,313 (30.1%)	6,693 (28.2%)
Foreign Population		187 (18.10%)	622 (9.01%)	1,846 (11.51%)	2,777 (10.41%)	3,168 (10.18%)	1,099 (6.23%)	1,751 (7.39%)
Education**	University degree or advanced degrees	28 (2.94%)	773 (12.07%)	1,454 (9.69%)	2,729 (10.89%)	6,237 (21.26%)	4,135 (24.50%)	6,911 (30.60%)
	High school or middle school diploma	615 (64.67%)	4,155 (64.88%)	9,609 (64.03%)	16,130 (64.39%)	16,825 (57.34%)	9,728 (57.63%)	12,005 (53.16%)
	Elementary school or no diploma	308 (32.39%)	1,476 (23.05%)	3,945 (26.29%)	6,190 (24.71%)	6,280 (21.40%)	3,017 (17.87%)	3,668 (16.24%)
Employment***	Employed	315 (79.75)	3,059 (93.23)	6,590 (77.50)	11,262 (91.64)	12,979 (94.16)	6,861 (93.67)	9,684 (95.06)
	U n e m - ployed or looking for work	80 (20.25%)	222 (6.77%)	1,913 (22.50%)	1,028 (8.36%)	805 (5.84%)	464 (6.33%)	503 (4.94%)
Building state and upkeep	Great/good	0 (0.00%)	790 (85.68%)	1,254 (73.81%)	2,250 (94.30%)	1,799 (89.77%)	437 (94.79%)	815 (95.77%)
	Poor/very poor	6 (100.00%)	132 (14.32%)	445 (26.19%)	136 (5.70%)	205 (10.23%)	24 (5.21%)	36 (4.23%)

* the data relating to the census sections corresponding to formerly-Bastogi have been deleted from the Fogaccia area.

** the relative frequencies were calculated using the sum of the population more than 6 years old.

*** the relative frequencies were calculated using the sum of the employed and unemployed people looking for a job.

Tab. 3. - The table shows the P-value resulting from the comparison between the distributions of frequencies of the considered variables. Green: statistically significant at the chi-square test with the Bonferroni correction. Yellow: statistically significant at the chi-square test, not significant when applying the Bonferroni correction. Purple: Statistically non-significant.

Education							Employment						
Bastogi	Boccea	Casalotti di B.	Fogaccia	Val Cannuta	Aurelio Nord	Aurelio Sud	Bastogi	Boccea	Casalotti di B.	Fogaccia	Val Cannuta	Aurelio Nord	Aurelio Sud
Bastogi	-						Bastogi	-					
Boccea	<0.0001	-					Boccea	<0.0001	-				
Casalotti di B.	<0.0001	<0.0001	-				Casalotti di B.	0.296	<0.0001	-			
Fogaccia	<0.0001	<0.0001	<0.0001	-			Fogaccia	<0.0001	<0.0001	<0.0001	-		
Val Cannuta	<0.0001	<0.0001	<0.0001	-			Val Cannuta	<0.0001	<i>0.0495</i>	<0.0001	-		
Aurelio Nord	<0.0001	<0.0001	<0.0001	<0.0001	-		Aurelio Nord	<0.0001	0.4278	<0.0001	<0.0001	-	
Aurelio Sud	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	Aurelio Sud	<0.0001	<0.0001	<0.0001	<i>0.0026</i>	<0.0001	-
Building status and conditions							Foreign population						
Bastogi	Boccea	Casalotti di B.	Fogaccia	Val Cannuta	Aurelio Nord	Aurelio Sud	Bastogi	Boccea	Casalotti di B.	Fogaccia	Val Cannuta	Aurelio Nord	Aurelio Sud
Bastogi	-						Bastogi	-					
Boccea	<0.0001	-					Boccea	<0.0001	-				
Casalotti di B.	<0.0001	<0.0001	-				Casalotti di B.	<0.0001	<0.0001	-			
Fogaccia	<0.0001	<0.0001	-				Fogaccia	<0.0001	<i>0.001</i>	<0.0001	-		
Val Cannuta	<0.0001	<0.0001	<0.0001	-			Val Cannuta	<0.0001	<i>0.003</i>	<0.0001	0.3872	-	
Aurelio Nord	<0.0001	<0.0001	0.673	<i>0.001</i>	-		Aurelio Nord	<0.0001	<0.0001	<0.0001	<0.0001	-	
Aurelio Sud	<0.0001	<0.0001	0.101	<0.0001	0.419	-	Aurelio Sud	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-

Comparison between formerly-Bastogi and the Zones of the XIII Municipality

The variables considered for Bastogi and the Zones of the XIII Municipality are reported in Table 2 and shown in Fig. 5.

Significant differences ($P < 0.00001$) were found between the foreign population, the employment status, the level of education and the state of the buildings in formerly-Bastogi and the other zones of the XIII Municipality; the exception is the difference in the distribution of the employment status between formerly-Bastogi and Casalotti di Boccea, which has shown no statistical significance ($P = 0.296$) (Tab. 3).

Comprehensive comparison of all the Urbanistic Zones of the XIII Municipality

Results of the comparison of the same variables between the individual UZs of the XIII Municipality are shown in Table 3. In the analysis, the differences resulted to be statistically significant, with the exception of the following: the conditions of the buildings, between Fogaccia and Aurelio Nord, Fogaccia and Aurelio Sud, Aurelio Nord and Aurelio Sud; for the foreign population, between Fogaccia and Val Cannuta; the employment status, between Val Cannuta and Aurelio Nord, Aurelio Nord and Boccea. In addition to the aforementioned, applying the Bonferroni correction, there are no

significant differences when comparing: the conditions of the buildings, between Val Cannuta and Aurelio Nord, between Val Cannuta and Boccea; the variable foreign population, between Fogaccia and Boccea, between Val Cannuta and Boccea; employment, between Val Cannuta and Aurelio Sud, Val Cannuta and Boccea (Tab. 2, Tab. 3).

Discussion

The above analysis represents the initial step of a research path. Moreover, the statistical analysis is based on seven-years-old data (the ISTAT 2011 Census is the most recent available Census) and the Census data likely underestimates the formerly-Bastogi inhabitants. Nevertheless, it is possible to see from the results that the formerly-Bastogi context presents characteristics of both physical and social isolation from the surrounding neighbourhoods. In particular, the area of formerly-Bastogi is statistically different from the Urban Area inside which it is located with regard to the values of several unfavourable social determinants. Therefore, this area might be defined as an enclave, an island, not excessively distant from the main stops of the public transport network, which is however not easily used due to obvious

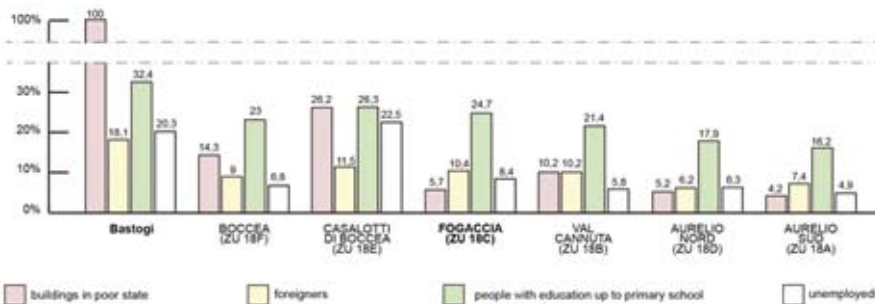


Fig. 5 - Relative frequencies of the state of building conditions and upkeep, the foreign population, employment status of the population of Bastogi and the Urban Zones of the XIII Municipality, ordered according to a periphery-centre trend. For statistical comparison between frequencies, refer to Table 3. The absolute and relative values of the frequencies are shown in Table 2.

limitations, such as the absence of sidewalks in certain stretches of road (31).

The analysis, carried out on all the Urbanistic Zones of the XIII Municipality, highlights a very unique feature of the urban fabric of Rome (32, 33), in particular regarding the physical (and social) limit represented by the so-called GRA (*Grande Raccordo Anulare*, Great Motorway Ring – Gra was also the name of the designer of the Ring, the Engineer Eugenio Gra!), the vast highway ring that surrounds by far the metropolis of Rome. From inside to outside, in fact, we observe a gradient (see Fig. 5) from the centre to the periphery in the distribution of some determinants, in particular the level of education and employment. From the most central areas, close to the Vatican City, we witness a statistically significant decrease in the educational level of the population, down to the Urban Areas of Casalotti di Boccea, just outside the GRA. The subsequent UZ of Boccea, however, shows indicators more in line with the central Areas, due to its residential character, with an urban design no longer characterized by a consolidated pattern, but rather a city that is spread out, with aggregates of single and family homes, immersed in the Roman countryside (based on census data). For the part of the city examined in this study,

therefore, we can say that social deprivation, measured through the distribution of specific social and environmental determinants, is concentrated in the areas straddling the GRA, decreasing as one moves away from it, be it moving towards or leaving the centre of the city (Fig. 6).

Moreover, formerly-Bastogi, albeit part of the Fogaccia Urbanistic Zone and in direct contact with the GRA, shows even worse indicators than the surrounding area, specifically with regard to the quality of construction and upkeep, and this is due on one hand to its peculiar building history and urban planning, and on the other one to the problems of legal framework described above, preventing an effective and continuous ordinary maintenance of these buildings.

The Roman case in housing occupations and squatters

This complexity, which is seen not only on the administrative level relating to ownership and management, but also on a political level of disputes and conflict, which responds to a specific strain and urgent question of an economic and social nature, does not represent an isolated case in the metropolitan context of the Municipality of Rome, from a strictly legal-administrative and social



Fig. 6 - Different urban patterns of nearby Urban Zones, on the left Fogaccia, on the right Boccea. The two Zones are separated by the “GRA”. Images ©2018 Google, cartographic data ©2018 Google

viewpoint (34, 35). On the one hand, if we see the growth of an entire “parallel” city, that is *abusive* meaning unauthorized, illegal, and in some cases squatting (a phenomenon virtually unknown in other countries - in fact, there is no perfect translation or word for it in French or German) (36). On the other hand, we have, as recently declared by the Mayor Raggi (37), about 200,000 vacant properties, and despite this about 10,000 people on the lists for access to public housing or assisted living. Within this context, the CAAT program arose, as mentioned previously, and according to Resolution 368/2013 of the City Assembly, the City spent annually 35 million Euros on this program. In fact, the city pays a lease to the owners of the properties in order to respond “in emergency” to a situation actually based on the very structure of the city. Despite the political will of all the previous and present administrations to overcome this program, it will be difficult to find a solution without further investments, both in economic and political terms. *Abusivismo*, this illicit and unauthorized housing solution, the ERP emergency management, and the lack of regulation of the building market and real estate sector, are all factors that over the years have contributed to create not only the “parallel” city mentioned above, but also an unspecified number (some tens of thousands according to some estimates) of people who do not have access to the ERP or CAAT programs (permanent assisted housing and living solutions), and so they had to take matters into their own hands. To date, within the City Municipality of Rome, there are roughly 50 housing “occupations” - buildings taken over by squatters - that are home to over 7,000 people. Therefore, we find ourselves with a third type of city, addition to the first “planned” city and the secondary illicit city (illegal housing). This third Rome can be described as an informal city composed by occupied buildings and squatters. On the one hand, we have the left-wing movements,

organizations that “*have reformulated the right to housing as a “diritto all’abitare”, or the right to live in a home*” (38), with three main groups: *Coordinamento Cittadino Lotta per la Casa*, *Blocchi Precari Metropolitani* and *Action* (loosely translated as “Citizen Group fighting for a home”, “Precarious metropolitan house seekers”, and “Action”). On the other hand, there is a vast amount of illicit and illegal actions, including the presence of the criminal organizations, devoted to the illegal sale of these apartments (39).

The study and understanding of contexts like formerly-Bastogi do not simply meet a specific research goal or objective, but rather these studies are aimed at exploring and understanding the complexity of all the similar situations that are currently present in the territory of the Municipality of Rome.

Conclusions

Internationally, empirical relationships between environment, social vulnerability and health have been observed and studied in many cities worldwide (40-43). At present, there is a rather scarce amount of standardised tools that allow for a clear understanding and interpretation of the phenomenon regarding the creation of inequalities in health and the everyday life in particularly marginalized contexts, such as that of formerly-Bastogi, characterized by a clear “informality” of their living and housing conditions. In order to face the growing interest in achieving meaningful, equitable and lasting solutions in contrasting and reducing inequalities in health, the need arises for new multidisciplinary approaches, oriented within an ecological model of health (44-46). The multidimensional approach proposed in this study aims to be a contribution in this direction, integrating a purely socio-demographic reading with that of architectural and urban planning

(47, 48). The attempt is that, beyond the understanding of this specific context, preparatory to an intervention that is currently being developed and which starts from the evaluations outlined here, in order to create a dialogue between methodologies and knowhow, reaching an understanding that may globally assess the complexity of the urban context.

Limits of this study

In this case study, defined by a high level of precariousness in living and housing conditions – along with a history of continuous squatting, evictions, attempts at stabilization, and therefore a certain fluidity in the social makeup – the classical study tools, based on the stability of the residence, appear evidently inadequate. As reported in the Methods section, the ISTAT 2011 Census survey system is based on the compilation of a questionnaire sent to all the families that were registered in municipal registers as of December 31st, 2010. This methodology probably didn't allowed to reach all the formerly-Bastogi inhabitants who live in that area and that are not registered in any kind of legal register. For this reason, it is likely that the Census data underestimate the actual number of formerly-Bastogi inhabitants, which – according to the esteem made by the research team and the inhabitants themselves, probably reaches up a number of about 2,000 people.

Future perspectives

Our research team, in collaboration with the Local Health Unit (*Azienda Sanitaria Locale* – ASL) Roma 1, the XIII Municipality of Rome, the NIHMP (National Institute of Health, Migration and Poverty) and the Department of Epidemiology of the Latium Region (Dipartimento di Epidemiologia), intends to put together a prototypical infrastructure analysis that will facilitate empirical studies in order to adequately capture the complexity of the

relationships between health inequality, socio-environmental and economic discomfort, and personal and collective health. The research team, recognizing the usefulness of national health survey systems (49) such as the questionnaire on Progress of Healthcare Trusts in Italy (PASSI), proposes the application of this tool to the formerly-Bastogi area and will extend its action by producing a study that focuses not only on the complexity of the relationships of inequalities in health, education and economic hardship, but also on the relationship between these determinants and the socio-environmental and psycho-social discomfort typical of marginalised urban settings (50).

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Riassunto

Disuguaglianze sociali nell'area metropolitana di Roma. Un'analisi multidisciplinare della segregazione urbana dell'area "ex-Bastogi"

Background. Lo studio vuole valutare, attraverso un approccio multidisciplinare, la relazione tra struttura urbana, isolamento e distribuzione dei cosiddetti Determinanti Sociali di Salute, nell'area chiamata "formerly-Bastogi", un complesso edilizio con più di 1.500 abitanti, nella zona nord-ovest della città di Roma.

Metodi. L'analisi architettonica/urbanistica, portata avanti con sopralluoghi e valutazioni delle fonti urbanistiche, mostra come il complesso sia isolato dal quartiere, e strutturalmente degradato. L'analisi socio-demografica, basata sul Censimento Generale del 2011, mostra significative differenze nella distribuzione dei determinanti sociali di salute tra formerly-Bastogi e le aree circostanti.

Risultati. L'area in studio risulta effettivamente isolata dal tessuto urbano circostante, sia dal punto di vista architettonico che sociale. Questo comporta delle conseguenze in termini di salute per gli abitanti.

Conclusioni. Occorre portare avanti uno studio approfondito del contesto, con metodologie quali-quantitative, così da guidare un intervento multidisciplinare di promozione della salute.

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