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TRACING THE ELEMENTS OF PRISON VIOLENCE

Abstract: Prison violence is a serious issue affecting inmates and staff worldwide. This study analyzes data from Greek prisons to identify factors associated with prison violence. The data includes statistics on the prison population, number of violent incidents, overcrowding, spatial density, and inmate/staff ratios. The findings indicate that overcrowding alone does not directly cause more violence. Rather, factors like facility management, architecture, inmate population characteristics, and staff training seem to have a greater impact. Overall, the study highlights the need for a holistic approach to prison management and design that considers the environment, population, and staff to reduce violence. The complex interplay of these elements must be examined to understand and prevent prison violence.

Key words: Prison violence, overcrowding, prison management.

1. INTRODUCTION

Violence is a serious problem in correctional institutions all around the world, in developed and less developed countries. Violence is perpetrated by prisoners against other prisoners and staff, and therefore it affects both groups. The use of force and violence by staff against prisoners has negative professional consequences for the person who uses it, for the prison organization due to the reactions it can provoke in the inmate population and the threat it can pose to order in the prison.

Prisons hold people with serious criminal records, troubled social backgrounds—often with a long history of violence as victims or perpetrators—in confined spaces against their will /Drossou, 2016/. These individuals come into close contact with each other and with the staff, who are far fewer in number, and there is a vast power imbalance between staff and prisoners /Homel, Thompson, 2005:101/.

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Although inmate violence is a significant factor in prison life and the operation of prisons in Greece /CPT/Inf 2014, 26, par. 132/, it is an issue that has only been sporadically discussed by Greek experts, competent ministers and political parties. Even when the topic is addressed /OSYE, 2017, 2018, 2019/, the discussion is based on specific events rather than on a strategy to control the problem based on studies and empirical data; an exception is a recent study which using data from all Greek prisons examines the relevance of prison characteristics to interpersonal violence and violence against staff /Lambropoulou, Milienos, 2023/.

2. FINDINGS' OVERVIEW FROM INTERNATIONAL RESEARCH ON CAUSES OF VIOLENCE

In prison sociology, there are two classical models for interpreting inmate behavior: the deprivation model and the importation model. According to the deprivation model, prisoners create a subculture that can eventually promote violence in order to feel that they control a part of their lives /Sykes et al., 1960/. In other words, the 'pains of imprisonment', or *stressors*, generate and reproduce violence / Tew, Vince and Luther, 2015; see also Hartenstein, Meischner-Al-Mousawi, Hinz, 2017/. The cultural importation model focuses on inmates' social and criminal backgrounds and their links to criminal groups as well as their cultural values in free society /Irwin, Cressey, 1962; Schrag, 1961/. Research has equally confirmed both models. Newer research based on these models has found that young age, short sentence length, gang membership and a pre-existing record of violent disciplinary violations in prison are related to prison violence as well /for an overview, see McGuire, 2018/.

In the last two decades, new approaches have been developed that complement the classical approaches, including the dynamic, transactional model /Bottoms, 1999/ and the occasional, situational model /Wortley, 2002/ and are both related.

The transactional model focuses on 'the continual dynamic process of interaction between the prisoners, the staff, and the environment they both inhabit' /Bottoms, 1999:212/. External influences (e.g. political pressures on prison directors) are also in a dynamic interaction. Violence is thus a result of both the people who are there and their interactions with the environment /Mandaraka-Sheppard, 1986:249; Wortley, 1996:115–117; see also Stenström and Pettersson, 2021/. For instance, Mandaraka-Sheppard's study /1986/ on the dynamics of inmate aggression in six women's prisons in the mid-1980s in England concluded that older inmates and other inmates who usually did not cause problems, tended to contribute to violent incidents when the administration was at risk of losing control of the prison for a variety of reasons (e.g. provoking the reaction of the prisoners due to severe disciplinary sanctions or the refusal of a [mass] request).

The situational model focuses on the relationship between 'specific kinds of behavior and specific aspects of the immediate environment' /Wortley, Summers, 2005:85/. The prison environment is not only the source of stresses and strains that may precipitate disorder (e.g. overcrowding, depressing architecture, inmate

violence), but also the provider of opportunities for disorder (e.g. inadequate surveillance, access to contraband) /Wortley, 2002/. For example, research by Edgar, O'Donnell, Martin /2012:101–123/ indicates that the likelihood of conflict and violence increases when it is assumed that the impact of conflict on staff behavior, prison rules and so on will be high, as well as when a reaction from competent government authorities is anticipated /see also Spain, 2005:73/.

Overall, empirical studies have identified that the main factors which affect the regular operation of a prison and cause outbreaks of violence are prison management, overcrowding, prison size, prison architecture, staff training, vulnerability to violence and gang membership.

In particular, several studies have shown that poor **prison management** and control is the most significant factor contributing to individual and collective prison violence /Ekland-Olson, 1986; McCorkle, Mieth, Drass, 1995; Homel, Thompson, 2005:104–105; Wooldredge, 2020/. Research has also found that management policies that enhance the responsibility of prisoners and minimize deprivation of liberty—for example, supporting prisoners' bonds with their families and ensuring fair enforcement of the prison rules—can reduce prison problems /Bottoms, 1999; Sparks, Bottoms, 1995/. Moreover, in a literature review on prison violence, McGuire notes that lower levels of violent misconduct are related to prisoners' feelings that they are treated in a procedurally fair and just way /McGuire, 2018:5; Neubacher, 2020/.

Numerous studies have examined whether violence is produced by the tension caused by **overcrowding** in prisons. They have found that overcrowding (in terms of rate of turnover and population density) is by no means a causal or main factor in violence; however, it can contribute to violence when combined with other factors, such as poor management, untrained staff and high staff turnover /Ruback,Carr, 1993; Gaes, 1994; Tartaro, 2002b/.

According to the meticulous meta-analysis of Franklin, Franklin, Pratt /2006/, inmate crowding emerged as a *weak* predictor of violence and misbehavior in prison. Similarly, the meta-analysis of Gadon, Johnstone, and Cooke found a non-significant relationship between crowding and institutional violence /2006:526, with various studies cited/.

Furthermore, older and newer studies associate overcrowding with **prison size**, prison regime (large prisons are usually maximum security) and prison effectiveness /Baggio et al., 2020; Farrington, Nuttall, 1980/. *Prison size* is regarded as a significant indicator for predicting prison violence, but the findings concerning the impact of prison size are inconsistent. For example, Farrington and Nuttall /1980/ concluded that assault rates for small and large prisons did not differ to a statistically significant degree, whereas McCorkle, Mieth, Drass /1995/ found that larger institutions (those with large average daily populations) had higher prisoner-staff assault rates. However, these prisons reported somewhat lower levels of assaults among prisoners. The latter again indicates that other factors might be more related to violence and the general behavior of convicts in prison (and after their release) than prison size, such as physical conditions, levels of security etc. /McGuire, 2018:5; see also Camp et al., 2003; Bierie, 2012, Rocheleau, 2013; cf. Hofinger, Fritsche, 2021/.

Prison architecture and prison size have sometimes been used as interchangeable concepts in literature, but it is not the same. Research in Europe and North America has defined three generations of prison design. The first generation of prison architecture dates back to the 18th and 19th centuries and corresponds to Bentham's Panopticon and, later its variation, the radial design (the 'Big House'). The space in these prisons is divided into rows of cells that consist of self-contained cell blocks. The second generation of prison design has a linear construction with dormitories and cells along long corridors (a 'telephone pole' design). In the third type, referred to as a podular design, cells, dormitories or sleeping rooms are positioned around the perimeter of a common dayroom 'pod', forming a housing/living unit.

Some studies have shown that group cell housing (wards/dormitories), namely prisoners living in a relatively small space, contributes to interpersonal violence, especially when there are neither security guarantees nor adequate selection procedures for inmates to be placed in wards /Dent, Dorrell, Howard, 2015/. Individual cells significantly reduce the potential for victimization and violence, but not for self-harm and suicide, which are more likely when inmates are alone in cells.

Moreover, studies have found that the linear architectural design of most prisons exacerbates violence due to the blind spots it creates /Farbstein et al., 1989; Zupan, Menke, 1991/. In addition, assaults are more common in cell areas than in work areas in linear prisons /McGuire, 2018:4/. The 'new prison philosophy' architecture developed in the 1970s, which adopts the podular design, reduces the number of unprotected spaces and facilitates direct supervision of prisoners /Tartaro, 2002a; Woodruff, 2017; Thelen, 2020/. However, the empirical studies for podular design are far fewer in number than those for linear design, and their results are contradictory /Grant, Jewkes, 2015; Tartaro, 2000, 2002b/. In addition, researchers warn that the successful implementation of podular design depends to a large extent on good governance, along with the selection and training of appropriate staff /Edgar, 2015:24; Farbstein et al., 1989/.

Staff inexperience is one of the most important factors related to assaults against them /Kratcoski, 1988/. Although there is evidence against a causal relationship, it is undeniable that 'inexperienced prison officers are more likely to engage in violent incidents because they are considered by inmates as 'ambiguous'' /Munro, 1995:245; see also Crewe and Liebling, 2015:14; CPT/Inf (2006) 41, par. 123/. Therefore, **training** programs (preliminary and recurring) for **prison staff**, primarily of guards, and support for prisoners seem to improve relations between the two groups and reduce violence against staff /Love, 1994/.

Vulnerability to violence is a serious issue of prison order. Research shows that (a) young people, homosexuals, transgender people and specific types of offenders (e.g. sexual offenders, drug offenders/addicts) are more **vulnerable to victimization** in prison, and (b) some inmates feel more vulnerable, and are in fact more vulnerable, to victimization and violence /Cooley, 1993; Edgar, O'Donnell, 1998:638/. However, UK studies have found that victims and perpetrators are not necessarily separate groups; a single group or individual may both victimize and be victimized /Edgar, O'Donnell, Martin, 2012:55–79; 98–100; Homel, Thomson, 2005:6; Hofin-

ger, Fritsche, 2021/. Furthermore, an American study found that the relationships between exposure to different types of violence and some forms of maladjustment (disruptive behavior and/or mental problems) varied across facilities, and the variation was influenced by the characteristics of the facilities in which prisoners were serving their sentence /Steiner, Meade, 2013/.

Research on **gang membership** and prison violence in the US demonstrates that belonging to a gang increases rates of violence and other forms of misconduct; yet, this must be considered in relation to the extent to which a prisoner is embedded within the gang, namely whether the prisoner is a core or peripheral gang member /Gaes et al., 2002/. In his overview, McGuire found 'a clear association between gang membership and likelihood of engaging in prison violence', despite 'some complex patterns' within these findings (e.g. gang membership before prison appeared less important than prison gang affiliation) /2018:5; Muntingh, 2009:15–16/.

3. THE RESEARCH

3.1. General Information about Greek correctional institutions

The Ministry of Citizen Protection (formerly the Ministry of Justice) runs 34 public prisons. Considering that in 1980, there were 28 prisons, in 1995, 27 and in 2004, 29, it is obvious that the construction of new prisons has remained at a low level in the last 40 years. Prison Law /GCC 1999/[1] distinguishes between *general* (Type A and B), *special* and *therapeutic* institutions. General institutions of Type A are for people on remand, declared guilty for debts and those sentenced to short-term imprisonment, while Type B for the rest prisons on the basis of crimes and sentences /GCC, Art. 19/. Special are the prison farms and the juveniles' institutions, while therapeutic the general– and mental hospital(s), and the detoxification center(s) for drug addicts. The Ministry from its side actually distinguishes in practice five categories of institutions on the basis of *prison regime, gender and age*[2]. These include (a) three farming half-way houses (rural) and one Central Prison Supply Storage Centre for inmates working in the bakery of the largest prison complex in the country; (b) three institutions for juvenile offenders (males 18–25 years of age)[3]; (c) eight closed prisons, one of them for convicted females; (d) three thera-

1 Greek Correctional Code. In October 2022 a new Correctional Code has been issued /Law 4985/22.10.2022/, actually amending the older one. It has introduced in the type of Special institutions the facilities for sex offenders, which until now operate informally in practice, as well as high security prisons and prisons for economic crimes /Art. 20/; the amended Code of 1999 foresaw for prisoners serving long sentences and for difficult prisoners to accommodate only in Type B facilities and/or in separate sections without any contact with the rest population /Law 2776/1999, Art. 11[4]/. These new institutions have not yet started operating officially though (November 2023). Since the present study has used data until 2022, we remain in the prison types of the old Correctional Code and that of the Ministry.

2 See also Law 3772/2009, Art. 20[1], Ministerial Decrees 103920/2009, 65116/2014 and 88741/2014, which introduced type C units and prisons for difficult and dangerous convicts and their abolition a few years later /Law 4322/2015, Art. 1[1]/.

3 Since 1998, there are no institutions for female juvenile offenders; those few given a prison sentence are accommodated in a special section of the prison for female convicts.

peutic institutions (one general hospital, one mental hospital and one detoxification center for drug addicts) and (e) 16 judicial prisons,[4] all of them closed, one for females awaiting trial. 'Judicial' and 'closed' prisons run under the same regime.

According to the General Secretariat of Crime Policy (hereinafter: General Secretariat), the current nominal prison capacity is 10,526 prisoners /WPB-ICPR, as of 01.01.2023/, and the inmate population density (hereinafter: population density), or occupancy level, has risen to 103.4%. This is higher than in 2018 (101%) and higher than the median population density per 100 available places in penal European institutions in the same year, which is 91.4 inmates per 100 places /Aebi, Tiago, 2018:65/. In 2013, the population density temporarily rose to 134% (as of 1 September 2013), the highest in Greek prison history. The population density initially decreased to 97.4% in December 2015, then increased again to 99% in June 2017 and further to 106.8% in January 2019 /WPB-ICPR, 2017; 2020/, despite the amendments on early release introduced in April 2015 and renewed three more times until August 2019 by the government[5].

Concerning the prison population, between 2015–2023, 21–32.6% are detainees awaiting their trial, 53–60% are of foreign nationality, 4.5–5.5% are women, 8–10.3% are between 18 and 25 years of age, 10–14% of the convicted persons are serving a life sentence, 22.5–31.8% are serving a prison sentence over 15 years, and 6.5–14.3% are serving a prison sentence for one to five years with an increase of these sentences from 2–5% after 2019 /General Secretariat, 2023/.

The unequal distribution of staff across prisons is remarkable. For example, in 2019, in a therapeutic institution, there was an inmate/staff (guards and special staff) ratio equal to .28 inmates per one staff member (23 inmates and 81 staff); in a female prison, this ratio was equal to .48 (131 inmates and 271 staff). Furthermore, the ratio of a general prison was equal to .72 (28 inmates and 39 staff), whereas in the country's largest prison with 1,474 inmates, there were 141 staff and the ratio equal to 10.45; in a general prison in the south of Greece, the ratio was 4.68 (529 inmates and 113 staff), while another general prison in the north of Greece, this ratio was 4.79 (584 inmates and 122 staff)[6].

There are no private prisons or public-private partnerships operating in the Greek prison system and the institutions are dispersed all over the country. Most prisons are of the second prison design, the linear architectural design. A few exceptions to the linear design are prisons from the 19th century constructed in a radial design, while there are no podular prisons.

3.2. Data sources

The empirical study of this work is based on two datasets. The first dataset includes the total number of prisoners (sentenced and on remand) between 2009

4 The judicial prison is typically for people awaiting trial. They are either on remand or they are to be tried on appeal or have been convicted for one offence and are on remand for a second one. In practice, they are common closed prisons.

5 Laws 4322/2015, Arts 14 [3,4]; 4411/2016, Arts 9,15 [1]; 4489/2017, Arts 43, 44; 4571/2018, Art.13, extended up to 31.8.2019.

6 Authors' calculations based on the General Secretariat of Crime Policy data.

and 2019 and the total number of serious incidents for the 34 prisons operating in Greece for each year. The data about the prison population, was collected by the Justice/Prison Statistics of the Hellenic Statistical Authority (ELSTAT) and the official website of the General Secretariat (from January 1st or December 31st of each year), whereas the number of incidents was provided by the General Secretariat in March 2020. The second dataset, which refers to all 34 prisons operating in Greece during the period 2015–2019, consists of the annual data of the official capacity, the total size (in 1,000 square meters), the number of inmates, the number of prison staff and the number of incidents (among prisoners and against staff), for each prison separately. This datafile was also provided in March 2020 by the General Secretariat, while in September 2023 some additional data was given; the current dataset is an updated and enriched version of a recently analyzed dataset /Lambropoulou, Milienos, 2023/.

Interpersonal violent incidents include only physical assaults and abuse among prisoners, whereas against staff, they include physical assaults and serious threats of exercising violence. This means that in the recorded incidents, whatever misconduct took place against the rules of the prison is not included. The recorded incidents were more or less the same types of 'interpersonal violence', and in a few incidents 'possession of a sharp object', 'exercise of psychological violence' or 'encouragement of other prisoner(s) to exercise violence' were also noted as further disciplinary violations.

The main hypotheses of the study are the following: (a) Overcrowded prisons have more violent incidents than not overcrowded; (b) Prisons with high spatial density have less incidents than prisons with low spatial density; (c) Prisons with high inmate/staff ratio have more violent incidents than prisons with low inmate/staff ratio; (d) Prisons with loose prison management and prisoner surveillance (e.g. agrarian prisons, semi-open prisons, juvenile institutions, therapeutic institutions) have fewer violent incidents than the rest; (e) The institutions for juveniles have a higher record of violent incidents than adult prisoners serving their sentences in general institutions.

The above hypotheses are going to be examined in the context of similarities among the 34 institutions (i.e., a case-oriented approach), according to the number of violent incidents among inmates and against staff, the prison– and spatial density and the inmate/staff-ratio. Moreover, it will be evaluated whether distinct clusters/groups exist among prisons, with respect to the number of incidents, and which are their main characteristics.

3.3. Method and Measures

In the present analysis, apart from the inmates-on-inmates and inmates-on-staff violent incidents, we consider prison size, population density, and inmate/staff ratio. However, since it is reasonable to expect high numbers of incidents in large prisons, prison violence has also been assessed in terms of the number of incidents per 100 inmates. To count the staff, the number of prison guards, external guards

and specialists working in prisons (psychologists, sociologists, criminologists, and social workers) has been cumulatively considered. The remaining staff (e.g., administrative, medical) have not been included because they are not in everyday contact with the prisoners, and the medical staff have a high turnover. Prison size is measured by the total area of the prison (in 1,000 square meters). It is necessary to mention that for 2015–2017, only the total number of staff from all prisons is provided and not separately from each prison; however, since the proportion of staff belonging to each institution is almost the same over the years, we used these proportions to make a projection of the total number of staff on the prison level; moreover, for one prison, the number of inmates and capacity for 2018–2019 were missing and these values have been replaced by the means provided by previous years.

Prisons are divided into two types: according to gender and age (Prison Type 1) and according to prison regime (Prison Type 2). *Prison Type 1* includes prisons for: a) males (N=29), b) females (N=2), and c) young males (N=3). *Prison Type 2* includes a) prison farms and the central prison supply storage center (N=4), b) general prisons (N=24), c) therapeutic institutions (N=3), and d) institutions for young males (N=3).

To assess the role of the number of staff on incidents, the inmate/staff ratio was computed by dividing the number of prisoners in each prison by the number of staff. Thus, a high inmate/staff ratio means that a small number of staff corresponds to a high number of prisoners. Furthermore, overpopulation was quantified by two measures: population density and spatial density. Population density, or occupancy level, is calculated by dividing the number of prisoners in each prison by the official capacity of the prison. Spatial density is calculated by dividing prison size (total area) by the number of prisoners, determining how many square meters correspond to each prisoner (i.e., high spatial density means that each inmate has more personal space). Although this measure is different from the prison cell spatial density, which only considers the size of the cells (not the total area), most of the facilities' space serves the everyday life of prisoners, therefore it still provides us with some insight on this aspect. Moreover, prison size is considered by carceral geographers.

3.4. Data Analysis

A descriptive statistical analysis, focusing on the most important properties of the two datasets, can be found at the beginning of our data exploration. Afterwards, the interest is focused on the second (more detailed) dataset to investigate the similarities between prisons, with respect to the number of incidents (per 100 inmates), the inmate/staff-ratio, the population-, and spatial density, over the years 2015–2019.

In detail, the statistical significance of the mean differences across time is evaluated by non-parametric methods, such as Friedman's test, along with pairwise comparisons using Wilcoxon test and a Bonferroni correction/adjustment /e.g., Conover, 1999/. The similarities between institutions are examined in terms of the multidimensional scaling method (using the chi-square distance between prisons and

Sammon's non-linear mapping /Sammon, 1969; Everitt, 2006/. Moreover, clustering methods (adapted for the longitudinal nature of our data), are used for investigating the underlying number of distinct clusters among 34 prisons. The data analysis was carried out using SPSS (28.0; IBM, 2021) and r-project (R Core Team, 2020).

3.5. Results

Figure 1 provides an overview of the violent incidents, in absolute numbers, and the prison population, for the period 2009–2019. As can be seen, violence among inmates and against staff shows a similar pattern, although inmate-on-inmate violence seems more intense. It is also interesting that although in the period 2014–2016 the prison population decreased, the total number of incidents remained at similar levels (it should be pointed out that the data depicted in Figure 1, refer to the number of prisoners or incidents, as have been counted by the end of the reference year, i.e., 31st Dec.).

[***Figure 1***] Number of Incidents and Stock Prison Population (in secondary axis), for the period 2009–2019.

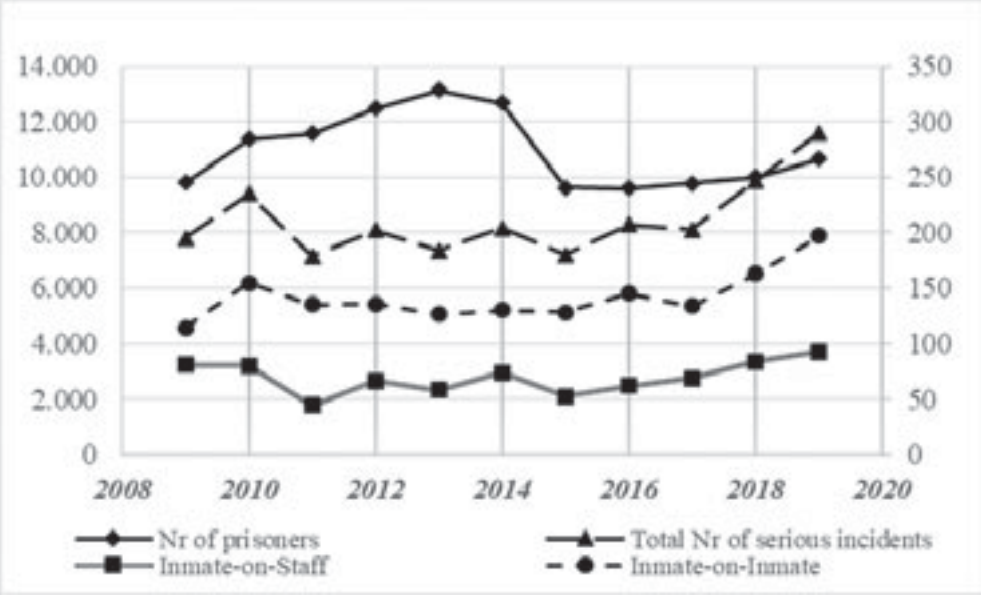


Figure 2 shows how the mean values of the number of incidents among inmates (in this dataset, all the values refer to what was counted at the beginning of the reference year, i.e., 1st Jan.), against staff and total (per 100 inmates) evolves during the period 2015–2019; it also shows the respective progress of the mean values of inmate/staff ratio, population density, and spatial density. It is worth mentioning that it is the timespan for which more detailed data have been provided by the General Secretariat and a period during which the same government had put in force consecutive prison decongestion measures.

As apparent in ***Figure 2***, from 2015 to 2017 the mean value of incidents among inmates was almost doubled (from 1.43 to 2.71), while the mean value of spatial density has increased (from 4.43 to 5.30), population density was decreased (from 1.51 to 1.16), and inmate/staff ratio was slightly increased (from 2.89 to 2.40). Therefore, although the conditions after 2015 seem to have been improved in many aspects, such as population density (decreased), inmate/staff ratio (decreased) and spatial density (increased), the total number of incidents has increased (from 2 to 3.97).

[***Figure 2***] Mean plots of incidents (per 100 inmates), population density, inmate/staff ratio and spatial density, for the period 2015–2019.

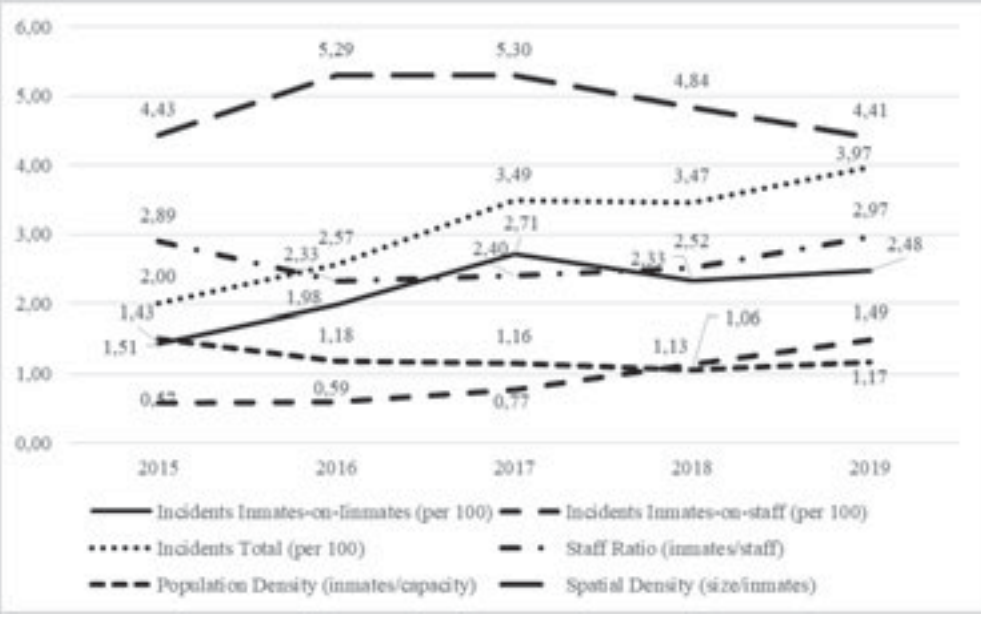
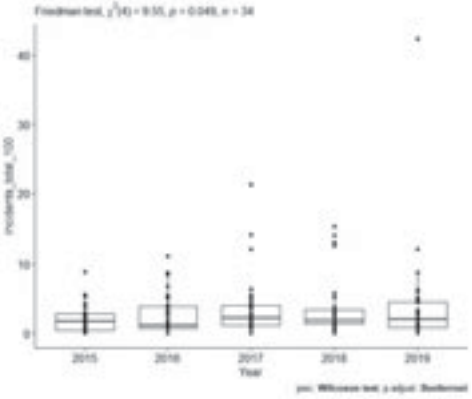
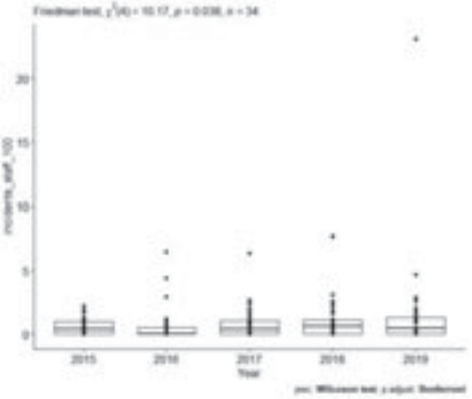


Figure 3 contains Friedman's test along with the pairwise comparisons, using Wilcoxon test and a Bonferroni correction/adjustment, to assess the statistical significance of the mean differences of the values across time. Thus, the differences of inmate-on-inmate incidents across time are not significant (at 0.05 level of significance), in contrast to the rest variables, namely the total number of incidents, the incidents against staff, the inmate/staff ratio, the population and spatial density. Furthermore, it seems that 2015 is a year significantly different compared to the subsequent two years (i.e., 2016 and 2017) concerning inmate/staff ratio, population-, and spatial density, i.e., 2015 has significantly larger inmate/staff ratio and population density, and smaller spatial density. It is the year when decongestion measures have been introduced to limit overcrowding.

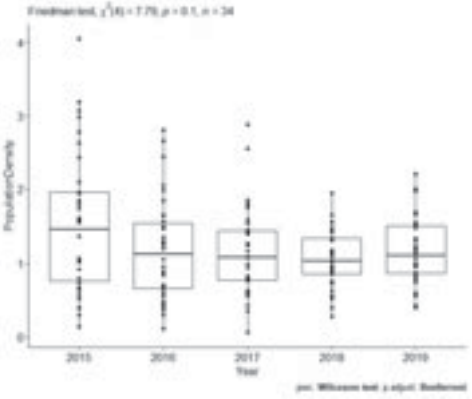
[***Figure 3***] Boxplots for each variable and year (incidents [per 100 inmates], population density, inmate/staff ratio and spatial density), along with Friedman's test and simultaneous pairwise comparisons, using Wilcoxon test and a Bonferroni correction/adjustment, for the period 2015–2019.



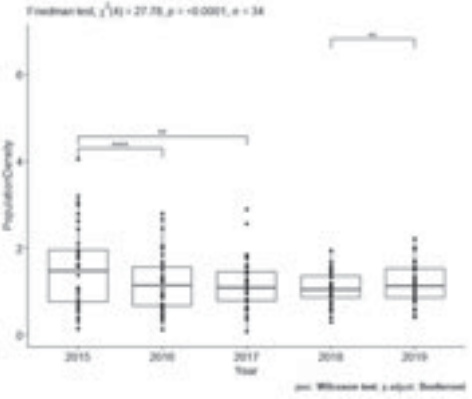
Total Incidents (per 100 inmates)



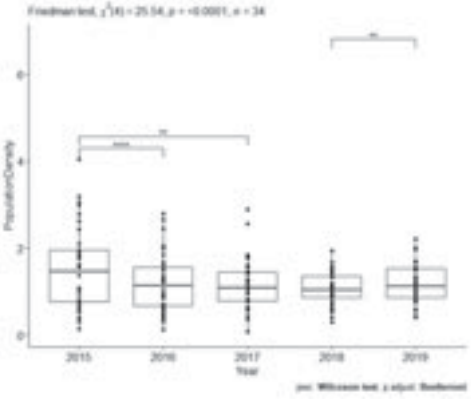
Incidents against staff (per 100 inmates)



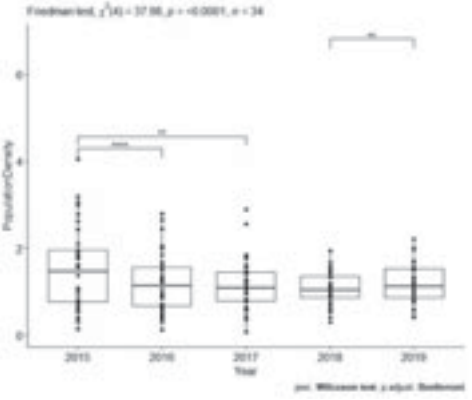
Incidents among inmates (per 100 inmates)



Prison population density



Prison Spatial density

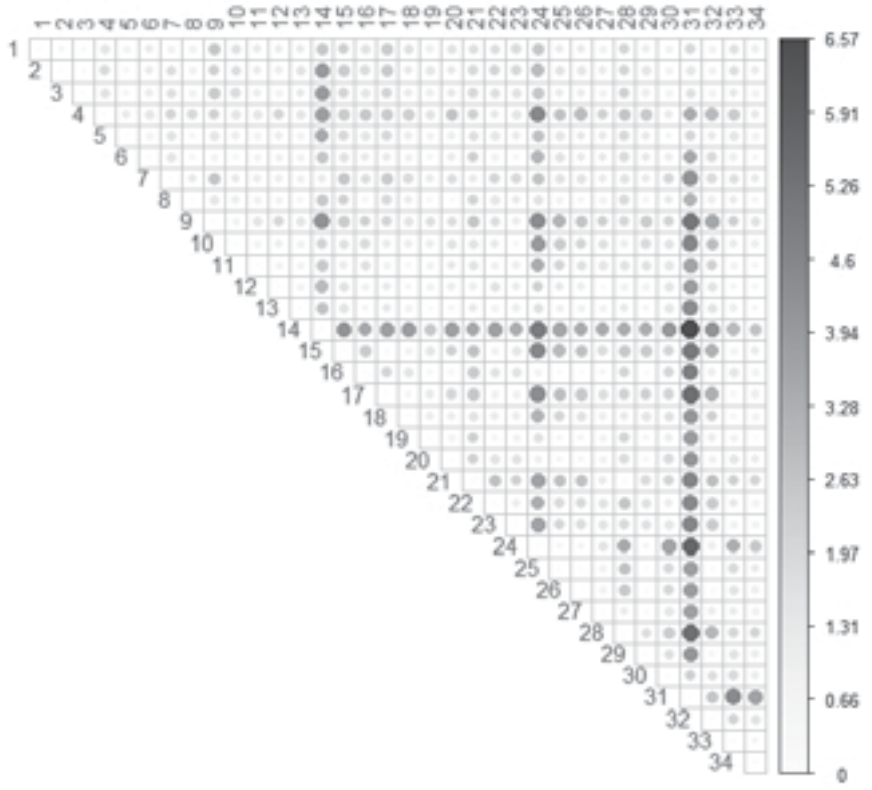


Inmate/Staff ratio

A step forward to our analysis was to examine the similarities between prisons and, as already referred to, whether these similarities can make distinct clusters/groups among prisons, and which are their main characteristics. Therefore, the multidimensional scaling method (with Sammon's non-linear mapping), on the chi-square distances between prisons has been used. In detail, the distance was computed using the number of inmate-on-inmate or against staff incidents (per 100 inmates), the inmate/staff-ratio, the population, and spatial density, over the years 2015–2019 (i.e., each variable was split into 5 variables, one for each year). For homogenization reasons and overcoming the effect of units of measurements, each variable has been divided by its total sum.

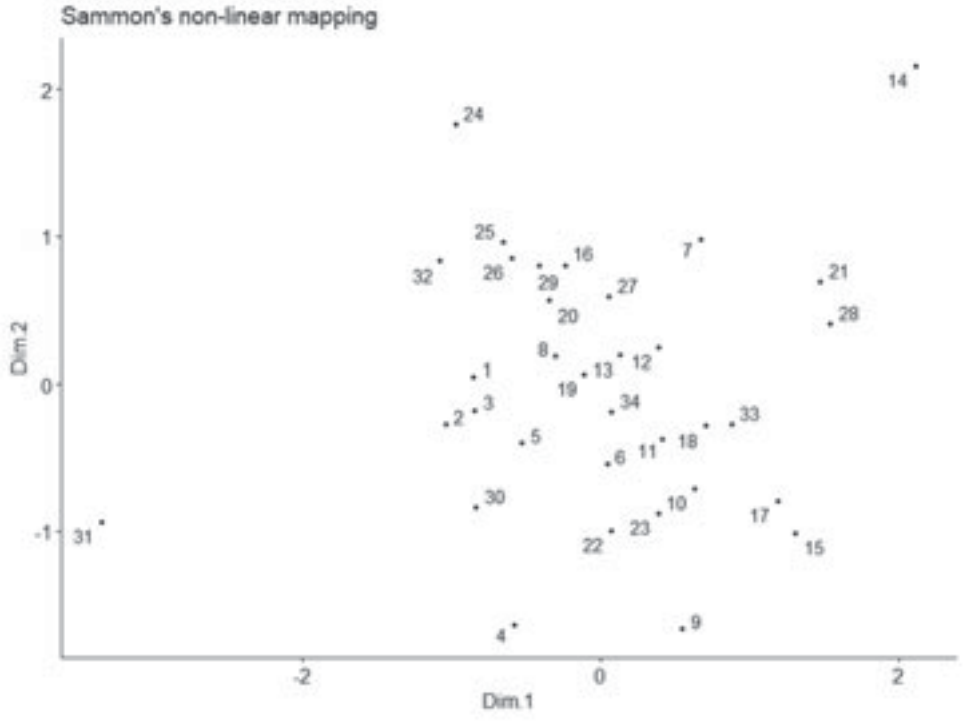
Figure 4 visualizes the distance matrix (that is, the longer the distance the more distinct profile between the pairs of prisons; note that large distances correspond to darker colors and larger dots/circles). As Figure 4 shows, there are some prisons (mainly, the prisons 14, 24 and 31, and to some extent, 4 and 9), which seem to have quite a different profile, compared to the rest ones. Prison 24, which is for sexual offenders (accused and convicted), has had only one incident in all these years. This confirms that sexual offenders avoid causing problems among themselves and to the administration, because they don't want to be transferred in another prison and being among inmates convicted for or accused of other crimes because they are in danger to be attacked. Quite similar to Prison 24 is Prison 31, one of the therapeutic institutions, which had no registered incidents at all. Prison 14, the biggest prison in the country, had no incident for three years (2015, 2016, 2019), whereas for two consecutive years, 2017 and 2018, it had 33 and 54 episodes, respectively (2.34 and 3.34 incidents per 100 inmates**).** This is not easy to explain; it cannot be excluded that the prison personnel authorities were not thorough enough and have not registered the eventual incidents. Since there is no central database in the General Secretariat into which each prison registers facts and figures in a standardized form, apart from general statistics on the number of prisoners, their gender, age, categories of sentences, etc. Thus, data collection is reliant on the diligence of each prison director or General Secretary. ~~In~~ Prison 4, one of the two female prisons, seems to have relatively large spatial density compared to the rest institutions (on average, 7.98 m^2 per inmate), while in Prison 9, one of the general prisons for persons convicted for serious crimes, the total number of incidents (per 100 inmates) in 2016 and 2019 are much larger (4.09 and 6.14 violent incidents, respectively) than what was observed the remaining years 2015, 2017 and 2018 (ranging from 1.22 to 1.65).

[***Figure 4***] Distance matrix using the computed by the chi-square distances between prisons, using the number of inmate-on-inmate or against staff incidents (per 100 inmates), the inmate/staff-ratio, the population-, and spatial density, for the period 2015–2019.



Furthermore, ***Figure 5*** provides us with a two-dimensional map, derived by the multidimensional scaling and Sammon's method; the distinct profiles of the three institutions (14, 24, and 31) referred to above, can also be seen. As we have indicated, these findings are mainly explained by the unexpected large number of incidents among inmates (per 100) in 2017 and 2018 for prison 14 (2.34 and 3.34, respectively, while all other years there were no registered incidents at this prison), the large population density of prison 24 and the low number of incidents (1), and the overall large spatial density of prison 31 with the absence of violent incidences.

[***Figure 5***] Two-dimensional map, derived
by the multidimensional scaling and Sammon's method.



To classify the institutions into homogeneous groups/clusters according to their number of incidents (per 100 inmates), a two-step cluster procedure was used (using log-likelihood as a distance measure, BIC[7] as a clustering criterion, and the number of incidents on inmates and against staff across 2015–2019 per 100, as clustering variables). Under this procedure, two clusters emerged from our data; the first Cluster contains 29 and the second 5 prisons (prisons 7, 10, 15, 30, and 33, belong to Cluster 2). Two prisons (***Table 1***), one for females and one for young males belong to Cluster 2, along with three prisons for males –one therapeutic, and two general. Prisons in Cluster 2 have more violent incidents than prisons in Cluster 1. ***Table 1*** also shows that the associations between Prison Type 1 or 2 and clustering are not significant (at 0.05 level), which means that there is no significant evidence for expecting specific types of prisons to belong to specific cluster. In addition, ***Figure 6*** (see also ***Table 2***) displays how the mean values of the variables, separately for each cluster, change over the years; the two clusters seem to have a different profile on incidents, in contrast to population density and staff ratio (and in some extend, to spatial density), which seem to be similar across clusters.

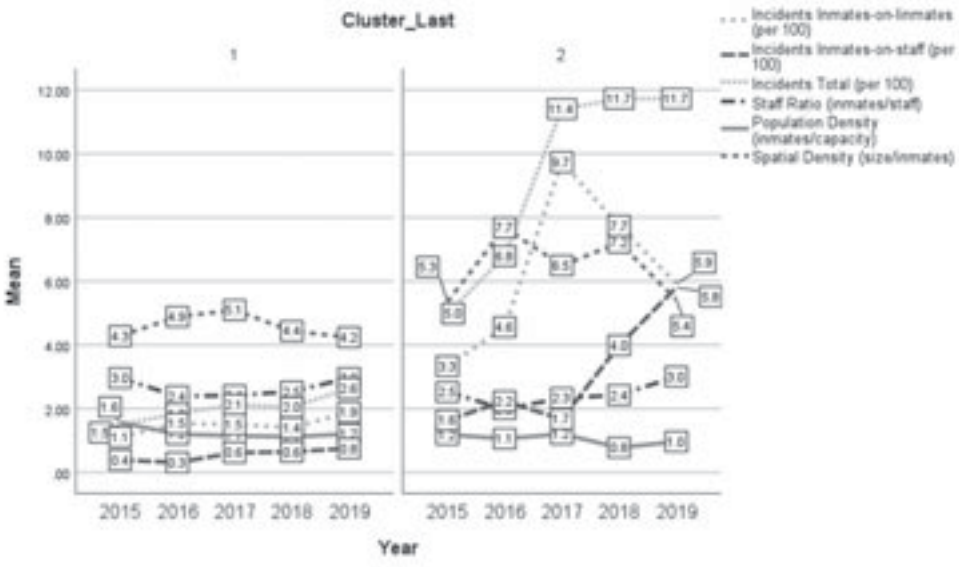
7 Bayesian Information Criterion.

[***Table 1***]. Prison type vs Clusters, along with Fisher exact test (assessing the significance of the association) and mean values of the total number of incidents (per 100 inmates), in parentheses.

Prison type according to gender	Cluster*/ mean values of total incidents			*Prison type according to prison regime*	Cluster*/ mean values of total incidents		
	1	2	Total		1	2	Total
Males	26 (1.82)	3 (10.29)	29 (2.70)	Young Males	2 (3.43)	1 (8.15)	3 (5.00)
Females	1 (4.59)	1 (7.59)	2 (6.09)	Prison farms	4 (1.23)	0	4 (1.23)
Young Males	2 (3.43)	1 (8.15)	3 (5.00)	Therapeutic	2 (1.40)	1 (7.97)	3 (3.59)
				General	21 (2.07)	3 (10.16)	24 (3.05)
Total	29 (2.03)	5 (9.32)	34 (3.10)	Total	29 (2.03)	5 (9.32)	34 (3.10)

*p>.05 (Fisher exact test)

[***Figure 6***] Mean plots of incidents (per 100 inmates), population density, inmate/staff ratio and spatial density, for the period 2015–2019, and for each cluster separately.



[***Table 2***]. Mean values of incidents (per 100 inmates), population density, inmate/staff ratio and spatial density, for the period 2015–2019, and for each cluster separately.

Year		Cluster	
		1	**2**
2015	Inmates-on-Inmates (per 100)	1.11	3.33
	Inmates-on-Staff (per 100)	.39	1.64
	Incidents Total (per 100)	1.49	4.97
	Staff Ratio (inmates/staff)	2.96	2.52
	Population Density (inmates/capacity)	1.57	1.19
	Spatial Density (size/inmates)	4.28	5.35
2016	Inmates-on-Inmates (per 100)	1.53	4.56
	Inmates-on-Staff (per 100)	.31	2.23
	Incidents Total (per 100)	1.84	6.79
	Staff Ratio (inmates/staff)	2.39	1.98
	Population Density (inmates/capacity)	1.20	1.06
	Spatial Density (size/inmates)	4.88	7.68
2017	Inmates-on-Inmates (per 100)	1.50	9.73
	Inmates-on-Staff (per 100)	.62	1.67
	Incidents Total (per 100)	2.12	11.40
	Staff Ratio (inmates/staff)	2.42	2.33
	Population Density (inmates/capacity)	1.15	1.20
	Spatial Density (size/inmates)	5.09	6.49
2018	Inmates-on-Inmates (per 100)	1.40	7.74
	Inmates-on-Staff (per 100)	.64	3.98
	Incidents Total (per 100)	2.04	11.72
	Staff Ratio (inmates/staff)	2.53	2.43
	Population Density (inmates/capacity)	1.11	.78
	Spatial Density (size/inmates)	4.43	7.21
2019	Inmates-on-Inmates (per 100)	1.88	5.92
	Inmates-on-Staff (per 100)	.75	5.80
	Incidents Total (per 100)	2.64	11.73
	Staff Ratio (inmates/staff)	2.96	3.00
	Population Density (inmates/capacity)	1.20	.96
	Spatial Density (size/inmates)	4.24	5.42

DISCUSSION

Overall, it has become evident that violent prison incidents and prison population growth over the last years are trending upward. Despite the remarkable decline in the prison population after 2015, the total number of violent incidents has not decreased. These results (although only for five years) strengthen the remaining findings of the research about the ambiguous impact of population density as a sole or main factor affecting prison violence (*hypothesis a*) and confirm the findings of several other studies /e.g., Gadon, Johnstone, Cook, 2006; Gaes, 1994; Tartaro, 2002b; McGuire, 2018/ that overcrowding is by no means a causal or main factor in prison violence.

From the results there are indications that prisons with less incidents (Cluster 1) have lower spatial density, than those with the most incidents (Cluster 2), contesting hypothesis b, although this is not clear and unambiguous. Similarly, other research has found that prison size is not necessarily correlated with prison misbehavior incidents /Lahm, 2009:134; cf. MacCorkle et al., 1995/.

In the present study the inmate/staff ratio seems not affecting the violent incidents; prisons in Cluster 1 and 2 have similar mean values ranging from 2.5 to 3.0, thus, hypothesis c has not been confirmed.

Moreover, the research has *generally* confirmed that prisons with loose prison management and prisoner surveillance (e.g., agrarian prisons, therapeutic institutions) have fewer violent incidents than the rest (hypothesis d) /see also Camp et al., 2003/; but this has not been confirmed for one of the three therapeutic institutions, which faces serious security shortages and inadequate staff training though.

Further, it has been verified that the institutions for juveniles have a higher record of violent incidents /Light, 1990; Spain, 2005; McGuire, 2018:3/ than adult prisoners serving their sentences in general institutions, i.e., 5.00 vs. 2.70 (Table 1) (hypothesis e), but not significantly different so that they remain to Cluster 1 (hypothesis d), apart from one which belongs to Cluster 2 with a large number of incidents (8.15). This facility houses young foreigners 18–21 years of age of 20 different nationalities, has high population– and spatial density, and high/inmate staff ratio. For example, there is inadequate space for the school, the social events are held in a small corridor, while in the single yard conflicts between the different ethnicities of the prisoners very often taking place.

As for the female prisons, both have high record of violent incidents (6.09), the one in Cluster 2 in the extreme (7.59), outnumbering the mean value of young inmates (5.00). However, international research demonstrates that in female facilities, institutional violence is at significantly lower rates than in male facilities /Harer, Langan, 2001/. In Greece, prisons for women, and in particular for sentenced prisoners, are in much better condition than those for men regarding the organization of the space, the friendly environment and the programs operating in them /see also Rocheleau, 2013/. There is also a separate living area for those few women who have a child with them (up to three years of age). Because no other relevant data are available about the prison environment, the sentences being served or the characteristics of the population to obtain a better understanding of the situation, we simply register this information. It cannot be excluded that the incidents in prisons for women are registered more thoroughly than in male prisons, and they might be less intense.

Although the picture is complex, and some contradictory results have emerged from the present study as well, research shows that a holistic approach to prison organization that takes into account its specific environment (e.g. levels of crowding, privacy), prison's structure (e.g. architecture, security level), characteristics of the prison population (e.g. age, social and crime type, sentence), and is supported by the administration, staff selection and training is perhaps the most promising model for reducing prison violence /Homel, Thompson, 2005:10/.

Using data collected by the General Secretariat from all Greek prisons, the research has shown that neither population-and spatial density, nor inmate/staff ratio have proved sufficient to explain violence in Greek penal institutions. To the contrary, age and prison management-prison type seem to have an impact on violent incidents. Therefore, prisoners' social characteristics, criminal records, sentences and crime convictions, the age, the ethnic constitution of the population, staff experience, environmental factors and the programs applied within a given time period must all be taken into consideration in order to gain an understanding of prison violence and consequently to control it.

REFERENCES

Aebi M.F., Tiago M.M. /2018/: *SPACE I– Council of Europe Annual Penal Statistics: Prison populations*. Updated on 11 June 2019, Council of Europe, Strasbourg, https://wp.unil.ch/space/files/2019/06/FinalReportSPACEI2018_190611–1.pdf.

Baggio S., Peigné N., Heller P., Gétaz L., Liebrenz M., Wolff H. /24 January 2020/: Do overcrowding and turnover cause violence in prison?, *Frontiers in Psychiatry,* 10, Article 1015, pp. 4, https://doi.org/10.3389/fpsyt.2019.01015.

Bierie D.M. /2012/: Is tougher better? The impact of physical prison conditions on inmate violence, *International Journal of Offender Therapy and Comparative Criminology*, *56*(3), pp. 338–355, https://doi.org/10.1177/0306624X11405157.

Bottoms A.E. /1999/: Interpersonal violence and social order in prisons, *Crime and Justice, 26*, pp. 205–281, https://www.jstor.org/stable/1147687.

Camp S.D., Gaes G.G., Langan N.P., Saylo W.G. /2003/: The influence of prisons on inmate misconduct: A multilevel investigation, *Justice Quarterly*, 20 (3), pp. 501–533, https://doi.org/10.1080/07418820300095601.

Conover W.J. /1999/: *Practical Nonparametric Statistics,* 3rd edn., Wiley, New York, NY.

Cooley D. /1993/: Criminal victimization in male federal prisons (Canada), *Canadian Journal of Criminology,* 35(4), pp. 479–495.

CPT / Inf (2006) 41: *Report to the Government of Greece on the visit to Greece carried out by the CPT from 27/08/2005–09/09/2005* (All reports available online at: https://www.coe.int/en/web/cpt/greece).

CPT / Inf (2010) 33: *Report to the Government of Greece on the visit to Greece carried out by the CPT from 17–29/09/2009*.

CPT / Inf (2014) 26: European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment. *Report to the Greek Government on the visit to Greece carried out by the CPT from 04–06/04/2013*.

Crewe B., Liebling A. /2015/: Staff culture, authority and prison violence, *Prison Service Journal*: *Reducing prison violence*, Issue 221, Special Edition, pp. 9–14.

Dent P., Dorrell D., Howard P. /2015/: Understanding prison violence. Trends and correlates, *Prison Service Journal*: *Reducing prison violence*, Issue 221, Special Edition, pp. 4–8.

Drossou X.-I. /2016/: *The micro-society of prisons and informal social control*. Unpublished doctoral dissertation, Panteion University of Social and Political Sciences, Athens, Greece.

Edgar K. /September 2015/: Conflicts in prison, *Prison Service Journal*: *Reducing prison violence*, Issue 221, Special Edition, pp. 20–24.

Edgar K., O'Donnell I./1998/: Assault in prison: The 'victim's' contribution, *The British Journal of Criminology,* 38(4), pp. 635–650, https://doi.org/10.1093/bjc/38.4.635.

Edgar K., O'Donnell I., Martin C. /2012/: *Prison violence: The dynamics of conflict, fear and power,* Routledge, London (Willan, Cullompton, 2003).

Ekland-Olson S. /1986/: Crowding, social control, and prison violence: Evidence from the Post-Ruiz Years in Texas, *Law and Society Review,* 20(3), pp. 389–421.

Everitt B.S. /2006/: *An R and S-Plus® Companion to Multivariate Analysis,* Springer, London.

Farbstein J. and Associates, Werner R. /1989/: *A comparison of 'direct' and 'indirect' supervision correctional facilities – Final Report*, National Institute of Corrections – Prison Division, United States Department of Justice, https://www.csc-scc.gc.ca/research/forum/e032/e032d-eng.shtml.

Farrington D.P., Nuttal C.P. /1980/: Prison size, overcrowding, prison violence, and recidivism, *Journal of Criminal Justice,* 8(4), pp. 221–231, https://www.doi.org/10.1016/0047–2352(80)90002–1.

Franklin T.W., Franklin C.A., Pratt T.C. /2006/: Examining the empirical relationship between prison crowding and inmate misconduct: A meta-analysis of conflicting research results, *Journal of Criminal Justice,* 34(4), pp. 401–412, https://doi.org/10.1016/j.jcrimjus.2006.05.006.

Gadon L., Johnstone L., Cooke D. /2006/: Situational variables and institutional violence: A systematic review of the literature, *Clinical Psychology Review,* 26(5), pp. 515–534, https://doi.org/10.1016/j.cpr.2006.02.002.

Gaes G.G. /1994/: Prison crowding research reexamined, *The Prison Journal*, 74(3), pp. 329–363, https://doi.org/10.1177/0032855594074003004.

Gaes G.G., Wallace S., Gilman E., Klein-Saffran J., Suppa S. /2002/: The influence of prison gang affiliation on violence and other prison misconduct, *The Prison Journal,* 82(3), pp. 359–385, https://doi.org/10.1177/003288550208200304.

Grant E., Jewkes Y. /2015/: Finally fit for purpose: The evolution of Australian prison architecture, *The Prison Journal,* 95(2), pp. 223–243, https://doi.org/10.1177/0032885515575274.

Harer M.D., Langan N.P. /2001/: Gender differences in predictors of prison violence: Assessing the predictive validity of a risk classification system, *Crime & Delinquency*, 47(4), pp. 513–536.

Hartenstein S., Meischner-Al-Mousawi M., Hinz S. /April 2017/: *Studie „Gewalt im Gefängnis"*, Kriminologischer Dienst des Freistaates Sachsen, Leipzig, https://krimpub.krimz.de/frontdoor/deliver/index/docId/167/file/2017_hartenstein_meischner-al-mousawi_hinz_studie-gewalt-im-gefaengnis.pdf.

Hofinger V., Fritsche A. /2021/: *Gewalt in Haft. Ergebnisse einer Dunkelfeldstudie in Österreichs Justizanstalten,* LIT Verlag, Wien.

Homel R., Thomson C. /2005/: Causes and prevention of violence in prisons– in: *Corrections Criminology* (S. O'Toole, S. Eyland, eds.), Hawkins Press, Sydney, pp. 101—108.

IBM Corp /2021/: *IBM SPSS Statistics for Windows, Version 28.0*, IBM Corp., Armonk, NY.

Irwin J., Cressey D.R. /1962/: Thieves, convicts and the inmate culture, *Social Problems,* 10(2), pp. 142–155.

Kratcoski P.C. /1988/: The implications of research explaining prison violence and disruption, *Federal Probation,* 52(1), pp. 27–32.

Lahm K.F. /2009/: Inmate assaults on prison staff: A multilevel examination of an overlooked form of prison violence, *The Prison Journal,* 89(2), pp. 131–150.

Lambropoulou E., Milienos F. /2023/: Factors of violence: A study in Greek prisons *Kriminologie – Das Online-Journal | Criminology – The Online* Journal, 5(1), 2023, pp. 29–51, https://doi.org/10.18716/ojs/krimoj/2023.1.2.

Light S.C. /1990/: The severity of assaults on prison officers: A contextual study, *Social Science Quarterly*, 71, pp. 267–284.

Love B. /1994/: Program curbs prison violence through conflict resolution, *Corrections Today,* 56(5), pp. 144–147, https://www.thefreelibrary.com/Program+curbs+prison+violence+through+conflict+resolution.-a015705521.

Mandaraka-Sheppard A. /1986/: *The dynamics of aggression in women's prisons in England,* Gower, Aldershot et al.

McCorkle R.C., Miethe T.D., Drass K.A. /1995/: The roots of prison violence: A test of the deprivation, management, and not so total institution models, *Crime and Delinquency,* 41(3), pp. 317–331, https://doi.org/10.1177/0011128795041003003.

McGuire J. /2018/: *Understanding prison violence: A rapid evidence assessment. Analytical summary*, HM Prison and Probation Service, London.

Munro F.M. /1995/: Social skills differences in aggressive and non-aggressive male young offenders within an unfamiliar social situation, *Medicine Science and the Law,* 35(3), pp. 245–248, https://doi.org/10.1177/002580249503500312.

Muntingh L. /2009/: *Reducing prison violence: Implications from the literature for South Africa,* CSPRI Research Report No. 17, Community Law Centre, South Africa.

Neubacher F. /2020/: On the development, origins and manifestations of prison violence – Evidence from a longitudinal study on young males and females in Germany, *Kriminologie – Das Online-Journal | Criminology – The Online Journal*, 2(3), pp. 372–393, https://doi.org10.18716/ojs/krimoj/2020.3.1.

OSYE (Confederation of Prison Officers in Greece), *Press releases.* 16 June 2017; 9 November 2017; 5 February 2018; 9 and 25 March 2018; 8 January 2019, https://www.osye.gr, no more available online.

Rocheleau A.M. /2013/: An empirical exploration of the 'pains of imprisonment' and the level of prison misconduct and violence, *Criminal Justice Review*, 38(3), pp. 354–374, https://doi.org/10.1177/0734016813494764.

Ruback R.B., Carr T.S. /1993/: Prison crowding over time. The relationship of density and changes in density to infraction rates, *Criminal Justice and Behavior,* 20(2), pp. 130–148, https://doi.org/10.1177/0093854893020002002.

R Core Team /2020/: *R: A Language and Environment for Statistical Computing*, R Foundation for Statistical Computing, Vienna.

Sammon J.A. /1969/: A Nonlinear Mapping for Data Structure Analysis*, IEEE Transactions on Computers*, C-18(5), pp. 401–409, https//:doi.org/10.1109/T-C.1969.222678.

Schrag C. /1961/: *Some foundations for a theory of correction* – in: *The prison. Studies in institutional organization and change* (D.R. Cressey, ed.), Holt, Rinehart and Winston, New York, pp. 309–357.

Spain A. /2005/: *Bullying among young offenders: Findings from a qualitative study* – in: *Bullying among prisoners, innovations in theory and research* (J. Ireland ed.), Willan, Cullompton, pp. 62–83.

Sparks J.R., Bottoms A.E. /1995/: Legitimacy and order in prisons, *The British Journal of Sociology,* 46(1), pp. 45–62, https://doi.org/10.2307/591622.

Steiner B., Meade B. /October 2013/: *Assessing the relationship between exposure to violence and inmate maladjustment within and across state correctional facilities*, Document No.: 243901, The National Institute of Justice Office of Justice Programs, Washington D.C.

Stenström A., Petterssonn T. /2021/ The micropolitics of conflicts in total institutions: The case of special approved homes for youths in Sweden, *Incarceration,* 2(1), pp. 1–18, https://doi.org/10.1177/2632666321993313.

Sykes G.M., Messinger S.L., Cloward R.A., McCleery R., Cressey D.R., Ohlin L.E., Grosser G.H., /1960/: *Theoretical studies in social organization of the prison,* Social Science Research Council, New York.

Tartaro C. /May 2000/: *The Impact of facility design and supervision strategies on jail violence*, PhD Thesis, Rutgers The State University of New Jersey – Newark, USA. UMl Number 9971498, Ann Arbor, MI.

Tartaro C. /2002a/: Examining implementation issues with new generation jails, *Criminal Justice Policy Review,* 13(3), 219–237, https://doi.org/10.1177/0887403402133002.

Tartaro C. /2002b/. The impact of density on jail violence, *Journal of Criminal Justice,* 30(6), pp. 499—510.

Tew J., Vince R., Luther J. /2015/: Prison culture and prison violence, *Prison Service Journal: Reducing Prison Violence*, Issue 221, Special Edition, pp. 15–19.

Thelen N. /13 August 2020/: *The benefits of podular jail design vs. linear*, https://www.samuelsgroup.net/blog/benefits-of-podular-jail-design-vs.-linear.

Woodruff L. /17 March 2017/: *Jail structure and design characteristics*, https://www.lexipol.com/resources/blog/the-evolution-of-prison-design-and-the-rise-of-the-direct-supervision-model/.

Wooldredge J. /2020/: Prison culture, management, and in prison violence, *Annual Review of Criminology,* 3(1), pp. 165–188, https://doi.org/10.1146/annurev-criminol-011419–041359.

Wortley R. /1996/: Guilt, shame and situational crime prevention – in: *The politics and practice of situational crime prevention* (R. Homel, ed.), Crime Prevention Studies, Vol. 5. Criminal Justice Press, Monsey, NY, pp. 115–132.

Wortley R. /2002/: *Situational prison control: Crime prevention in correctional institutions,* Cambridge University Press, Cambridge, UK.

Wortley R., Summers L. /2005/: Reducing prison disorder through situational prevention: The Glen Parva experience. –in: *Crime science: New approaches to preventing and detecting crime* (M.J. Smith, N. Tilley, eds.), Willan, Cullopton, pp. 85–103.

WPB-ICPR/World Prison Brief, Institute for Crime & Justice Policy Research, https://www.prisonstudies.org/country/greece.

Zupan L.L., Menke B.A. /1991/: *The new generation jail: An overview* – in: *American jails: Public policy issues* (J.A. Thompson, G.L. Mays, eds.), Nelson Hall, Chicago, pp. 180–194.

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PRAĆENJE NASILJA U ZATVORU

REZIME

Nasilje u zatvoru je ozbiljan problem koji pogađa zatvorenike i osoblje širom sveta. Ovo istraživanje analizira podatke iz grčkih zatvora kako bi identifikovalo faktore povezane sa ovim oblikom nasilja. Podaci uključuju statistike o zatvorskoj populaciji, broju nasilnih incidenata, prenatrpanosti, prostornoj gustini i odnosu između zatvorenika i osoblja. Rezultati ukazuju da prenatrpanost sama po sebi ne uzrokuje više nasilja – faktori poput upravljanja objektom, arhitekture, karakteristika zatvorske populacije i obuke osoblja čini se da imaju veći uticaj. Ovo istraživanje naglašava potrebu za holističkim pristupom upravljanju i dizajnu zatvora koji uzima u obzir okolinu, populaciju i osoblje radi uticaja na smanjenje učestalosti nasilja. Složena interakcija ovih elemenata mora se proučiti kako bi se razumelo i sprečilo nasilje u zatvoru.

Ključne reči: Nasilje u zatvoru, prenatrpanost, upravljanje zatvorom.

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