

The Mafia Index. A measure of the presence of the mafia across Italian provinces

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Introduction¹

The presence of the mafias in Italy is an irrefutable fact.² Surprisingly, however, a relatively small number of studies and publications have attempted to measure the presence of mafias on the Italian territory. This is remarkable, because measurements are fundamental in the perspective of supporting the law enforcement activity against the mafias. Probably, better data and information sharing, and therefore better measurements, could effectively contribute to Italy's efforts to prevent mafias or to enforce the law against them. The aim of this article is to partially fill this gap and present the Mafia Index (MI hereinafter), a composite index measuring the presence of mafias at the provincial level in Italy.

The following section (Section 1) discusses the shortcomings of the existing measurements of mafias in Italy, reviewing the most recent attempts to create indexes of the presence of mafias and/or organised crime. The article then presents the methodology used to create the Mafia Index (Section 2). The MI is analysed and discussed in Section 3. Section 4 concludes.

1. Problems relating to the existing attempts to measure the presence of mafias in Italy

Based on the foregoing brief review of existing attempts to measure the presence of mafia in Italy, this subsection analyses the current state of the art and identifies the problems with such research.

¹ This contribution is drawn from Francesco Calderoni, 'Where is the mafia in Italy? Measuring the presence of the mafias across Italian provinces', *Global Crime*, Vol 12 (1), 2010.

² For the purpose of this study, 'mafias' refers not only to the Sicilian Mafia but also to other criminal groups which share some significant features with the latter (although they are not the same phenomenon). Traditionally there are four main mafias in Italy: besides the Sicilian Mafia, there are the Camorra, the 'Ndrangheta and the Sacra Corona Unita. Some authors talk of a "fifth" mafia, referring to criminal phenomena exhibiting some of the significant features of the four main groups. This denomination has been applied to criminal groups in Sicily, Sardinia, Basilicata and Veneto (see for example, Bascietto, *Stidda. La quinta mafia, i boss, gli affari, i rapporti con la politica*; Sergi, *Gli anni dei basilischi*). In general, the category 'mafias' is widely accepted in the Italian literature (where *mafie* is the plural form of the word. See Santino, *Dalla Mafia Alle Mafie*; Fiandaca and Costantino, *La Mafia, Le Mafie*; Sciarrone, *Mafie vecchie, mafie nuove*; Pezzino, *Le mafie*.) and at the international level (usually including other phenomena such as the Yakuza, the Triads and the so-called Russian Mafia. See, for example, Varese, "How Mafias Migrate"; Naylor, "Mafias, Myths, and Markets: On the Theory and Practice of Enterprise Crime."). Moreover, it is customary to apply the term 'mafia' (in the singular) to criminal organizations other than the Sicilian Mafia. In Italy, the allocation of other similar criminal groups to the category 'mafia' also occurs in criminal law. The last paragraph of Article 416-bis of the Italian Criminal Code (mafia-type association) explicitly states: "the provisions above apply also to the camorra, the 'ndrangheta and other associations, however known or called, even foreign, which use the intimidatory power of the group to achieve the goals typical of a mafia-type association".

Some of the measurements considered do not allow comparison among different areas. This is the case of the Organised Crime Index (OCI) compiled by ISTAT,³ which measures regional trends compared to their level in 1995 (for each region 1995=100). The OCI cannot be used to assess whether there is more organised crime in Sicily than, for example, in Calabria or Veneto.⁴

The measurements reviewed are frequently made at the regional level or do not include all Italian provinces. In the former case, the analysis is limited to regions, which are relatively large areas and may comprise very different socio-economic and criminal contexts. Most of the measurements reviewed above were at regional level. Some studies conducted analysis at the provincial level.⁵ Only the studies by Mennella and Daniele and Marani analysed all the Italian provinces.

Most of the studies reviewed used data covering a limited time span. This may significantly affect the perception and measurement of the mafia. The latter, in fact, is an enduring and complex system which can hardly be measured with data relative to one or two years. Constructing an index with data limited to only a few years may prove problematic, given that the presence of the mafia lasts and changes over time periods longer than a calendar year. This problem affects most of the reviewed studies and indexes. The ISTAT OCI, the Eurispes *Indice di penetrazione mafiosa* (IPM, Mafia penetration index),⁶ Centorrino and Ofria,⁷ Mennella⁸ and Lavezzi⁹ used yearly data from one year to construct their indexes. Daniele and Marani¹⁰ and Censis¹¹ used data covering three or four years.

In some cases, the geographical scope and the variables used have changed among different editions of the measurements. This applies especially to the IPM, and it affects the possibility of

³ ISTAT, “B. Indicatori di contesto chiave e variabili di rottura.”

⁴ For example, the OCI for Sicily in 2006 is 48.3 while for Umbria (a small central region) is 304.3.

⁵ Eurispes, *16° Rapporto Italia 2004*; Censis, *Il condizionamento delle mafie sull'economia, sulla società e sulle istituzioni del Mezzogiorno*; Mennella, “Reti sociali, criminalità organizzata e mercati locali del lavoro”; Daniele and Marani, “Organized crime, the quality of local institutions and FDI in Italy”; Calderoni and Caneppele, *La geografia criminale degli appalti*.

⁶ Eurispes, *16° Rapporto Italia 2004*; Eurispes, *17° Rapporto Italia 2005*; Eurispes, *19° Rapporto Italia 2007*; Eurispes, *20° Rapporto Italia 2008*; Eurispes, *22° Rapporto Italia 2010*.

⁷ Centorrino and Ofria, “Criminalità organizzata e produttività del lavoro nel Mezzogiorno.”

⁸ Mennella, “Reti sociali, criminalità organizzata e mercati locali del lavoro.”

⁹ Lavezzi, “Economic structure and vulnerability to organised crime.”

¹⁰ Daniele and Marani, “Organized crime, the quality of local institutions and FDI in Italy.”

¹¹ Censis, *Il condizionamento delle mafie sull'economia, sulla società e sulle istituzioni del Mezzogiorno*.

comparing the IPM 2004 with the other editions (2005, 2007, 2008, 2010) in order to analyse the trends of the provinces.¹²

The variable selection is frequently problematic, and there is a significant variety among the measurements reviewed. First, the variables selected do not always directly concern organised crime. For example, data on bomb or fire attacks, usury or money-laundering include crimes not committed by the mafias. For this reason the use of such data to measure the presence of the mafia may provide unreliable information. In some cases, moreover, the measurements include indirect crimes and exclude offences more directly related with the mafia. For example, the ISTAT OCI includes arsons and serious robberies, but it excludes mafia-type associations. Second, some specific types of crime suffer from a very high ‘dark figure’ (i.e. unreported crimes), so that the official statistics are not likely to reflect the actual distribution of crimes, but rather the population’s propensity to report them. For this reason these data are extremely unreliable and should be analysed with great caution. Extortion is a typical example. The threat of retaliation for reporting extortion to the police is very serious when it involves a mafia group, because it is relatively certain, immediate and may imply serious damage, including death. It is consequently likely that, in areas where organised crime exerts strong control over the territory, data on extortion are severely underestimated.¹³ For these reasons, the official data on extortion are probably distorted, underestimating the distribution of the offence in provinces under the close control of mafia-type associations. Other provinces may have higher rates, although this may be due to a higher propensity to report among victims, perhaps encouraged by less pervasive control of the area by criminal organizations. Despite the importance of extortion in the dynamics of the mafia, data on extortion should be analysed with extreme care and not be considered as furnishing direct measures of mafia presence. The above-reviewed attempts to measure the presence of mafia frequently overlooked the difficulties involved in the use of official crime statistics, and they did not verify whether the variables selected were directly and reliably related to the mafia. There is no discussion on the selection of the variables and no analysis of the possible problems relative to the use of these data.¹⁴

¹² For example, in the ranking of the IPM 2004 Crotona was the last province of Calabria. In 2005 the IPM 2005 Eurispes included mafia murders in the index. Crotona ranked first in IPM 2005.

¹³ Daniele, “Organized crime and regional development. A review of the Italian case,” 227; Asmundo and Lisciandra, “Un tentativo di stima del costo delle estorsioni sulle imprese a livello regionale: il caso Sicilia,” 117; Caneppele and Calderoni, “Extortion Rackets in Europe: An Exploratory Comparative Study.”

¹⁴ In another study, Daniele examines the problems of measuring extortion and mafia in Italy. See Daniele, “Organized crime and regional development. A review of the Italian case,” 227.

The procedures for calculating the measurements exhibit various problems. The IPM by Eurispes included data in absolute values for the number of phone interceptions in the provinces. This severely affected comparability among the provinces, because larger and more densely populated provinces are likely to have more interceptions than smaller ones. It is widely acknowledged that comparison among variables whose distribution is affected by the size of the population studied is achieved by calculating rates. In this case, the rate per 100,000 inhabitants, or better per phone lines, would have yielded comparable information.

Other measurements sum the different variables and subsequently calculate the rates. This procedure is inevitably affected by the overall values of the summed crimes. For example, in 2008 the police reported to the judicial authorities 104 mafia murders, 6646 extortions, 10728 cases of damage followed by arson, and 34082 drug offences.¹⁵ It is clear that the sum of the provincial values will be most influenced by drug and damage followed by arson offences. This implies that very frequent and generic (not directly mafia-connected) offences are mixed with crimes which are direct signals of mafia presence, such as mafia-type murder. In practice, these indexes reflect the distribution of the most numerous crimes, which are frequently the ones more indirectly (if ever) related to the mafia.

Analysis of the existing attempts to measure the presence of the mafia in Italy highlights several problems and issues. These relate to the selection of the variables most directly related to the mafia, to the geographical and chronological scope of the data analysed, and to the procedures used to calculate the index. One of the mentioned scholars, Lavezzi, acknowledged dissatisfaction with the current measurements and argued that ‘the measurement of organised crime would therefore require a specific study’.¹⁶

The present study aims to contribute to this need by creating the Mafia Index (MI), which is designed in particular to:

- accurately select the most directly mafia-related variables
- cover a prolonged time span
- provide scores at the provincial level
- use a clear calculation procedure accounting for the different values and distributions of the selected variables.

¹⁵ Data are available on the ISTAT website “Justice in Figures”: giustiziaincifre.istat.it

¹⁶ Lavezzi, “Economic structure and vulnerability to organised crime,” 206.

2. The creation of the Mafia Index

A methodology based on three steps was used to create the MI. The first step defined the concept of mafia and devised an operational definition comprising multiple dimensions (2.1). The second step identified possible indicators for each dimension and operationalized them (2.2). The third step created the MI by combining the variables selected (2.3).

2.1. The different dimensions of the mafia

The concept of mafia is an extremely complex one, and the literature has offered a number of definitions from different epistemological perspectives. However, defining the mafia would fall outside the scope of this study, which relies for its purposes on two main definitions of ‘mafia’. The first is the well-known legal definition of ‘mafia-type association’ provided by Article 416-bis of the Italian Criminal Code. Paragraph 3 of the provision defines the ‘metodo mafioso’ (mafia method) and the goals of the mafia as follows:

‘An association is of mafia-type when its members exploit the potential for intimidation which their membership gives them, and the consequent subjection and *omertà* to commit offences, or to assume, directly or indirectly, the management or control of financial activities, concessions, permissions, enterprises and public services, or for the purpose of deriving profit or wrongful advantages for themselves or others, or to hamper or to prevent during public elections the free exercise of the right to vote or to obtain votes for themselves or for others (author’s translation)’.

The second definition is the ‘paradigm of complexity’. This is a sociological definition which describes the mafia as ‘a system of violence and illegality that aims to accumulate wealth and to obtain positions of power; which also uses a cultural code and which enjoys a certain popular support’.¹⁷ Some other scholars in Italy and abroad have adopted or aligned with the paradigm of complexity,¹⁸ which among its various implications postulates that ‘mafia’ is a complex, multifaceted concept.¹⁹

Based on these two definitions, both of which highlight the complexity of the mafia and the variety of its activities and functions, this study adopts the following operational definition of mafia: *a criminal system characterised by the presence of criminal groups providing illicit goods and services, using violence, threat or intimidation, and infiltrating the political and the economic system.* According to this operational definition, the mafia has four main dimensions:

¹⁷ Santino, “Mafia and Mafia-type organizations in Italy,” 87; Santino, *Dalla Mafia Alle Mafie*.

¹⁸ Armao, *Il Sistema Mafia*; Paoli and Fijnaut, “Introduction to Part I: The History of the Concept,” 31; Allum and Siebert, “Organized crime: a threat to democracy?,” 17; Scalia, “From the octopus to the spider?,” 6.

¹⁹ Santino, “Mafia and Mafia-type organizations in Italy,” 87.

- presence of criminal groups providing illicit goods and services
- use of violence, threat or intimidation
- infiltration of the political system
- infiltration of the economic system.

2.2. *The selection of the variables*

On the basis of a systematic review of the literature of existing attempts to measure the presence of mafia in Italy, and of available data sources, selection was made of a number of possible indicators and related variables with which to measure the above four dimensions.²⁰

Table 1 lists the four dimensions, the indicators identified within each dimension, the variables measuring each indicator and the available years. Two variables (“Number of mafia-type associations identified by the investigative authorities” and “Offence of mafia-politics vote-trading reported by the police to the prosecution service”) were not available.

²⁰ In Italy, there are no victimization surveys or other periodic surveys measuring the presence or the perception of mafias (like, for example, the Transparency International’s Corruption Perceptions Index). Such surveys would provide important information with which to complement existing data (See Caneppele and Calderoni, “Extortion Rackets in Europe: An Exploratory Comparative Study.”). Although these sources have problems (sampling, memories of the respondents, costs), they have been used for the analysis of organised crime (see van Dijk, “Mafia Markers: Assessing Organized Crime and its Impact upon Societies.”). The only existing survey is the Italian Business Crime Survey conducted by the Italian Ministry of Interior and Transcrime in 2008 (see Mugellini, “Measuring crime against business in the EU: the problem of comparability,” 89. This survey has also covered offences related to organised crime (e.g. corruption, extortion), but results are available only at regional level and have not yet been officially published (see Mugellini, “The Victimization of Businesses in Italy: key results.”

Table 1. Dimensions, indicators and variables for the Mafia Index

Dimension	Indicator	Variable	Period
Presence of criminal groups providing illicit goods and services	Presence of mafia-type associations	Mafia-type associations ^a	1983-2008
	Presence of mafia-type associations	Offences of mafia-type associations indicted by the prosecution service ^b	1994-2003
	Presence of mafia-type associations	Number of mafia-type associations identified by the investigative authorities ^c	N/a
	Presence of criminal associations	Criminal associations ^a	1983-2008
	Drug trafficking	Drug offences ^a	1983-2008
	Prostitution	Exploitation of prostitution ^a	1983-2008
	Usury	Usury ^a	2004-2007
	Counterfeiting	Counterfeiting ^a	2004-2007
	Smuggling	Smuggling ^a	2004-2007
	Trafficking of waste	Organised activity for the illicit trafficking of waste ^a	2002-2009
Use of violence, threat or intimidation	Homicidal violence	Mafia murders ^a	1983-2008
	Homicidal violence	Attempted mafia murders ^a	2004-2007
	Instrumental violence	Extortions ^a	1983-2008
	Instrumental violence	Kidnappings for ransom ^a	1983-2007
	Instrumental violence	Arsons ^a	1983-2008
	Instrumental violence	Damage followed by arson ^a	1983-2008
	Instrumental violence	Bomb or fire attacks ^a	1983-2008
Infiltration of the political system	Infiltration of local governments	City councils dissolved for infiltration by organised crime ^d	1991-2009
	Infiltration of elections	mafia-politics vote-trading ^a	N/a
Infiltration of the economic system	Infiltration of public procurement	Offences related to public procurement ^b	2003-2005
	Money-laundering	Money-laundering ^a	2004-2007
	Investments by the mafia	Assets confiscated from organised crime ^e	1983-2009

^a Offences reported by the police to the prosecution service. Operational database for Italian law enforcement agencies. Until 2003 this database was known as ‘modello 165’, while since 2004 a new system (‘SDI’ acronym for *Sistema di Indagine*) has replaced the previous one.

^b Territorial Information System on Justice database compiled by ISTAT and Ministry of Justice.

^{c-d} Ministry of Interior data

^e Agenzia del Demanio data

^f data from Legambiente, Rapporto Ecomafia

Source: author’s compilation

Subsequently, the selected and available variables were analysed according to three criteria.

Table 2 presents the variables selected according to these criteria.

The first selection criterion was the availability of data for a sufficiently long period of time. This criterion may appear trivial, but it has important implications. As argued above, a mafia is an established and long lasting criminal system. To measure its presence in the Italian territory it is necessary to take account of this persistent and continuous nature. Therefore, the selection of data for a limited time period may affect the analysis of the phenomenon and distort perception of it. The data collected for the study had different time spans. Long time series were available for 12 variables (at least 19 years available). For 8 variables, data were available for shorter periods (between 3 and 10 years).

The second selection criteria was content validity.²¹ Each identified variable was checked for its content validity, i.e. how it reflected one or more dimensions of the operational definition of mafia. This criterion paid particular attention to how the variable directly reflected mafia activities. Some variables were directly and univocally related to the mafia. This was the case, for example, of mafia-type associations or mafia murders. Clearly, these variables measured phenomena which were directly related to the concept of mafia. By contrast, some of the variables identified were not directly and univocally related to the mafia: for example, statistics on drug offences, money-laundering and extortion. It was impossible to know from the data available whether the suspects/perpetrators of these offences were related to the mafia (e.g. as members or other partners) or isolated single criminals. It is legitimate to hypothesize that these offences are frequently committed by criminal organizations, and even by the mafias. Indeed, most of the studies reviewed earlier did so. However, it is impossible to establish the share of the total offences actually committed within mafia groups and not by single individuals. Further, the ‘mafia share’ may vary from offence to offence. For this reason, variables not directly and univocally related to the mafia did not pass the test for content validity. The reason for their exclusion was to avoid the use of data whose connection with the mafia was only partial and unclear. Among the available variables, only six were directly related to the mafia.²² The other variables (n. 14) were not directly and univocally related to the mafia.

The third selection criterion consisted in criterion validity.²³ Each identified variable was analysed, verifying its statistical correlation with the other variables. Among the identified variables, 13 variables had a positive (Pearson’s $r > 0.3$) and statistically significant correlation with at least half of the other variables.²⁴ Seven variables were not correlated to any other variables (exploitation of prostitution, drug crimes and waste trafficking) or were correlated to between one and four variables (counterfeiting, money-laundering, smuggling and usury).

²¹ Content validity refers to how “the measure covers the full range of the concept’s meaning”. Bachman and Schutt, *The Practice of Research in Criminology and Criminal Justice*, 95.

²² Mafia type associations (reported by the police), Assets confiscated from organised crime, Mafia murders, City councils dissolved for infiltration by organised crime, Mafia type associations (indicted by the prosecution) and attempted mafia murders.

²³ Criterion validity refers to how “the scores obtained on one measure can be compared to those obtained with a more direct or already validated measure of the phenomenon (the criterion)”. Bachman and Schutt, *The Practice of Research in Criminology and Criminal Justice*, 95.

²⁴ Criminal association correlated to 16 other variables; extortion and city councils dissolved for organised crime infiltration to 13; mafia-type association (police reported), mafia murders, assets confiscated to organised crime, mafia type association (indicted), attempted mafia murders, damage followed by arson, bomb or fire attacks, arsons and offences related to public procurement to 12; and kidnapping for ransom to 11.

Table 2. Selection of the variables for the MI

Dimension	Variable	Time period	Content validity	Criterion validity
Presence of criminal groups providing illicit goods and services	Mafia-type associations	26 years	Yes	Yes
	Mafia-type associations	10 years	Yes	Yes
	Criminal associations	26 years	No	Yes
	Drug offences	26 years	No	No
	Exploitation of prostitution	26 years	No	No
	Usury	4 years	No	No
	Counterfeiting	4 years	No	No
	Smuggling	4 years	No	No
Use of violence, threat or intimidation	Organised activity for the illicit trafficking of waste	8 years	No	No
	Mafia murders	26 years	Yes	Yes
	Attempted mafia murders	4 years	Yes	Yes
	Extortions	26 years	No	Yes
	Kidnapping for ransom	25 years	No	Yes
	Arsons	26 years	No	Yes
	Damage followed by arson	26 years	No	Yes
Infiltration of the political system	Bomb or fire attacks	26 years	No	Yes
	City councils dissolved for infiltration by organised crime	19 years	Yes	Yes
Infiltration of the economic system	Offences related to public procurement	3 years	No	Yes
	Money-laundering	4 years	No	No
	Assets confiscated from organised crime	27 years	Yes	Yes

Source: author's compilation

2.3. The creation of the Mafia Index

Based on the above-described selection procedure, only four variables that successfully passed the three selection criteria were included in the Mafia Index. They were:

- mafia-type associations
- mafia murders
- city councils dissolved for mafia infiltration
- assets confiscated from organised crime.

Each of the variables selected covered a different dimension of the operational concept of mafia identified in 2.1. Consequently, the MI measures all four dimensions of the mafia.

The literature has frequently adopted one or more of the variables selected as a reliable proxy for the presence of mafias.²⁵ Indeed, the presence of a mafia-type association (reported by the

²⁵ Most of the indexes and studies reviewed in section 1 used one or more of the selected variables to measure the presence of mafias in Italy. Other publications have focused on one specific indicator among those selected. See Chinnici and Santino, *La violenza programmata : omicidi e guerre di mafia a Palermo dagli anni '60 ad oggi*; Chinnici, "L'omicidio a Palermo"; Mete, *Fuori dal comune*; Trocchia, *Federalismo Criminale: Viaggio nei comuni sciolti per mafia*; Talamo, "Appendice: Alcuni dati sui patrimoni mafiosi."

police to the prosecution service) reflects the actual presence of a criminal group operating in a given province. The commission of a mafia murder shows that the mafias have some form of control, or at least are able to reach their targets with relative ease. The dissolution of a city council and the presence of assets confiscated from organised crime are reliable proxies for infiltration of the political and economic systems. Although the four variables satisfied the three selection criteria and are frequently used in studies on the Italian mafias, they cannot be considered immune to problems. Indeed, it is widely acknowledged that official/administrative crime statistics should be used with great caution, especially for non-conventional crimes such as mafia-related ones.²⁶ These, in fact, sources may reflect the efforts and performance of the criminal justice system rather than the actual trends of the crimes. The variables included in the MI are no exception. However, some elements suggest that these variables are sufficiently reliable. For example, mafia murders should have a limited dark figure. In some cases mafias may conceal the murders that they commit, for example by resorting to the so called ‘lupara bianca’, which consists in concealment of the victim’s corpse, thus impeding the detection and investigation of the murder. More frequently, however, mafias do not conceal their murders. Indeed, the exercise of homicidal violence emits a very strong signal of the power and control exerted by the mafias. Once the decision to murder has been taken, mafias may want to maximize its effects, making it generally known that they are capable of killing their enemies. Therefore, this variable does not appear to be excessively influenced by the performance of the criminal justice system; rather, it is likely to reflect the actual distribution of mafia murders across the national territory. The other variables show an extremely strong correlation with mafia murders and among them. This very probably confirms that provinces with high values on one variable also have high values on the other three variables. Furthermore, the variables of the MI cover a time span of nearly thirty years (except for city councils dissolved for mafia infiltration, a variable which covers the 1991-2009 period). In such a (relatively) long time period, it appears difficult to argue that the highest values of a province are due to a systematic outperformance (or underperformance) of the criminal justice system in that province. Obviously, these elements do not completely dispel the risk that the variables depict the performance of the criminal justice system, at least in part. However, it appears justifiable to assume that the values of the variables selected primarily reflect the distribution of mafia-related phenomena and only marginally the performance of the Italian criminal justice system. The scores of the MI substantially confirm this assumption (see below, Section 3).

²⁶ Caneppele and Calderoni, “Extortion Rackets in Europe: An Exploratory Comparative Study.”

Two different procedures were adopted to calculate the MI. The first of them (MI (rate)) calculated the average of the annual rates for each variable and for each province.²⁷ It then normalized the rates, attributing the score of 100 to the province with the highest average rate. The average of the scores for each indicator provided the final score for each province (third column in Table 3, ‘Mafia index (rate)’).

The Mafia Index (rate) measures the presence of mafia in the Italian provinces, but it is greatly affected by the unequal distribution of the variables analysed. Indeed, all four indicators were extremely concentrated in a limited number of provinces, with the highest rates very distant from the average and median rates.

The concentrated distribution of the selected variables may jeopardise a satisfactory estimation of the actual presence of the mafia on the Italian territory. In particular, it may overestimate the presence of the mafia in a few provinces of Southern Italy. These are the original areas of mafia-type organisations, and it is therefore not surprising that they show high rates on the indicators selected. For this reason, crimes and data may overestimate the presence of the mafia, while for other provinces it may be more difficult to attribute a crime to a mafia-type group. Moreover, given the traditional presence of mafia-type groups, these areas are also the target of extremely intensive law enforcement operations. Consequently, the figures reflecting police reports and other data may be higher owing to better performance by and/or more numerous law enforcement personnel. In general, the variables selected have very low values, since the crimes are relatively rare and complex (compared, for example, with robbery or theft). Hence even a very low rate (compared with other crimes) may still be an important signal of mafia presence in a given province. To measure the presence of mafia in Italy better, it may be more useful to focus on each province’s rank among all Italian provinces. This approach makes it possible to off-set the problems relating to the distribution of the selected variables.

For these reasons, a second calculation procedure was developed. This was the MI (rank), which was based on the rank of each province among all the Italian provinces for each indicator, instead of the average of the annual rates. For each indicator, the MI (rank) calculated the average of the annual rates for each province. It then ranked all the Italian provinces in decreasing order. It attributed the score of 100 to the province with the highest rank, and proportionally lower scores to the other provinces, according to their rank. The average score for each indicator provided the MI for each province (fourth column in Table 3, ‘MI (rank)’).

²⁷ Rates for mafia-type associations, murders and for confiscated assets are per 100,000 inhabitants in the

The two procedures yielded very closely correlated provincial scores.²⁸ The provinces with the highest rate (first procedure) ranked high also in the second procedure. However, the impact of the outliers was reduced and the overall distribution of the provinces was less concentrated.

province; rates for city councils dissolved for mafia infiltration are per 100 city councils in the province.

²⁸ Pearson's r was 0.895 and statistically significant at 0.01 level.

Table 3. The Mafia Index

MI Rank	Province	MI (rate) ^a	MI (rank) ^b	MI Rank	Province	MI (rate) ^a	MI (rank) ^b
1	Reggio Calabria	80.58	98.32	53	Genova	1.13	12.67
2	Napoli	47.28	87.03	54	L'aquila	0.88	12.52
3	Caserta	35.33	84.73	55	Bologna	0.91	12.43
4	Caltanissetta	42.20	84.50	56	Lucca	0.96	12.43
5	Palermo	50.37	83.22	57	Trento	0.78	11.66
6	Catania	32.12	82.50	58	Pavia	0.75	11.54
7	Crotone	34.11	81.22	59	Macerata	0.90	10.81
8	Trapani	29.42	77.86	60	Asti	0.88	10.70
9	Catanzaro	32.83	76.97	61	Belluno	0.80	10.48
10	Vibo Valentia	26.08	74.13	62	Ferrara	0.62	10.14
11	Agrigento	23.52	71.75	63	Arezzo	0.86	9.63
12	Ragusa	17.83	61.82	64	Bergamo	0.70	9.18
13	Messina	15.44	60.82	65	Trieste	0.66	9.18
14	Enna	17.21	57.74	66	Pesaro Urbino	0.52	9.16
15	Salerno	12.02	57.65	67	Pistoia	0.58	8.53
16	Bari	12.83	55.72	68	Lodi	0.58	8.21
17	Siracusa	12.74	50.71	69	Nuoro	0.55	7.35
18	Lecce	7.50	48.76	70	Padova	0.70	7.25
19	Brindisi	11.85	47.11	71	Modena	0.92	7.16
20	Avellino	8.06	46.29	72	Udine	0.57	7.03
21	Cosenza	7.22	44.10	73	Livorno	0.86	6.95
22	Matera	6.99	39.75	74	Ravenna	0.59	6.92
23	Foggia	4.56	36.64	75	Cremona	0.61	6.71
24	Taranto	5.91	35.25	76	Pescara	0.62	6.39
25	Benevento	5.16	34.80	77	Parma	0.53	6.17
26	Latina	4.30	34.16	78	Viterbo	0.54	6.17
27	Roma	2.92	27.89	79	Reggio Emilia	0.67	6.07
28	Novara	4.53	25.24	80	Alessandria	0.43	5.94
29	Milano	2.53	24.93	81	Mantova	0.45	5.94
30	Como	2.16	24.10	82	Grosseto	0.41	5.62
31	Torino	1.71	23.68	83	Isernia	0.49	5.62
32	Sassari	1.54	21.68	84	Sondrio	0.38	5.40
33	Verbano Cusio Oss.	2.05	21.53	85	Ascoli Piceno	0.50	4.87
34	Teramo	1.89	21.08	86	Rovigo	0.43	4.87
35	Lecco	4.05	20.69	87	Ancona	0.54	4.67
36	Brescia	1.92	20.50	88	Massa Carrara	0.56	4.35
37	Potenza	1.98	20.35	89	Vercelli	0.22	4.31
38	Rimini	1.67	19.79	90	Cuneo	0.28	4.10
39	Frosinone	1.74	19.58	91	Siena	0.26	4.10
40	Imperia	1.64	19.04	92	Pisa	0.38	3.90
41	Varese	1.55	18.07	93	Perugia	0.47	3.69
42	Venezia	1.47	17.84	94	Oristano	0.34	3.67
43	Savona	1.44	16.66	95	Vicenza	0.39	3.15
44	Piacenza	1.26	14.60	96	Treviso	0.35	3.04
45	Gorizia	2.37	14.54	97	Rieti	0.39	2.72
46	La Spezia	1.30	14.39	98	Chieti	0.32	2.60
47	Firenze	1.58	14.21	99	Prato	0.15	2.59
48	Cagliari	0.98	13.72	100	Bolzano	0.25	1.63
49	Verona	1.02	13.72	101	Terni	0.25	1.63
50	Aosta	1.26	13.64	102	Pordenone	0.10	0.54
51	Forli'	0.83	13.59	103	Biella	0.00	0.00
52	Campobasso	1.44	12.80				

^a Average of the scores on the four indicators (for each indicator, the max average annual rate=100)

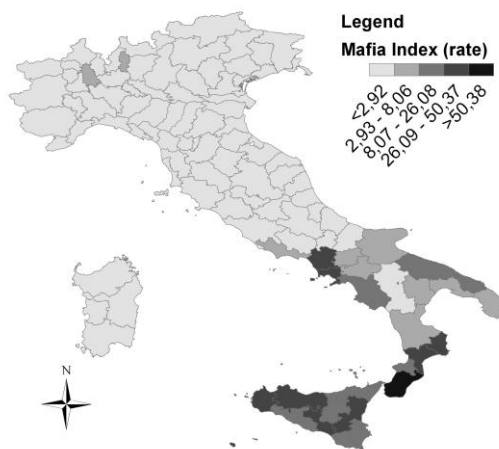
^b Average of the scores on the four indicators (for each indicator, the highest rank=100)

Source: author's calculations

3. Analysis of the Mafia Index

The MI appears to be a reliable index measuring the presence of mafia at the provincial level. Furthermore, the MI is a relatively simple index, in that it is composed of only four variables. This makes it easier to calculate and update. However, the variables selected satisfy all three selection criteria, namely availability for a prolonged period, direct relation with the mafia, and criterion validity. The four variables of the MI are strongly correlated with each other (Cronbach's alpha= 0.908).²⁹

Map 1. Mafia Index (rate) *



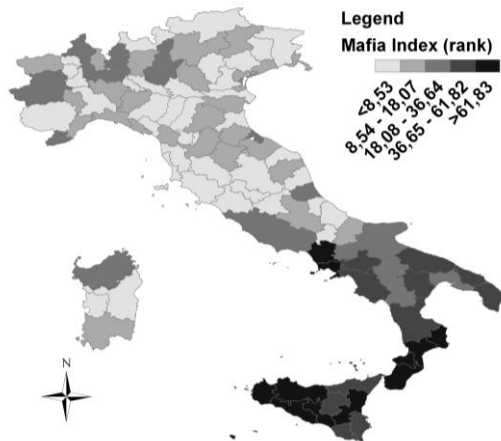
*Classes created through Jenks Natural Breaks Classification
Source: author's calculations

Maps 2 and 3 show the distribution of the MI across Italian provinces. The presence of the mafia appears to be concentrated in some Southern Italian provinces: in particular, the provinces of Naples and Caserta (Campania), Southern Calabria (Reggio Calabria, Vibo Valentia, Crotona and Catanzaro) and Western Sicily (Palermo, Trapani, Agrigento, Caltanissetta) and Catania have high values in the index. These results confirm the extensive literature (both scientific studies and public reports) identifying those areas as most affected by the presence of mafia-type organisations.³⁰ Map

²⁹ van Dijk, "Mafia Markers: Assessing Organized Crime and its Impact upon Societies," 42.

³⁰ Sciarrone, *Mafie vecchie, mafie nuove*, 155.

Map 2. Mafia Index (rank)*



*Classes created through Jenks Natural Breaks Classification

Source: author's calculations

Indeed, the Camorra concentrates particularly in the provinces of Naples and Caserta (in which is situated the town of Casal di Principe, hometown of the Casalesi clan described in Roberto Saviano's *Gomorra*³¹).³² The 'ndrangheta is historically based in Southern Calabria.³³ Similarly, the Sicilian Mafia originated in the Western Sicilian provinces.³⁴

Notwithstanding the concentration in their original areas of mafia-type associations, many other Southern provinces record high values in the MI (rate). This is the case of some provinces of Apulia (Bari, Brindisi and Lecce) where the "fourth mafia", the Sacra Corona Unita, arose in the 1980s.³⁵

The analysis of the MI (rate) in Map 1 highlights only 3 provinces with low-medium values outside the Southern regions. These are the provinces of Novara (Piedmont), Lecco (Lombardy) and Latina (Lazio). However, when focusing on the MI (rank) in Map 2, new and more interesting patterns emerge. In particular, some large provinces in Central and Northern Italy, such as Rome, Milan, Turin and Brescia, present medium-level scores. Alongside these, some minor provinces in the Centre-North emerge, such as Verbano-Cusio-Ossola, Novara (Piedmont), Imperia (Liguria), Lecco and Como (Lombardy), Rimini (Emilia-Romagna), Latina and Frosinone (Lazio), Teramo (Abruzzo) and Sassari (Sardinia). Several other central and northern provinces record values higher than that of the lowest class in Map 2. Although these provinces do not reach the scores of those

³¹ Saviano, *Gomorra*.

³² Behan, *The Camorra*; Allum, *Camorristi, Politicians, and Businessmen*.

³³ Varese, "How Mafias Migrate," 422; Ciconte, 'Ndrangheta, 22-33.

³⁴ Gambetta, *The Sicilian Mafia*, 81-85; Paoli, "Italian Organised Crime," 22.

³⁵ Massari, *La sacra corona unita*.

mentioned above, they further demonstrate that the mafia is present outside the regions where it originally developed.

In general, several provinces of Central and Northern Italy present non-negligible scores in the MI (rank), which highlights that the mafia cannot be considered a merely Southern problem affecting only economically and socially underdeveloped provinces; rather, it is a national problem which is significantly present in all the major Italian cities and several other provinces outside the South. These remarks should not be taken as underestimating the critical situation of many Southern regions and provinces. However, although the South has received much attention in the existing literature on the mafia, the existence of the mafia in the Centre and North is more disputed, particularly at the institutional level.³⁶

4. Conclusions

The MI is intended to be a reliable tool with which to measure the presence of organised crime among Italian provinces. It seeks to solve the main problems outlined in the review of attempts to measure the mafia in Italy.

Firstly, the selection of the variables composing the MI followed a detailed procedure which operationalized the concept of mafia and provided multiple dimensions. Each dimension was associated with more than one possible indicator and variable. The variables finally selected were data available for a prolonged period, and satisfaction of both content and criterion validity. Moreover, they covered all the four dimensions of the operational definition of mafia.

Secondly, the MI covers the 1983-2008 time period (except for the variable “city councils dissolved for mafia infiltration”, which refers to the 1991-2008 period). Consequently, the index provides a long-period analysis of the mafia, avoiding the risks of relying only on data relative to a few years.

Thirdly, the MI is disaggregated at the provincial level. This level is more detailed than the regional one and enables identification of different patterns within the Italian regions, even within those with a traditional mafia presence.

Fourthly, the MI was calculated using two different procedures. The first (MI(rate)) reflected the actual distribution of the selected variables among Italian provinces. The second (MI(rank)) focused on each province’s rank among all the provinces, thus highlighting the relative

³⁶ Both the mayor and the prefect of Milan have minimized the threat of the presence of the mafia in the North. “I soldi son desiderati”; “La Moratti ad Anziano: la mafia a Milano non esiste”; Galli, “Il prefetto: a Milano la mafia non esiste - Milano.”)

positions instead of the actual rates. This second procedure shed light on the presence of the mafia outside the regions with a traditional mafia presence.

The scores of the MI confirm the critical situation of some provinces in Southern Italy where mafia-type associations have been traditionally present. However, the MI(rank) produces significant scores outside the South of Italy as well, highlighting that the mafia is a national problem which should not be reduced to a problem specific to the South (implicitly related to underdevelopment and poverty).

In conclusion a few remarks can be outlined about the implications for law enforcement. A first remark is that the approach used in this study provide a reliable assessment of the overall presence of the mafias in Italy. This kind of measurement can support law enforcement in identifying critical provinces and better concentrate investigative resources. Further, the Mafia Index may be divided in several time periods, allowing to assess the trend and the evolution of the presence of mafia across the different areas of Italy. This would allow also to assess the impact of law enforcement and prosecution on the recorded levels of mafia. This index was created with public available data. Law enforcement and prosecution services could integrate the index with confidential (e.g. intelligence, informants, etc.) data, providing more complete picture of the presence of the mafias. For example, the Italian Ministry of Interior is planning to map the presence of mafia groups on the Italian territory, on the basis of law enforcement reports, judicial sources and intelligence. Ultimately, this exercise should allow to estimate the number of groups and even of affiliated members for every Italian province. The provincial rate of mafia groups per province (for example, X mafia groups per 1 million inhabitants) would be an important variable to be added to the Mafia Index. Further, the Mafia Index can contribute in strategic crime and risk analysis. For example, analyses could study the relation between the presence of mafias, the prevalence of other crimes (e.g. violent crimes, robberies, money-laundering).

Obviously, the Mafia Index is a measurement strictly connected with the Italian situation and available data. However, similar indexes could be created in other countries, focusing on specific features of organised crime and mafias. Such attempts could provide important and innovative approaches in the comparative analysis of organised crime.

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