Spatio-temporal approaches to crime in Malta: a European and Islands perspective

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Bio-Note:

Saviour Formosa has a Ph.D in spatio-temporal environmental criminology, having read for a MSc in GIS, a BA(Hons) in Sociology, and a Diploma in Applied Social Sciences. Dr. Formosa is responsible for Information Resources at the Malta Environment & Planning Authority and is a lecturer at the University of Malta. He has managed a number of national and international projects within the spatial planning, environment and IS fields. His main expertise lies in the implementation of cross-thematic approaches and uses to the data cycle and management with emphasis in the thematic and spatial data structures, visualisation, modelling, web-mapping, analysis and dataflow management and reporting.

Introduction

Crime in small states is generally viewed as being very low and non-serious, particularly due to the inherently small size and the high thresholds required to attain perceivable levels of crime that pertain to metropolis and large states. However, little evidence is given to such assertions, mainly due to lack of comparative data at international level. Prior to attempting any understanding of the spatial and territorial implications of offences within the different spatial levels of a small a country such as Malta, one needs to establish the international patterns within which that country operates. The corner stones for spatio-temporal analysis of crime in the Maltese Islands have been effected through a study that identified the Maltese hotspots based on a socio-economic and urban landuse approach and the relationships between crime-landuse-territory and space-time (Formosa, 2007).

This paper takes a higher-level analytical approach and establishes Malta's 'position in the world of crime' through a league-table review of Malta's crime against those of other countries, taking a dual level perspective: the macro (European) and micro (small islands) perspectives. This approach elicits Malta's ranking in an international construct and through clustering identifies the Islands' position, laying out the foundation for further detailed studies. Based on this statistical analysis, a relative-safety model is created placing Malta's position on that scale.

The investigation seeks to lay out the foundations for further study that puts Malta in a position to understand the changes in crime type over time, investigate the national criminal patterns in relation to the location of convicted offender habitation, reported offences and offence target categories. The study will also enable the groundwork for investigative transitions in crime in relation to the social and physical (landuse) aspects of the Maltese Islands, through the identification of spatio-temporal trends in crime, and where possible the relationship between them. This is made possible through the integration of geographical-information and social-science disciplines to the effect that through GIS, an in-depth study can be carried out on spatial and temporal trends in crime, in relation to causal factors influencing these changes and in turn to help identify areas requiring intervention.

Perspective Notes

Note that the term macro and micro were employed in this paper to denote an issue of relative scale between the European (continental) and small islands comparison. The European analysis was termed macro as it covered a larger geographic area than the smaller and in turn relatively

microscopic island areas. Micro does not allude to point-sized definitions used elsewhere in spatio-temporal research employing GIS, which are analysed for their spatial constructs within the Maltese islands, for example a point incidence of crime would be termed micro as against a large island polygon which would be termed macro.

Note that the international data is based on the United Nations, (2003), InstrumentE, Questionnaire for the Seventh United Nations Survey of Crime Trends and Operations of Criminal Justice Systems where each country completed the survey based on a series of definitions and composition for each crime type, the comparability of these results is based on that international survey. The only issue that needs to be highlighted concerns the dark figure of crime within each reporting country which can vary considerable by country or group of countries (Hyatt et al, 1999: 7, Mayhew et al, 1993: viii-ix); such as the 37% of violent crime as reported in Western Europe and 24% in Eastern Europe as against 65% and 44% respectively for property crime and 50% and 33% respectively for other crime (Alvazzi del Frate et al, 2004; Van Kesteren, J.N. et al, 2000). The British Crime Survey also reports that out of 11 million offences in 1981 less than 3 million were reported; as against 11m and 5.6m respectively for 2005/2006 ((Zedner, 1997: 580-581, Jansson, 2007). Until such time as new international research figures on 'detailed' levels of non-reporting are made available, the figures as reported to the UN are analysed. Should new data be made available the results might show differing comparability outputs and hence would require updating. The base United Nations data employed for this study states that by definition "crime statistics are often better indicators of prevalence of law enforcement and willingness to report crime, than actual prevalence".¹ In view of this, the figures resulting in this paper for this Malta-comparative study should be reviewed against this state of affairs in data availability.

7.2 Malta in the Wider World

Where does Malta fit in an international crime league-table? Is the island state a high-crime area or is it a safe destination? These are the usual questions targeted at any state but Malta's dependence on a tourism-based economy highlights the need to know more about the islands. Whilst it is stated that Malta is a safe country, there are few statistics to prove this².

The International Level

¹ http://www.uncjin.org/Statistics/statistics.html

² http://travel.state.gov/travel/cis_pa_tw/cis/cis_963.html

A UNICRI³ review of crime⁴ shows that Malta ranks among the highest twenty countries in the world for total crime per capita where 43.59 per 1000 persons were subjected to some category of crime⁵ (Table 1.11). With over 17,000 crimes in 2002 alone this is hardly surprising, though statistics provided by UNICRI may not include the number of tourists who may fall victim to predators. Malta compares as relatively safe compared to such countries as Dominica at 111.99 per 1000, the UK with 85.6 and the US with 84.39. However, it is high compared to such countries as Mauritius with 29.95, Hong Kong with 11.03 and Yemen 1.29 crimes per 1000 persons. Note must be taken at this stage that such figures are only as relevant as the reporting structure existing in a country; thus a country such as Yemen may have higher rates but crimes are not reported or deemed as not constituting an offence as listed in other countries. This applies throughout the list.

Rank	Country	Description
1	Dominica	111.99 per 1000 people
2	New Zealand	109.32 per 1000 people
3	Finland	102.3 per 1000 people
4	Denmark	93.92 per 1000 people
5	Chile	90.97 per 1000 people
6	Montserrat	89.01 per 1000 people
7	United Kingdom	86.5 per 1000 people
8	United States	84.39 per 1000 people
9	Netherlands	81.26 per 1000 people
10	South Africa	78.42 per 1000 people
11	Canada	77.63 per 1000 people
12	Germany	75.25 per 1000 people
13	Norway	72.94 per 1000 people
14	France	63.11 per 1000 people
15	Seychelles	53.65 per 1000 people
16	Hungary	44.67 per 1000 people
17	Malta	43.59 per 1000 people
18	Estonia	40.83 per 1000 people
19	Italy	38.22 per 1000 people
20	Czech Republic	38.17 per 1000 people
58	Azerbaijan	1.79 per 1000 people
59	India	1.69 per 1000 people
60	Yemen	1.29 per 1000 people
	Weighted Avg	25.81 per 1000 people

Table 1.1: Crimes per 1000 persons – a country comparison

Source: Seventh United Nations Survey of Crime Trends and Operations of Criminal Justice Systems, covering the period 1998 - 2000 (United Nations Office on Drugs and Crime, Centre for International Crime Prevention).

³ United Nations Interregional Crime and Justice Research Institute (UNICRI)

⁴ http://www.nationmaster.com/graph-T/cri tot cri cap

⁵ Note that this data refers to the resident population and does not cater for such variables as tourist numbers and number of illegal migrants

This section aims to look at Malta from a European perspective, against the worst and best countries, at a generic level (all crimes) and at specific crimes level (individual). Malta has recently joined the EU and little comparative analysis involving Malta has been carried out on this topic. Finally, the study takes a different perspective, one that would do justice to the Maltese image and position in the wider world: the Island perspective. Though Malta plays a "big boys" game at international level with UN and EU membership, it is a micro-state with its own peculiar circumstances. It is sometimes difficult to compare Malta to national EU 25 data, since most operate at highly differentiated scales: national, regional and local levels. What could be termed as local in another country, such as a borough could be termed national in Malta; such are the differences in scale⁶.

There are also differences in urban and rural, conurbation and the cities' definition, amongst others. The island perspective may also suffer from high density, specific crimes related to maritime industry, colonial history, religious impact, political change and micro-economies. It would be interesting to see if criminality finds strange bedfellows in small island states.

• The Data

Statistics used in this cross-national comparison are expressed as crimes per 1000 persons. This allows for a comparative analysis across the different spatial aggregates and places different sized countries such as Malta, the United Kingdom and Poland on the same scale.

In reviewing this section, note has to be taken that not all countries report to the UN, thus the comparisons only stand for those that do report and this does not mean that their reports are extremely loyal to an international definition of what a particular crime represents: a case in point is reportage of domestic violence. As an example, a country may be rife in one type of crime such as beatings, but may not report the same crime.

• The Investigated Data Categories

The league of crime nations is based on the Seventh United Nations Survey of Crime Trends and Operations of Criminal Justice Systems (UN, 2003). The report covers the years 1998-2000 and the review covers the latest date possible: 2000, but where data is missing the next earliest figures are quoted. Since the UN report does not have any data on Malta, such was extracted from the local sources, as gathered from the Abstracts of Statistics (NSO, 1949-2000) and the Malta Police Data (extracted from the Police Information Retrieval System (PIRS)). For

⁶ Thus, the need to look at both the large country comparison as well as the smaller island comparison.

European countries that had missing data, such was mined from the European Regional Crime Database (Entorf *et al*, 2004)⁷.

Data reviewed in this section covers the main twelve crime categories listed in the UN 2003 report. The descriptions are taken from the United Nations (2003) InstrumentE (questionnaire) listing with descriptions for the Maltese inclusions within the respective categories as extracted from the Police PIRS (Police Incident Reporting System) data for 2000.

Crime Category	Comments
Grand total of recorded	all recorded crimes but excludes traffic offences and petty crimes
crimes	
Assaults	in Malta, assault is composed of: bodily harm, domestic violence, general bodily
	harm, threats and private violence, violence against public officer
Automobile theft	thefts of vehicle
Bribery crimes	in Malta, bribery is composed of: malversation (corruption) by public officer
Burglaries (domestic	in Malta, burglary is composed of: theft from bars/hotels, theft from factories,
and commercial)	theft from residence, and theft from retail outlets
Drug offenses	refers to drug cultivation, possession and trafficking
Frauds	fraudulent acquisition of other person's property
Intentional homicide,	attempt to cause deliberate death including infanticide
attempted	
Intentional homicide,	deliberate death including infanticide
completed	
Rapes	Malta's data is normally recorded as sexual offences not rapes, however research
	showed that rapes are reported at hospital and police then act on these reports.
	Data from Malta Today (2002) indicates that there were 30 cases of alleged rape ⁹
	and attempted rape in 2000 as reported at one hospital. Rape in Malta is
	designated as full penetration. Recent police data shows that of the 30 cases
	reported in 2000, 13 were listed in the PIRS as rape.

Table 1.2: Crime Categories⁸

⁷ Horst Entorf and Hannes Spengler, European Regional Crime Database, Darmstadt University of Technology, March 2004

⁸ Note: Crime statistics are often better indicators of prevalence of law enforcement and willingness to report crime, than actual prevalence.

⁹ The term alleged rape is used since confirmation of rape can only be done after conclusion of full Health Department and Police investigations. A number of rapes go unreported (as reported by Police Officer to author), whilst others are falsely reported (as detailed by a school head to author). The latter increases in summer when a number of foreign summer students studying the English language falsely report that they had been raped in order to mislead their families that they have had sex and possible gotten pregnant. This is a regular summer occurrence in the Maltese Islands, but each case has to be investigated properly to its satisfactory conclusion.

Robberies	in Malta, robbery is composed of: hold-up, pick-pocketing, snatch and grab
Thefts	in Malta, theft is composed of: general theft, theft from beaches, theft from
	seacraft, theft from vehicle, theft of seacraft

The methodology takes the approach of reviewing Malta's position against each crime category, then eliciting its ranking position for each of the two spatial levels analysed in this paper: Europe, and Islands. A graduated map is produced for each category, with the Grandtotal one depicted in this paper. Each category is described through its mean, rank, and the relative Malta's record in crimes per 1000 persons. The process then analyses Malta's grading against the Mean, which should show whether Malta has a higher or lower than mean record for that crime. The analysis finally rank's Malta's position against the group of countries under study. The results are then reviewed against each spatial level and a safety score created that would designate whether Malta is a relatively safe country of not. Table 1.2 lists the categories analysed and their descriptions.

7.2 A European perspective

The European perspective looks at Malta within a regional scenario, bound by similarities in culture and history. The crime categories are analysed in terms of crimes per 1000 persons and ranked by country as against other EU countries. The results are depicted in Table 1.3 which lists the countries¹⁰ in alphabetical order and the relative crime data. The league-table describes the ranking that each country acquired and Malta's position within it.

As a brief description of the table, the ranks indicate that some countries such as Greece are consistently registering at the bottom end of the scale. This is depicted in the table by a blue background which is the colour for the lowest crime rate of that particular crime category. In some cases more than one country are given this lowest tag, since they rank the same as other countries at the bottom of the rankings.

On the other end of the scale, a red tag indicates the highest ranking country for each crime category. Only England and Wales registered multiple-crime highest-rankings: on automobile theft and assaults. Also, in one particular crime category, the three Baltic countries of Estonia, Latvia and Lithuania together topped the intentional (completed) homicides ranking.

Malta, in general, ranked lowest on homicides, both completed and attempted, as well as in bribery. Malta had no experience as the highest ranking country in any category.

¹⁰ Cyprus, Luxembourg and Sweden did not report crime data.

Country	Grand	Total	The	efts	Robb	oeries	Ra	bes	Intentional	Homicide	Attempted	Homicide
	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking						
Austria	40.98	12	26.2	9	0.26	22			0.02	10		
Belgium	62.2	8	31.44	7	1.29	8			0.04	5		
Bulgaria	18.23	23	5.83	24	0.52	15	0.07	10	0.04	5	0.02	5
Czech Republic	38.01	14	15.06	13	0.4	18	0.05	15	0.02	10	0.01	14
Denmark	94.5	3	36.34	5	0.59	14	0.09	8	0.01	18	0.03	3
England and Wales	97.67	2	32.58	6	1.8	3	0.16	2	0.02	10	0.01	14
Estonia	42.22	11	10.39	19	3.47	2	0.05	15	0.1	1	0.03	3
Finland	102.43	1	22.08	11	0.5	16	0.11	6	0.03	7	0.05	2
France	64.04	7	39.64	3	0.41	17	0.14	3	0.02	10	0.02	5
Germany	76.21	5	37.02	4	0.72	11	0.09	8	0.01	18	0.02	5
Greece	9.7	26	2.36	26	0.08	27	0.01	25	0.01	18	0.01	14
Hungary	45.01	9	14.91	14	0.35	20	0.06	11	0.02	10	0.02	5
Iceland			26.63	8	0.12	26	0.26	1	0.02	10	0.01	14
Ireland	21.66	21	8.27	21	0.64	13	0.06	11	0.01	18		
Italy	38.23	13	23.7	10	0.65	12	0.04	19	0.01	18	0.02	5
Latvia	21.16	22	12.12	17	1.33	7	0.04	19	0.1	1		
Lithuania	22.29	20	14.42	15	1.18	9	0.05	15	0.1	1	0.01	14
Malta	43.510	10	16.490	12	1.380	5	0.03	23	0.010	18	0.010	14
Netherlands	82.12	4	45.8	1	1.17	10	0.1	7	0.01	18	0.09	1
Norway	73.5	6	42.81	2	0.4	18	0.12	5	0.01	18	0.02	5
Poland	32.74	18	6.25	22	1.38	5	0.06	11	0.06	4	0.01	14
Portugal	36.33	16	9.04	20	1.72	4	0.04	19	0.02	10		
Romania	16.43	25	6.03	23	0.18	25	0.05	15	0.03	7	0.02	5
Slovakia	16.44	24	4.88	25	0.23	24	0.02	24	0.03	7	0.01	14
Slovenia	34.01	17	10.73	18	0.24	23	0.04	19	0.02	10	0.02	5
Spain	23.37	19	13.66	16	12.59	1	0.14	3	0.01	18	0.02	5
Switzerland	37.74	15			0.3	21	0.06	11	0.01	18	0.01	14

Table 1.3: EU Country League Table: 2000 ...cont

Note: blank cells indicate unreported categories

Country	Fra	uds	Burg	aries	Bribery	Crimes	Automob	ile Theft	Drug O	ffenses	Assa	ults
	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking						
Austria			7.95	10			0.86	23	1.84	9	3.85	5
Belgium			17.74	2			3.41	7	3.63	3	4.67	4
Bulgaria	0.85	16	4.83	17	0.01	8	1.38	17	0.05	26	0.38	22
Czech Republic	2.6	6	7.21	11			2.31	13	0.43	17	2.14	12
Denmark	1.51	10	18.66	1			6.04	2	0.18	23	1.84	13
England and Wales	6.03	2	15.79	5			6.4	1	2.14	7	8.52	1
Estonia	1.32	12	17	3	0.05	3	1.7	15	1.15	11	0.34	24
Finland	2.89	3	16.92	4	0.02	5	3.17	9	2.6	6	5.37	2
France	2.42	8	6.3	13			5.12	4	1.76	10	1.81	14
Germany	10.9	1					1.01	21	2.97	4	1.42	15
Greece	0.04	24	1.5	22			0.8	24	0.33	19	0.31	25
Hungary	2.74	4	7.16	12	0.07	2	1	22	0.35	18	1.12	16
Iceland	1.44	11	8.57	7	0.01	8	1.38	17	2.78	5	4.93	3
Ireland	0.41	20	6.14	15			3.96	6	1.9	8	2.64	9
Italy	0.58	17					4.23	5	0.6	13	0.5	20
Latvia	0.04	24	4.16	20	0.02	5			0.28	20	0.35	23
Lithuania	0.41	20	2.49	21	0.01	8	1.4	16	0.26	22		
Malta	0.520	18	6.200	14	0.010	8	2.690	10	0.140	24	2.630	10
Netherlands	1.24	13	5.73	16			2.41	12	0.47	15	2.78	8
Norway	2.74	4	1.18	23			5.2	3	9.87	1	3.28	7
Poland	2.06	9	9.43	6	0.03	4	1.76	14	0.51	14	0.85	18
Portugal	0.52	18	4.73	18	0.01	8	2.64	11	0.65	12	3.8	6
Romania	1	15	0.95	24	0.52	1	0.2	26	0.02	27	0.42	21
Slovakia	0.23	23	4.72	19	0.01	8	1.12	20	0.11	25	0.69	19
Slovenia	2.47	7	8.03	9	0.02	5	0.71	25	0.47	15	1.11	17
Spain	0.39	22	0.6	25			3.41	7	0.28	20	2.29	11
Switzerland	1.08	14	8.41	8			1.3	19	6.48	2		

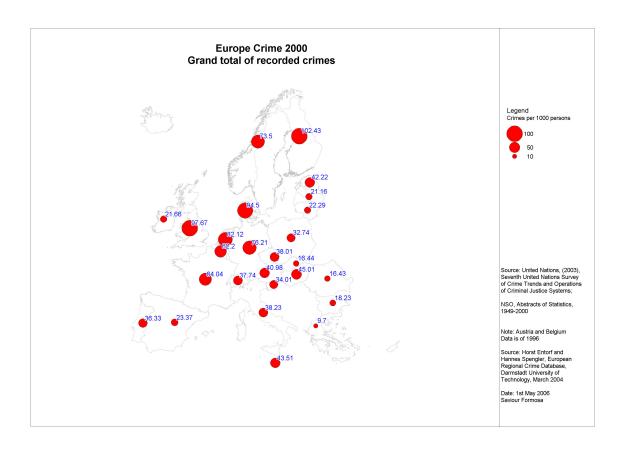
Note: blank cells indicate unreported categories

The next section analyses briefly each crime category, where Malta's position is analysed against the other countries. Refer to Table 1.2 for guidance. At the end of this analysis a summary table for Malta is given in Table 1.5 that lists Malta's crime categories positions in relation to the European mean, particularly whether they fall above or below the mean.

• Grand total of recorded crimes

The grand total of all recorded European crime counts show that Malta has a lower than the mean position, with 43.51 crimes per 1000 registered in 2000 against a wide range scenario ranging between a maximum of 102.43 for Finland against 9.7 for Greece, Malta ranks 10th of 26 countries. Interesting to note is the fact that the highest registering countries are northern European by location, such as Norway, Finland, Denmark, Germany, the Netherlands and England and Wales. The Mediterranean, Southern and East European countries tend to have lower per capita crime rates. Refer to Figure 1.3.

Figure 1.3: Europe Grand total of recorded crimes – Graduated Map



Assaults

Assault figures show that Malta registered above the mean having had a ranking of 10 out of the 25 countries reporting across Europe. England and Wales had the highest assault crimes figures

at 8.52, followed by Finland at 5.37 per 1000. Also this scenario shows that the eastern European countries have a low assault rate as against the western states.

• Automobile theft

Automobile theft at the European scale, is one of the categories where Malta has a very high rate. With a rate of 2.69 crimes per 1000 persons, it placed 10th in the European ranking. The country with the highest number of automobile thefts per 1000 persons was England and Wales at 6.4, followed by Denmark at 6.04. As in the assault case there are lower rates for the eastern European states than there are for the western European states. This situation may reflect an affluence issue where there are fewer cars around in the eastern states as well as less expensive cars leading to a situation were cars are smuggled overland¹¹.

• Bribery crimes

Malta ranked at the bottom of the scale in Europe at 0.01 per 1000 offences. Though the registered ranking was 8th out of 13 countries reporting bribery statistics, in actual fact it was at par with 6 other countries registering that same figure. Romania topped the list at 0.52 crimes per 1000 persons, followed by Hungary at 0.07.

• Burglaries

Malta ranked 14 out of 25 with a lower reading than the mean. With a rate of 6.2 crimes per 1000 persons, it falls way behind the highest number of burglaries for Denmark at 18.66, and Belgium at 17.74. A spatial analysis indicates that the countries registering that largest number of crimes per capita are clustered around the European centre with the addition of Finland.

• Drug offenses

Once again, Malta's drug offences are very small with a low rate of 0.14 per 1000 persons and a ranking of 24 out of 27 reporting countries. Spatial analysis shows the dearth of offences in an arc spanning southern and eastern Europe. The two countries that registered the highest rate at were Norway at 9.87 followed by Switzerland at 6.48.

• Frauds

Frauds in Malta are small in number as reflected by a lower than European mean. Frauds ranked Malta at an 18th position of 25. The two countries registering the highest number of frauds per 1000 persons were Germany at 10.9, followed by England and Wales at 6.03. As in the drugs scenario, the countries reporting the lowest rates for fraud sit in an arc spanning southern and eastern Europe. It is interesting to note that the highest offence rates can be found in the

¹¹ Evidenced by author in Albania, Kosovo and Macedonia in 1999 following the war in Kosovo. Interviews with locals elicited the statement that most cars were unlicensed, uninsured and there was no apparent control to investigate origin of vehicle.

countries that have been identified as forming part of the European pentagon dealing with high industrial and economic output by the ESPON (European Spatial Planning Observatory Network¹²).

• Intentional homicide, attempted

Attempted homicides place Malta in the lowest category as it shares this position with 9 other countries, (marked 14th through alphabetical listing) out of 22 European reporting countries, registering 0.01 attempts per 1000 persons. Whilst Europe as a whole has a low homicide rate, the highest rate can be found in The Netherlands at 0.09 and Finland at 0.05, though the latter two are still at least 1 factor smaller that the highest ranking countries in the global scenario.

• Intentional homicide, completed

Completed homicides also place Malta in the lowest category as it shares this position with 9 other countries, (though marked 18th through alphabetical listing) out of 27 European reporting countries, registering 0.01 attempts per 1000 persons. Interestingly, as against attempted homicides, the picture for completed homicides changes totally as the Netherlands ranks at the bottom alongside Malta, indicating the need to investigate how many homicides are stopped before they go the full track. Also the spatial scenario shifts from the Nordic countries to the eastern Baltic States and Poland. Estonia, Lithuania and Latvia register a factor above the lowest countries at 0.1 crimes per 1000, whilst Poland notched 0.06.

• Rapes

At a rate of 0.03, Malta's rate is lower than mean level, ranking the islands 23rd of 25 countries. Whilst the western and Nordic states register the highest rates for Europe, eastern countries as a whole exhibit a lower number of rapes. The country with the highest rates was Iceland (0.26), followed by England and Wales (0.16).

Robberies

Malta registers a very high rate for robberies, where at 1.38 crimes per 1000 persons, it ranks 5th in the European list of 27 countries. Spain dominates European robberies by far at 12.59, with second position going to Estonia at a distant 3.47, thus rendering Spain's result as an outlier. In effect, should the outlier be removed, Malta's effective ranking would be even higher.

• Thefts

¹² http://www.espon.lu

Malta's theft ranking stands at 12th of 26 countries with a rate of 16.49 crimes per 1000 persons, going below the European mean of 19.8. The top countries were the Netherlands with 45.8, followed by Norway at 42.8.

In summary, Table 1.6 lists the crime descriptions in a simple table. It indicates that Malta falls within a relative safety category of crime, which scores below the mean for the grand total as well as in 8 categories of crime. In 3 of the latter, Malta has the lowest crime rate for Europe; the completed and attempted homicide categories and bribery. In the case of robberies, automobile theft and assaults Malta has an above-the-mean score. The ranking fields indicate the relative position of Malta for each crime category as against the number of countries reporting that type of data. The dark orange shading indicates a rank higher than the mean.

Country	Grand	Thefts	Robberies	Rapes	Intentional	Attempted	Frauds	Burglaries	Bribery	Automobile	Drug	Assaults
	Total				Homicide	Homicide			Crimes	Theft	Offenses	
Mean	45.797	19.795	1.256	0.078	0.029	0.021	1.857	7.696	0.061	2.523	1.565	2.322
Malta	43.510	16.490	1.380	0.03	0.010	0.010	0.520	6.200	0.010	2.690	0.140	2.630
Malta's Mean position	Lower	Lower	Higher then	Lower	Lower then	Lower then	Lower	Lower	Lower then	Higher then	Lower	Higher
	then	then	Mean	then	Mean –	Mean –	then	then Mean	Mean –	Mean	then	then
	Mean	Mean		Mean	Lowest	Lowest	Mean		Lowest		Mean	Mean
					Country in	Country in			Country in			
					EU	EU			EU			
Ranking (out of 30												
max)	10	12	5	23	18	14	18	14	8	10	24	10
Recording countries	26	26	27	25	27	22	25	25	13	26	27	25

Table 1.5: Malta's relative position in the league table based on the European mean: 2000

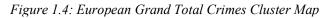
• Clustering the European countries – establishing Malta's position

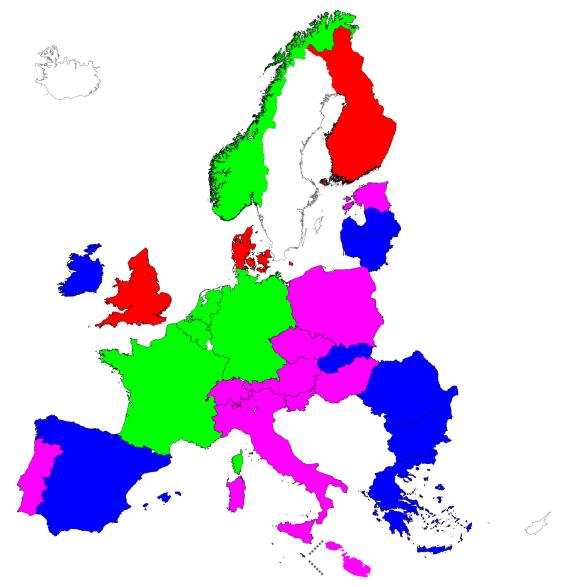
Cluster Analysis was carried out for the Grand Total of crimes based on a 4-group output (Table 1.6 and Figure 1.4). Whilst the first group composed of Northern countries Denmark, England and Wales and Finland occupy the highest-crime rate group, they are followed by another group of northern countries. Results show that Malta inhabits one of the lower (fewer crimes per 1000 persons) groups with 9 other countries. Malta's position within the third group, indicates a relatively safer category composed of Mediterranean countries, Portugal and central and eastern European countries. The least crime-reporting countries fall within a group of peripheral countries in the Mediterranean, Atlantic and Baltic states.

Country	Grand Total
Country	Cluster
Denmark	1
England and Wales	1
Finland	1
Belgium	2
France	2
Germany	2
Netherlands	2
Norway	2
Austria	3
Czech Republic	3
Estonia	3
Hungary	3
Italy	3
Malta	3
Poland	3
Portugal	3
Slovenia	3
Switzerland	3
Bulgaria	4
Greece	4
Ireland	4
Latvia	4
Lithuania	4
Romania	4
Slovakia	4
Spain	4

Table 1 6. Euro	nean Grand Tot	ıl Crimes Cluster	Analysis 2000
Tuble 1.0. Euro	pean Grana 1010	<u>ii Crimes Ciusier</u>	Analysis. 2000

In effect, such clustering highlights the issue that neighbouring countries have to a certain extent similar crime groups, except for the fourth group that is only related by its peripherality. The first cluster also shows a distinct cluster that may be resultant from specific circumstances that are not investigated here.





Source: Formosa, 2007; 176

7.3 An Island Perspective

Following an analysis of Malta within its regional and continental setting, where differentlysized countries where examined, the ideal way to analyse Malta's situation is through an analysis of similarly-sized spatial context.

At the micro perspective, eight island states from different regions in the world were chosen, and assessed for their crime statistics in order to try and elicit some similarities at such a small spatial

level as against the larger European level. The other islands reviewed were; Barbados, Dominica, Hong Kong - SAR of China, Jamaica, Mauritius, Seychelles, and Singapore.

As in the European description of Table 1.5, the islands results are depicted in Table 1.7 which league-table describes the ranking that each country acquired and Malta's position within it. The summary table for Malta is given in Table 1.8 that lists Malta's crime categories positions in relation to the island mean, which in the islands' case, registers differently than the European perspective. Where Malta was compared to relatively huge countries, Malta came out relatively unscathed, with few above-the-mean crime categories. However, in the islands' case, the number of above-the-mean categories grew to 5 from a European 3.

The colour tabs once again show that one country tops the list for relative safety, which country is Singapore, closely followed by Malta as against a highest crime ranking for Dominica, the latter having three highest ranking categories. However, Malta registers the highest for automobile thefts. Even so, this result shows that Malta is one of the safest countries in both the European and Islands' perspectives.

As in the European case, each crime category is briefly analysed in the next section.

• Grand total of recorded crimes

The grand total of recorded Island crime counts shows that Malta has a higher than mean position. With 43.51 crimes per 1000 registered in 2000 against a maximum registration of 107.63 for Dominica followed by Seychelles at 53.69, Malta ranks 3th of 8 countries. Interesting is the fact that the Asian countries of Singapore and Hong Kong registered the lowest rates. Refer to Figure 1.5 for a graphical depiction of the grand total results.

Table 1.7: Islands Country League Table: 2000

Country	Grand	Grand Total		Thefts		Robberies		Rapes		Homicide	Attempted Homicide	
	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking
Barbados	40.85	4	8.70	4	1.60	1	0.25	4	0.07	2		
Dominica	107.63	1	31.22	1	0.78	5	0.33	3	0.03	4		
Hong Kong, SAR of China	11.86	8	4.50	6	0.51	7	0.02	7	0.01	6		
Jamaica	14.88	6	1.88	8	0.89	4	0.50	2	0.34	1	0.39	1
Malta	43.510	3	16.490	2	1.380	2	0.03	5	0.010	6	0.010	2
Mauritius	30.30	5	8.04	5	0.98	3	0.02	7	0.02	5	0.01	2
Seychelles	53.69	2	10.07	3	0.65	6	0.79	1	0.07	2		
Singapore	12.03	7	4.20	7	0.12	8	0.03	5	0.01	6		

Country	Fra	Frauds		Burglaries		Bribery Crimes		Automobile Theft		Drug Offenses		Assaults	
	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	Per 1000	Ranking	
Barbados	0.85	2	11.10	2			0.84	3	5.46	1	5.77	3	
Dominica	0.44	6	17.77	1			0.99	2	3.70	3	0.96	7	
Hong Kong, SAR of China	0.75	4	1.32	6	0.49	1	0.41	4	0.34	7	1.10	6	
Jamaica	0.44	6	0.92	7	0.01	3	0.10	6	4.52	2	4.11	4	
Malta	0.520	5	6.200	3	0.010	3	2.690	1	0.140	8	2.630	5	
Mauritius	0.77	3	1.34	5	0.01	3			2.08	5	9.09	1	
Seychelles	1.62	1	2.79	4					3.14	4	8.62	2	
Singapore	0.36	8	0.25	8	0.04	2	0.41	4	1.05	6	0.13	8	

Note: blank cells indicate unreported categories

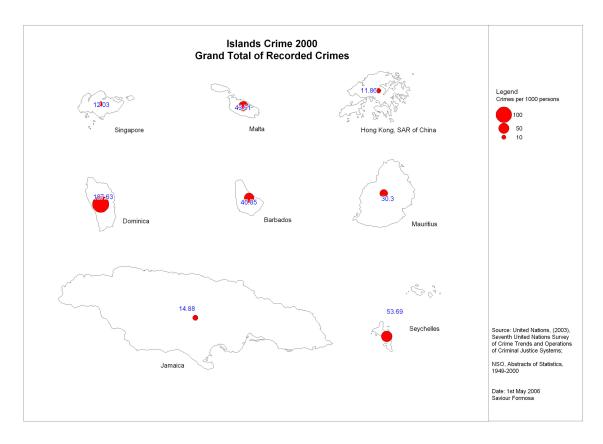


Figure 1.5: Islands Grand Total of recorded crimes – Graduated Map

Assaults

Whilst in the European perspective Malta registered higher than the mean positions, at an island level it is defined as one of the island communities with the lowest rate for assault signifying that in an island states comparison, Malta's position on assault compares favourably with Europe as a whole. Malta (2.63) ranked 5th of 8 islands, with Mauritius (9.09) and Seychelles (8.62) topping the ranks.

• Automobile theft

Having ranked high amongst the European perspective, automobile theft ranking at small island level comes as no surprise. Malta occupies the top position at a rate of 2.69 crimes per 1000 persons, nearly two standard deviations above the mean, effectively rendering Malta an outlier in this scenario. Malta's position is followed by Dominica at 0.99 per 1000, which is far below the Maltese level. In comparison to the European case, there may be several reasons for this, amongst them affluence, a ready market for spare parts, and easily accessible short routes to export material from disassembled vehicles. These 'opportunities' may not be available to all islands, particularly the export routes issue.

• Bribery crimes

Malta's bribery status has been shown in the European perspective to be very low, ranking at the bottom of the scale at 0.01 per 1000 offences. In the islands' case this is still the case as Malta registered 3rd out of 5 countries reporting bribery statistics, where in actual fact it was at par with 3 other countries registering the lowest figure. Hong Kong topped the list at 0.49 crimes per 1000 persons, followed by Singapore at a factor difference of 0.04.

• Burglaries

Malta ranks 3rd out of 8 countries with higher readings than the mean. With a rate of 6.2 crimes per 1000 persons, it falls behind the highest number of burglaries for Dominica at 17.77, and Barbados at 11.1. At the global scenario, it was ascertained that these two islands rank amongst the highest global ranking countries.

• Drug offenses

At an island level, Malta strengthens it position as a relatively drug-free society with a very low rate of 0.14 per 1000 persons and a ranking at the bottom of the scale of 8 countries. The two countries registering the highest rates were the Caribbean islands of Barbados (5.46), Jamaica (4.52) and Dominica (3.7) and relatively low for the Asian islands.

• Frauds

Frauds in small states is relatively low at a mean of 0.72. Malta ranked 5^{th} of the 8 islands with the highest number of frauds per 1000 persons being registered in Seychelles at 1.62, followed by Barbados at half that rate (0.85).

• Intentional homicide, attempted and completed

Malta ranks at the bottom of the scale for both attempted and completed homicides at 0.1 offences per 1000 persons. Jamaica tops the list for both type of crimes at 0.39 for attempted and 0.34 for completed homicides.

Rapes

At a rate of 0.03, Malta's rape rate is below the mean for islands states, ranking the islands 5th of 8 countries. Seychelles and Jamaica register the highest rates at 0.79 and 0.5 respectively.

Robberies

As reviewed in the European scenario, Malta registers a very high rate for robberies. With a rate of 1.38 crimes per 1000 persons, it ranks 2nd in the islands ranking. Malta is second only to Barbados at 1.6.

• Thefts

Malta ranks highly for thefts with a rate of 16.49 crimes per 1000 persons, going above the islands mean of 10.64. Malta ranks second to Dominica that registered 31.22.

In summary Table 1.8 indicates that Malta again falls within a relative safety category of crime, though it scores below the mean for 7 categories of crime. In the case of grand total, theft, robberies, automobile theft and burglaries, Malta has an above-the-mean score. The automobile theft category hits the top position in the Islands perspective with theft and robberies ranking second.

• Clustering the Islands – establishing Malta's position

A clustering analysis was carried out on grand total crime based on a 3-group output (Table 1.9 and Figure 1.6). Malta falls within the second cluster together with Barbados and Seychelles. This is the middle-of-the-road ranking, particularly since Dominica is such an outlier that it cannot be clustered with other groups but inhabits a group of its own. The last cluster is made up of the rest of the island countries, which have a relatively safer record, even though Jamaica has a higher homicide rate.

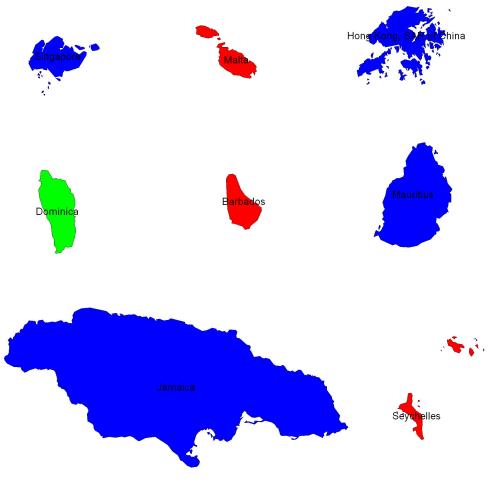
Country	Grand	Thefts	Robberies	Rapes	Intentional	Attempted	Frauds	Burglaries	Bribery	Automobile	Drug	Assaults
	Total				Homicide	Homicide			Crimes	Theft	Offenses	
Mean	39.344	10.638	0.864	0.246	0.070	0.137	0.719	5.211	0.112	0.907	2.554	4.051
Malta	43.510	16.490	1.380	0.03	0.010	0.010	0.520	6.200	0.010	2.690	0.140	2.630
Malta's Mean	Higher	Higher	Higher	Lower	Lower	Lower	Lower	Higher	Lower	Higher then	Lower	Lower
position	then	then	then Mean	then	then Mean	then	then	then Mean	then	Mean –	then	then
	Mean	Mean		Mean	– Lowest	Mean –	Mean		Mean –	Highest	Mean –	Mean
					Country in	Lowest			Lowest	Country in	Lowest	
					Islands	Country			Country	islands	Country	
						in Islands			in		in	
									Islands		Islands	
Ranking (out of 8)	3	2	2	5	6	2	5	3	3	1	8	5
Recording countries	8	8	8	8	8	3	8	8	5	6	8	8

Table 1.8: Malta's relative position in the league table based on the Islands mean: 2000

Table 1.9: Islands Grand Total Crimes Cluster Analysis

Country	Grand Total Cluster
Dominica	1
Barbados	2
Malta	2
Seychelles	2
Hong Kong, SAR of China	3
Jamaica	3
Mauritius	3
Singapore	3

Figure 1.6: Islands Grand Total Crimes Cluster Analysis



Source: Formosa, 2007: 183

Summary of the Main Points

The main points emanating from this analysis can be summarized in the fact that Malta is a relatively safe country, which is clustered towards the lower ends of the crime rate rankings both

at European and Island categories. The data is more relevant to the islands than the European perspective where Malta is a very small partner with a high density and closed boundaries. In the European case it clustered with the nearest neighbour: Italy, whilst in the Islands' analysis it clustered with the smallest countries.

The best way to elicit other similarities or differences is to review the results through a comparative category analysis of the European and Islands' perspectives.

7.2.3 Comparative Analysis: Macro - Micro

Whilst the previous section was aimed at preparing the base data for the placement of Malta in an international construct based on crimes per 1000 persons, the following section brings together and compares Malta's position against each macro and micro levels for each crime category.

Table 1.10 depicts the mean for the European and Islands' analysis, the minimum and maximum rate per 1000 persons, as well as Malta's mean and relative mean position above or below the mean.

• Grand total of recorded crimes

Malta experienced a high rate of total crimes within the two levels and registers higher than mean readings at islands level with very close to mean reading at macro level.

• Assaults

Malta experienced a high rate of assaults across the macro level with close to mean results. Interestingly, comparative analysis shows that islands tend to have a higher mean, which in effect lowers Malta's relative position to below the mean.

• Automobile thefts

Malta's automobile thefts statistical position is 'secure' at all levels, as it tops all statistical measures. The European level shows a high mean which situation is enhanced at the micro level where islands register a low mean, thus accentuating Malta's relative position.

• Bribery crimes

An analysis of the bribery category indicates that moving from the macro to micro level, the potential for bribery increases. The mean practically nearly doubles between the levels. The potential for bribery growth at European level may be accounted for due to the high position attained by Romania. Malta registers a low bribery rate at all mean levels.

• Burglaries

The analysis of burglaries elicits the fact that the mean ranges are relatively close for the macro and micro levels, with Malta having a higher-than-mean at island level as against a lower one at EU level.

• Drug Offences

Drug offences suffer an increase in incidence at micro level, mainly due to the heavy weighting by the three Caribbean islands of Barbados (5.46), Jamaica (4.52) and Dominica (3.7) in such a small group. Malta's position is very low at all levels.

Measure	Grand Total Thefts		Thefts	Robberies		Rapes		Intentional Homicide		Attempted Homicide		
	Europe	Islands	Europe	Islands	Europe	Islands	Europe	Islands	Europe	Islands	Europe	Islands
Mean	45.797	39.344	19.795	10.638	1.256	0.864	0.080	0.253	0.029	0.070	0.021	0.137
Max	102.430	107.630	45.800	31.220	12.590	1.600	0.260	0.790	0.100	0.340	0.090	0.390
Min	9.700	11.860	2.360	1.880	0.080	0.120	0.010	0.020	0.010	0.010	0.010	0.010
Malta	43.510	43.510	16.490	16.490	1.380	1.380	0.030	0.030	0.010	0.010	0.010	0.010
Malta's Mean	Lower	Higher	Lower	Higher	Higher	Higher	Lower	Lower	Lower	Lower	Lower	Lower
position	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean

Table 1.10:	Comparative	Macro-Micro	Analysis	<i>Table: 2000</i>

Measure	Frauds		Burglaries		Bribery Crimes		Automobile Theft		Drug Offenses		Assaults	
	Europe	Islands	Europe	Islands	Europe	Islands	Europe	Islands	Europe	Islands	Europe	Islands
Mean	1.857	0.719	7.696	5.211	0.061	0.112	2.523	0.907	1.565	2.554	2.322	4.051
Max	10.900	1.620	18.660	17.770	0.520	0.490	6.400	2.690	9.870	5.460	8.520	9.090
Min	0.040	0.360	0.600	0.250	0.010	0.010	0.200	0.100	0.020	0.140	0.310	0.130
Malta	0.520	0.520	6.200	6.200	0.010	0.010	2.690	2.690	0.140	0.140	2.630	2.630
Malta's Mean	Lower	Lower	Lower	Higher	Lower	Lower	Higher	Higher	Lower	Lower	Higher	Lower
position	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean	then Mean

• Frauds

Malta has a low fraud rate at both levels. There is a distinct macro-micro difference in that at EU level the mean level is twice that of the islands' level. This could mean that there are less real frauds or that inversely it could be rife but is so ingrained in social practices that it goes unreported.

• Intentional homicides - attempted

Malta has a very low attempted homicide rate at all levels reaching bottom ranking rates. Interestingly the micro level sees the highest means, mainly due to the comparatively high reporting number of countries, amongst them Jamaica at 0.39.

• Intentional homicides - completed

As in the case of attempted homicides, Malta has a very low completed homicide rate at both levels reaching bottom ranking rates. Again, the micro level saw an increase in the highest means.

• Rapes

Rapes at island level figures indicate that there is a tripling of rates from macro to micro level, mainly due to the heavy rates for two islands of Seychelles (0.79) and Jamaica (0.5). This effectively pushes Malta's relative position to a very low position.

• Robberies

At micro level the robbery rate falls, indicating a less dangerous situation in island states than at macro levels. This situation essentially pushes Malta's micro position in a relatively higher mode than that at macro level.

• Thefts

Thefts experience a decrease for micro levels that are lower than the macro levels. A situation of high European crime rates pushes Malta to a lower mean state at macro level.

Summary of the Main Points

In summary, Malta is a relatively safe country both at macro and micro levels. The macro-micro analysis shows that islands register higher means per category than the EU level. Six categories have a higher mean than the EU, though the Grand Total shows otherwise. A deeper analysis shows that islands register five categories that have higher means for serious crimes. In the case of assaults, drug offences, homicides (attempted and completed) and rapes, the islands have a higher mean. Robberies is the serious category that has a higher mean at EU level. In view of this, the islands are more dangerous places that the larger EU countries. In the case of less serious crimes, the inverse is true: islands have lower means for vehicle theft, burglaries, fraud and thefts with bribery being lower than the EU mean.

Within this context, Malta appears to be relatively safe since it registers lower means for all serious crimes than the Islands' (micro) means except for robberies. Malta's means show similarities to the EU norm in all serious categories. However, for the non-serious offences it registers higher levels for vehicle theft, burglaries and theft than those of the other islands, making it more dangerous at this level, a finding once again similar to the EU macro-micro outcome except for fraud.

In summary, Malta, though having similar physical characteristics to other islands (insularity, density and size), it experiences a different offence structure that reflects more the macro EU level than the micro Islands' level.

7.2.4 Creating a score model for the placement of Malta's safety status

The previous sections indicated Malta's position in a macro and micro level comparison at European and Island perspectives as at 2000. This structure enabled the creation of a ranking system as well as a mean positioning system. Once this structure has been established a model can be developed that helps analyse Malta's relative position vis-à-vis each category of crime at mean over a number of years. Such a system enables a trend analysis of relative safety over time in this case covering a three-year period from 1998 to 2000.

This section attempts to create the structure than can be used as a gauge for annual trend analysis at national, regional and local levels.

The approach taken is based on Kwan *et al's* (2000) identification of 4 crime categories (murder, rape, drug offences and robbery) that would be termed as most serious with the rest being declared least serious. In view of this, a grading system by crime category weighted for the same type of seriousness has been created and contrasted against each crime category mean result as detailed below (Formosa, 2007):

i) Classification of most serious and least serious crimes based on the categories above
In Malta's case, Kwan *et al's* (2000) most serious categories are kept with the addition of assaults as it is deemed as a highly serious offence due to potential wounding and aggravated bodily harm that could lead to death. Table 1.11 lists

the crimes within each of the categories;

Category	Weighting
Most Serious	
Assaults	x2
Drug offenses	x2
Attempted homicide	x2
Intentional homicide	x2
Rapes	x2
Robberies	x2
Least Serious	
Automobile theft	x1
Bribery crimes	x1
Burglaries	x1
Frauds	x1
Thefts	x1

Table 1.11: Seriousness and Mean Placing Weightings

Placing	Rating
Mean level	0
Above Mean	1
Below Mean	-1

- A grading for seriousness is given where a weighting¹³ of 2 is given for the most serious and 1 for the least serious crimes (Table 1.11);
- iii) A rating was devised that would award +1 for above mean position placing in each of the categories reviewed above, award -1 for below the mean position and a 0 for positions at the mean value (Table 1.11);
- iv) A matrix was created to analyse Malta's position for each crime category (Table 1.12) based on i) to iii) above and totals calculated;
- v) The results for each macro-micro level is depicted onto a scale that outlines the whole range possible for country placement within the model. Maximum figures would range from -17 to +17 with -17 representing a very safe state (country) with least crime and a +17 score would indicate a highly dangerous state (Figure 1.7). A zero (0) on the scale indicates the state's mean placing at both the EU and Islands levels.

	1998	1999	2000	1998	1999	2000
Category	Europe	Europe	Europe	Islands	Islands	Islands
Most Serious						
Assaults	-2	2	2	-2	-2	-2
Drug offenses	-2	-2	-2	-2	-2	-2
Attempted homicide	-2	-2	-2	-2	-2	-2
Intentional homicide	-2	-2	-2	-2	-2	-2
Rapes	-2	2	-2	-2	-2	-2
Robberies	-2	-2	2	-2	2	2
Least Serious						
Automobile theft	-1	-1	1	-1	1	1
Bribery crimes	-1	-1	-1	-1	-1	-1
Burglaries	-1	-1	-1	-1	1	1
Frauds	-1	-1	-1	-1	-1	-1
Thefts	-1	-1	-1	-1	1	1
Totals	-17	-9	-7	-17	-7	-7

Table 1.12: Crime categories Matrix Calculations – Malta's 'relative safety-danger' position

¹³ This weighting method was chosen in view of the unavailability of studies gauging local perception to crime seriousness. The relative double weights given to serious offences as against non-serious reflect do not necessarily reflect the fact that assault is twice as dangerous as vehicle theft, but serve as a basis for future studies in line with Kwan et al's 2000 study.

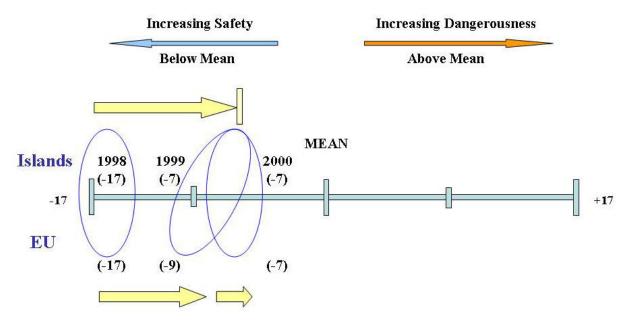


Figure 1.7: Relative Safety-Danger Score Model: 1998-2000

The score results show that Malta is a relatively safe country when compared to both the European and Island perspectives, having experienced lower than mean results for all three years under review. However, the change analysis indicates a rapidly changing scenario. At Island level, Malta had the safest possible level in 1998 at a score of -17, which figure rapidly shot towards the mean to -7 and stabilised there for 1999 and 2000. At the European level, the 1998 - 17 score again shot up to -9 in 1999 and then again to -7 in 2000. Such figures show that crime is very dynamic and Malta's increasing crime levels is having a progressive effect on its international safety score.

This score model can be employed at NUTS4 and NUTS5 levels to elicit the trends at the most functional policy-making levels: the district and local council levels. When analysed over a number of years, the model can be used to identify shifts in temporal trends at intra-country level as well as create a safety ranking table for each locality.

7.2.5 Summary

Source: Formosa, 2007: 190

In summary, a relative-safety ranking exercise identified an initial Maltese Islands safety record at well below the macro and micro mean as resulting from the crime category analysis at both European and Islands perspectives. The study also showed that islands are more dangerous places than the larger EU level, with Malta having a greater affinity to the EU crime characteristics than those found in islands.

The score model at both macro and micro levels indicated a relatively safe country with decreasing relative safety.

7.3 Conclusion

The paper has sought to place Malta in a criminological framework over space and time, based on international data. The study reviewed Malta's international position where the issue of Malta's 'relative safe' status was determined.

The 'Malta in an international scenario' helped identify issues at European and Islands level. Eleven crime categories and the grand total crime were analysed, each placing Malta in a meanbased comparative analysis on crimes per 1000. The results show a relatively low rate for most serious which differ over the two spatial levels. A methodology was created resulting in a score model that placed Malta at the different spatial level within a relative safety-dangerousness scale where Malta was deemed safe, though progressively decreasing in relative safety. The model can be used over time to analyse changes and for different countries and sub-national levels since it has a dynamic structure that changes with each annual data input.

Cluster analysis showed that Malta shares the same group as its immediate European neighbours as well as sharing a similar island size cluster. Malta is placed within relatively safer (low-rates) groups in both levels, even though it may spike in some offences such as automobile theft at islands level.

Detailed analysis showed that Malta experiences a crime structure that is closer to the EU level than the Islands' level, the latter experiences higher rates of serious crimes and lower rates of non-serious crimes. This paper helped set out a national base structure from criminological research in the Maltese Islands, where none existed before, giving a new perspective on crime in Malta.

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