15 Missing Persons in Croatia: Incidence, Characteristics and Police Performance Effectiveness

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15.1 Introduction

Literature available concerning missing persons addresses this issue in different discourses. Most prevalent are studies of incidence, forensic studies and police guidance manuals. Special attention is given to the issue of missing children. The intention of this chapter is to make a contribution to the overall body of knowledge on the missing persons phenomenon using experience gained in a Croatian context.

The Republic of Croatia gained independence in 1991 and has been a member state of the European Union since 2013. The struggle for independence in the Homeland War resulted in several thousand registered missing persons, many of whom (1702) have not been found to this day. Several institutions including the police are working on these cases. However, this study does not deal with the persons gone missing in the war or in natural disasters. The focus is on the incidence of disappearance and on the profile of the persons gone missing in the period from 2010 to 2012. This study is a part of a much larger study conducted for the first time in the Republic of Croatia. It focuses on the incidence, sociodemographic, psychological and psychiatric profiles of missing persons, as well as on the reporting and searching for missing persons relating to the police performance procedure, and on the relationships among all these factors. To understand better the context in which people go missing in Croatia, the most essential sociodemographic and economic indicators are supplied in the introductory part.

According to the 2011 Census, the Republic of Croatia has 4,284,889 inhabitants. Out of the total number 2,066,335 are men (48.2 %), and 2,218,554 women (51.8 %). The average age of the population is 41.7 years (men 39.9 and women 43.4). The masculinity coefficient (the number of men to 100 women) is over 100 for age groups under 39 years. After that it exhibits a constant drop and by age 65 it is drastically lower—in favour of women (ranging from 98 to 28 men to 100 women) (Census of Population, 2013). With regard to education, among the population over

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the age of 15, 30.8 % has completed only primary education, 52.6 % secondary education, and 16.4 % persons have college or university level education. Among men over 15 years of age, 58 % are married, 4 % divorced, 3 % widowed and a high 35 % are single. The percentage of married women is even lower—only 53 %. The percentage of single women is 24 %, divorced 5 %, widowed 18 % (six times higher than widowed men). This may be accounted for by the fact that women live longer on average than men (Statistical Yearbook of the Republic of Croatia, 2012).

According to Croatian Bureau of Statistics, out of the 3.6 million people over 15 years of age, 41.4 % are employed and 8 % unemployed. However, the inactive segment of the population makes up a high 50.5 % (retired persons, school children, college students, homemakers, etc.) (Statistical Yearbook of the Republic of Croatia, 2012). Croatia's population has 9.58 % persons belonging to different minorities: 4.36 % Serbian and less than 1 % of each of the 21 other minorities (e.g. 0.73 Bosnian, 0.42 Italian, 0.40 Roma, 0.33 Hungarian) (Statistical Yearbook of the Republic of Croatia, 2012).

In recent years Croatia has been afflicted with a long-lasting economic depression, high economic emigration and highly skilled professionals movement to the developed countries of the European Union. Croatia is in the group of five European Union countries with highest unemployment and poverty rates (European Commission, 2013). The US Government states in its Trafficking in Persons Report (2013) that Croatia is a destination, source and transit country for persons of all genders and ages, and victims of human trafficking for the purpose of forced prostitution and forced labour, signifying the importance of connecting the issue of missing persons with committed criminal acts. The Organisation for Security and Co-operation in Europe (OSCE) stresses that in the growing number of cases of human trafficking, the favoured destinations for this type of crime were the countries of old Europe, Russia, Turkey and Cyprus, as well as the Adriatic countries, in particular Croatia and Montenegro. Therefore, the missing persons files include not only Croatian citizens but also foreign citizens gone missing on the territory of Croatia.

The number of reported missing persons in the Republic of Croatia is permanently on the rise and has become a matter of general public interest. Not all cases are equally serious; there is evidence that at certain times of the year, such as the end of the school year and the tourist season, a higher incidence of missing persons is reported for specific segments of the population. According to Hedges (2002), there is no national uniform method of dealing with these enquiries: the police have different policies, responses, report taking methods, etc. This leads to a varied level and style of response throughout the country. In Croatia, apart from the police, no other institution keeps records or gets involved in tracking down and providing assistance to missing persons and their families. Consolidated data on reported missing persons are classified by the police as a security issue. It is common practise for the police to search for a missing person in partnership with family members, other persons, and government and non-government organisations. Currently, efforts are being made to develop a more consistent, standardised approach to missing persons nationally.

The term 'missing person' is not a concept specifically defined in any of the existing regulations and police legislature of the Republic of Croatia, which impacts the initiation of the search for a missing person. Each situation is assessed individually by the police officer assigned to the case. He/she makes judgements based on his/her experience, training, set of values, prejudices and power of observation. Assessment of each case is affected by the information gathered from the individual reporting the missing person. The publication of the Guidance on the Management Recording and Investigation of Missing Persons compiled by the Association of Chief Police Officers is profoundly important for it elaborates in detail the police and other agencies procedures (2005).

Earlier studies of missing persons carried out by Croatian authors dealt mainly with the persons gone missing during the Homeland War, whereas studies of missing persons in the ensuing peace period have been much more sporadic

and narrower in target. In the course of 2014, a group of researchers at the Croatian Police College (a department within the Ministry of the Interior) and two faculties belonging to the University of Zagreb[1] compiled a wide-based study of missing persons. The most relevant results of the study constitute the body of this chapter.

15.2 Methodology

The sample used in the study included 1724 cases of missing persons reported to the police between 2010 and 2012, representing 34.2 % of the total number of reported missing persons in Croatia. Data gathered came from six police directorates (out of the total 20) provided a representative sample of the rate of missing persons reporting and its distribution across the territory of Croatia. The six directorates are based in Zagreb (1), Rijeka (3), Split (2), Osijek (5), Virovitica (20) and Gospić (16) as marked in Fig. 15.1.

Given the relatively stable rate of missing persons reporting in the last decade, the 20 police directorates may be grouped into three categories. In the first category is Zagreb, as the capital, with highest percentage (50 %) of reported cases. In the second category are the directorates with the rate of reporting 10–18 % (in this sample Rijeka, Osijek and Split), and the third category is represented by Gospić and Virovitica with less than 3 % reported cases.

Distribution, per police directorate, of the reported missing persons in this sample is as follows: Zagreb (50 %), Rijeka (18.2 %), Split (15.5 %), Osijek (13.3 %), Virovitica (1.6 %) and Gospić (1.5 %). Every third case (chronologically) in each of the six selected police directorates was processed for the purposes of this study.

Relevant data were gathered using the *Search for Missing Persons* questionnaire with 417 variables grouped so as to assess the incidence, characteristics, motives, reasons and circumstances bearing on the disappearance of the missing persons and on the ensuing police action. The data were processed using the descriptive statistics, and correlations and differences were computed using Chi-Square tests, contingency coefficients and discriminant analysis. Once approval was granted by the respective police directorates to go ahead with the study, the next step comprised a detailed study of the search files suitable for in-depth analysis.

15.3 Who Goes Missing: Incidence of Missing People and Their Profile

Traditionally, missing persons are graded as vulnerable or non-vulnerable. However, this system only places individuals into two broad groups and does not help to illustrate individual differences and circumstances that make one person more vulnerable than another (Amoore & De Goede, 2005), this fine-tuning being left to an officer's judgement. As there have not been any guidelines upon which to make this judgement, it could be coloured by prejudice, other commitments, time available, level of experience of the officer and many other factors. While the majority of missing persons incidents relate to children, for which there is an extensive evidence base (Biehal & Wade, 2004; Hammer, Finkelhor, & Sedlak, 2002), there is a lack of substantial international research on adult missing persons (Biehal, Mitchell, & Wade, 2003; Newiss, 1999, 2005; Parr & Fyfe, 2012; Patterson, 2005; Payne, 1995). Adults receive little attention from the police and policy makers perhaps due to the common misperception that adults go missing voluntarily (Kiepal, Carrington, & Dawson, 2012).

The increase in the number of reported missing persons in the Republic of Croatia is receiving more attention from the Croatian public and the police, whose work and efforts in tracking down these persons are continually growing as a result. The collected data in Table 15.1 show the *growth* trend of the reported missing persons with certain variations and drops in 2004 and again in the period 2008–2010. In the studied period, the annual missing person average in the

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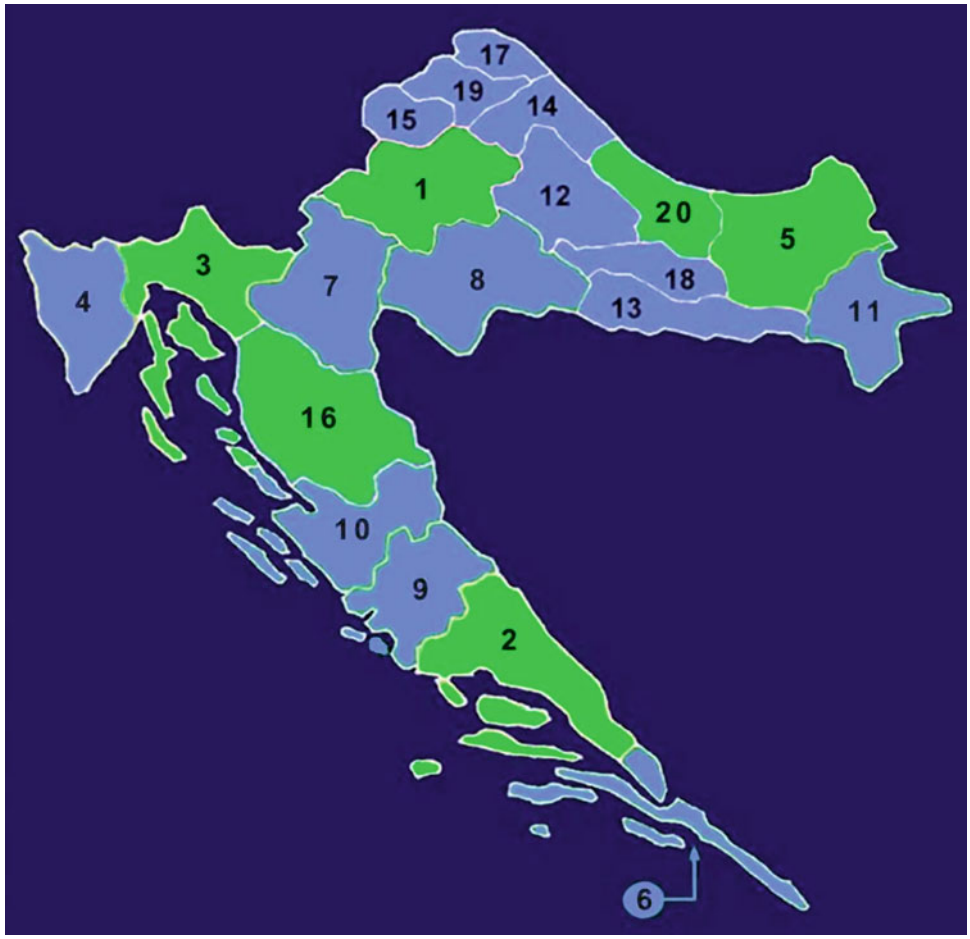

Fig. 15.1 Croatia—geographic representative sample (Copyright: Author's own image)

Republic of Croatia was 39 persons to 100,000 people. Meanwhile, the number of missing person reports has increased, and in 2013 it was 51 persons to 100,000. Again, these data do not include persons who disappeared during the Homeland War or in natural disasters. As a point of interest, the number of persons gone missing for each 100,000 people in Australia is 15 (James, Anderson, & Putt, 2008).

According to Newiss (1999), in the UK a person is recorded missing by the police approximately every 2 min. It is estimated that one person is reported missing every 15 min each year in Australia (James et al., 2008). Conversely, Croatia has a much lower incidence of missing persons—one person is reported missing every 5 days.

15.3.1 Socio-demographic Status

An earlier study by Šuperina and Dujmović (2011) of missing persons in Croatia in 2001–2002 showed that the majority of the reported missing persons were adults (54.84 %), followed by juveniles (35.54 %), children (10.7 %) and younger adults (8.6 %).

In this study, the segment of the reported missing adults constitutes 62.6 %, with 9.1 % of all cases relating to persons over 70 years of age. Juveniles make up 27.2 %, children 10.2 %, with only 14 (0.8 %) reported cases of missing children under the age of 10. For purposes of comparison, in the UK and USA juveniles make up between 2/3 and 4/5 of all reported missing persons (Parr & Fyfe, 2012).

Table 15.1 The number of the reported missing persons in the Republic of Croatia in the period 2000–2013 with the calculated base and chain index (Copyright: Author's own image)

Year	No. of missing persons	Base index	Chain index
2000	1247	100.00	
2001	1253	100.98	100.48
2002	1406	112.75	112.21
2003	1639	131.44	116.57
2004	1559	125.02	95.12
2005	1619	129.83	103.85
2006	1702	136.49	105.13
2007	1771	142.02	104.05
2008	1753	140.58	98.98
2009	1733	138.97	98.86
2010	1704	136.65	98.33
2011	1774	142.26	104.11
2012	1928	154.61	108.68
2013	2192	175.78	113.69

Source: Statistics of the Croatian Ministry of the Interior for years 2000–2013

In the UK, Australia and USA roughly equal numbers of men and women go missing (Parr & Fyfe, 2012; James et al., 2008; NCIC Missing Person and Unidentified Person Statistics for, 2009, 2012; America's Missing Persons by Age, Race and Gender 2014). This corresponds to the numerical indicators in Croatia. Analysis conducted in 2001 and 2002 showed that among the reported missing persons 51.8 % were men and 48.19 % women.

Relation between age and gender is shown in Tables 15.2 and 15.3.

In this study age and gender have a statistically significant relationship. Given the percentages of women and men in the total sample, women are significantly more often represented at young age (children and juveniles), and men in all categories between ages 25 and 65, covering the working male population.

The participants' social status impacts all aspects of their lives and functioning in a given environment including risk and protective factors. When compared to the educational status of the general population over 15, the studied sample shows a significant aberration towards a higher level of formal education (secondary school—72.5 %; college and university level—15.2 %). It is striking here that persons of lower educational status are not a risk group.

Table 15.2 Missing persons distribution by age and gender (Copyright: Author's own image)

Age (years)	Gender		Total
	M	F	
0–15	93	83	176
	52.80 %	47.20 %	100.00 %
	9.10 %	12.00 %	10.20 %
	5.40 %	4.80 %	10.20 %
15–20	213	256	469
	45.40 %	54.60 %	100.00 %
	20.70 %	36.90 %	27.30 %
	12.40 %	14.90 %	27.30 %
20–25	59	39	98
	60.20 %	39.80 %	100.00 %
	5.70 %	5.60 %	5.70 %
	3.40 %	2.30 %	5.70 %
25–35	169	62	231
	73.20 %	26.80 %	100.00 %
	16.50 %	8.90 %	13.40 %
	9.80 %	3.60 %	13.40 %
35–50	209	91	300
	69.70 %	30.30 %	100.00 %
	20.40 %	13.10 %	17.40 %
	12.20 %	5.30 %	17.40 %
50–65	158	71	229
	69.00 %	31.00 %	100.00 %
	15.40 %	10.20 %	13.30 %
	9.20 %	4.10 %	13.30 %
65–	126	91	217
	58.10 %	41.90 %	100.00 %
	12.30 %	13.10 %	12.60 %
	7.30 %	5.30 %	12.60 %
Total	1027	693	1720
	59.70 %	40.30 %	100.00 %
	100.00 %	100.00 %	100.00 %

Table 15.3 Age and gender contingency measures (Copyright: Author's own image)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	81.480	6	0.000
Likelihood ratio	82.120	6	0.000
Linear-by-linear association	33.179	1	0.000
N of valid cases	1720		

Table 15.4 Missing persons distribution by age and education (Copyright: Author's own image)

Age (years)	Education							Total
	Finished a few grades of primary school	Finished primary school	Finished vocational school	Finished secondary school, grammar school	Finished non-university college	Graduated from faculty or college	Academic scientific degree	
0–15	101	33	42	0	0	0	0	176
	57.40 %	18.80 %	23.90 %	0.00 %	0.00 %	0.00 %	0.00 %	100.00 %
	70.60 %	14.90 %	6.60 %	0.00 %	0.00 %	0.00 %	0.00 %	10.30 %
	5.90 %	1.90 %	2.50 %	0.00 %	0.00 %	0.00 %	0.00 %	10.30 %
15–20	21	63	374	11	0	0	0	469
	4.50 %	13.40 %	79.70 %	2.30 %	0.00 %	0.00 %	0.00 %	100.00 %
	14.70 %	28.50 %	59.10 %	2.30 %	0.00 %	0.00 %	0.00 %	27.40 %
	1.20 %	3.70 %	21.90 %	0.60 %	0.00 %	0.00 %	0.00 %	27.40 %
20–25	4	7	29	31	27	0	0	98
	4.10 %	7.10 %	29.60 %	31.60 %	27.60 %	0.00 %	0.00 %	100.00 %
	2.80 %	3.20 %	4.60 %	6.50 %	20.60 %	0.00 %	0.00 %	5.70 %
	0.20 %	0.40 %	1.70 %	1.80 %	1.60 %	0.00 %	0.00 %	5.70 %
25–35	2	15	66	86	50	12	0	231
	0.90 %	6.50 %	28.60 %	37.20 %	21.60 %	5.20 %	0.00 %	100.00 %
	1.40 %	6.80 %	10.40 %	18.00 %	38.20 %	11.90 %	0.00 %	13.50 %
	0.10 %	0.90 %	3.90 %	5.00 %	2.90 %	0.70 %	0.00 %	13.50 %
35–50	3	28	57	148	28	34	1	299
	1.00 %	9.40 %	19.10 %	49.50 %	9.40 %	11.40 %	0.30 %	100.00 %
	2.10 %	12.70 %	9.00 %	30.90 %	21.40 %	33.70 %	50.00 %	17.50 %
	0.20 %	1.60 %	3.30 %	8.70 %	1.60 %	2.00 %	0.10 %	17.50 %
50–65	5	27	48	105	18	24	1	228
	2.20 %	11.80 %	21.10 %	46.10 %	7.90 %	10.50 %	0.40 %	100.00 %
	3.50 %	12.20 %	7.60 %	21.90 %	13.70 %	23.80 %	50.00 %	13.30 %
	0.30 %	1.60 %	2.80 %	6.10 %	1.10 %	1.40 %	0.10 %	13.30 %
Više od 65	7	48	17	98	8	31	0	209
	3.30 %	23.00 %	8.10 %	46.90 %	3.80 %	14.80 %	0.00 %	100.00 %
	4.90 %	21.70 %	2.70 %	20.50 %	6.10 %	30.70 %	0.00 %	12.20 %
	0.40 %	2.80 %	1.00 %	5.70 %	0.50 %	1.80 %	0.00 %	12.20 %
Total	143	221	633	479	131	101	2	1710
	8.40 %	12.90 %	37.00 %	28.00 %	7.70 %	5.90 %	0.10 %	100.00 %
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Tables 15.4, 15.5, 15.6 and 15.7 show the relationship between education, age and gender.

Tables 15.6 and 15.7 indicate that differences in education with regard to age are statistically significant. It is evident that as age increases so does education. Participants in the age group 20–35 are significantly more often college educated, while participants over 35 more frequently than others have secondary or university education.

Table 15.5 Age and education contingency measures (Copyright: Author's own image)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	1470.139	36	0.000
Likelihood ratio	1331.681	36	0.000
Linear-by-linear association	383.133	1	0.000
N of valid cases	1710		

Table 15.6 Missing persons distribution by gender and education (Copyright: Author's own image)

		Gender		
		M	F	
Education	Finished a few grades of primary school	70	75	145
		48.30 %	51.70 %	100.00 %
		6.90 %	10.90 %	8.50 %
		4.10 %	4.40 %	8.50 %
	Finished primary school	112	109	221
		50.70 %	49.30 %	100.00 %
		11.00 %	15.80 %	12.90 %
		6.50 %	6.40 %	12.90 %
	Finished vocational school (3 years)	352	281	633
		55.60 %	44.40 %	100.00 %
		34.50 %	40.70 %	37.00 %
		20.60 %	16.40 %	37.00 %
	Finished secondary school, grammar school (4 years)	330	148	478
		69.00 %	31.00 %	100.00 %
		32.30 %	21.40 %	27.90 %
		19.30 %	8.60 %	27.90 %
	Finished non-university college	83	48	131
		63.40 %	36.60 %	100.00 %
		8.10 %	7.00 %	7.70 %
		4.90 %	2.80 %	7.70 %
	Graduated from faculty or college	72	29	101
		71.30 %	28.70 %	100.00 %
		7.10 %	4.20 %	5.90 %
		4.20 %	1.70 %	5.90 %
	Academic scientific degree	2	0	2
		100.00 %	0.00 %	100.00 %
		0.20 %	0.00 %	0.10 %
		0.10 %	0.00 %	0.10 %
Total		1021	690	1711
		59.70 %	40.30 %	100.00 %
		100.00 %	100.00 %	100.00 %

Table 15.7 Gender and education contingency measures (Copyright: Author's own image)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	44.774	6	0.000
Likelihood ratio	45.974	6	0.000
Linear-by-linear association	34.289	1	0.000
N of valid cases	1711		

Statistically significant are differences in education with relation to gender. The relative rate of women with incomplete and complete primary education is higher, whereas in the case of men the rate is higher among men with secondary, college and, particularly, university education.

Table 15.8 The most important indicators of the missing persons' social status (Copyright: Author's own image)

Has been married	18.9 %
Has lived with parents	32.1 %
Has lived with a child	4.6 %
Has lived in a reform institution	17.2 %
Has lived alone	6.1 %
Unmarried	56.5 %
Widowed	6.7 %
Pupil/student	33.2 %
Unemployed	30 %
Retired	14.7 %

Other important social status characteristics of the participants (Table 15.8) indicate that they are likely to be three times less often married (18.7 %) than the average Croatian population over 15.

A third, mostly young persons, lives with parents and 36.7 % live with other people (with a partner, child, grandchild, foster parent) or in a care-providing institution (an old people's home). About 1/5 of the participants live alone. Obviously, a solo lifestyle does not pose a risk factor for disappearance. This suggests that the risk can be attached to the interplay between the quality of life and psychological status, also studied here.

15.3.2 Psychological and Psychiatric Status

Assessment of the psychological and psychiatric status of a missing person relies mainly on the readiness of the individual reporting the missing person to provide relevant information, given that for reasons of confidentiality the police are not allowed insight into any person's medical records. Proceeding with awareness that the data gathered here are insufficient (50 % unknown, on average, for each variable), it was nevertheless possible to establish this status, at least roughly, from the information in 18 variables. Each variable had five categories (not at all, partly no, unknown, partly yes, mostly yes). Receiving psychiatric treatment (in hospital or surgery) were 29.2 %

participants, with 26.6 % actually diagnosed with a mental illness. Suicidal tendencies were exhibited by 7.1 %, old age dementia (including Alzheimer's and Parkinson's disease) was present in 6.2 %, and addiction to alcohol was established in 7.4 % cases. Persons suffering from anxiety or depression made up a further 6.3 %, while drug addiction was present in 2.1 % cases.

The discriminant analysis was used to estimate the linear relationship between a discriminant (dependent) non-metrical variable having two or more categories (age, gender, marital status, life with parents), and linear combination of seven independent metric variables of psychological status (Tables 15.9, 15.10, 15.11, 15.12, 15.13, 15.14, 15.15, 15.16, 15.17, 15.18, 15.19, 15.20, 15.21, 15.22, 15.23, 15.24, 15.25, 15.26, 15.27 and 15.28). The predictor variables do not have normal multivariate distribution but besides the sample size, discriminant analysis is relatively robust even when distributions are contradicted.

In this study independent variables are the variables that characterise the psychological and psychiatric status. They are as follows: X_1—*suicidal*

Table 15.9 Tests of equality of age group means regarding the psychological and psychiatric status variables (Copyright: Author's own image)

	Wilks' Lambda	F	df1	df2	Sig.
Suicidal	0.955	20.282	4	1713	0.000
Alcoholic	0.954	20.772	4	1713	0.000
Anxdepre	0.923	35.702	4	1713	0.000
Mentalill	0.935	29.874	4	1713	0.000
Pshospit	0.945	24.806	4	1713	0.000
Pmedicat	0.956	19.567	4	1713	0.000
Dementia	0.784	118.022	4	1713	0.000

Table 15.10 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of five age groups of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	0.313	66.3	66.3	0.488
2	0.143	30.3	96.6	0.354
3	0.016	3.3	99.9	0.124
4	0.000	0.1	100.0	0.018

Table 15.11 Standardised canonical discriminant function coefficients in differentiation of five age groups of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function			
	1	2	3	4
Alcoholic	–0.067	–0.312	0.381	1.091
Anxdepre	0.231	–0.667	0.366	–0.988
Mentalill	–0.424	0.712	0.638	–0.041
Dementia	0.910	0.546	–0.091	0.138

Table 15.12 Structure matrix in differentiation of five age groups of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function			
	1	2	3	4
Dementia	0.910*	0.337	0.233	0.071
Mentalill	–0.231	0.551	0.791*	–0.133
Anxdepre	0.390	–0.439	0.727*	–0.355
Phospit	–0.216	0.482	0.711*	–0.042
Pmedicat	–0.124	0.386	0.687*	–0.021
Alcoholic	0.230	–0.420	0.658*	0.581
Suicidal	0.274	–0.285	0.556*	–0.131

Table 15.13 Values of discriminant functions at group centroids in differentiation of five age groups of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function			
Age (years)	1	2	3	4
0–15	0.219	–0.293	–0.332	–0.017
15–20	0.093	–0.527	0.103	–0.001
20–25	–0.410	–0.070	–0.131	0.069
25–50	–0.585	0.265	0.019	–0.007
50–	0.910	0.397	0.031	0.003

Table 15.14 Tests of equality of gender group means regarding the psychological and psychiatric status variables (Copyright: Author's own image)

	Wilks' Lambda	F	df1	df2	Sig.
Suicidal	1.000	0.087	1	1717	0.768
Alcoholic	0.991	15.570	1	1717	0.000
Anxdepre	1.000	0.005	1	1717	0.943
Mentalill	0.990	16.625	1	1717	0.000
Pshospit	0.988	20.812	1	1717	0.000
Pmedicat	0.988	21.244	1	1717	0.000
Dementia	1.000	0.362	1	1717	0.547

Table 15.15 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of male and female missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	0.024	100.0	100.0	0.154

Table 15.16 Standardised canonical discriminant function coefficients in differentiation of male and female missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function
	1
Alcoholic	0.834
Anxdepre	–0.629
Pmedicat	0.697

Table 15.17 Structure matrix in differentiation of male and female missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function
	1
Pmedicat	0.714
Alcoholic	0.611
Phospit	0.564
Mentalill	0.500
Suicidal	0.116
Dementia	0.091
Anxdepre	0.011

Table 15.18 Values of discriminant functions at group centroids in differentiation of male and female missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function
Gender	1
Male	0.128
Female	–0.190

Table 15.19 Tests of equality of marital status group means regarding the psychological and psychiatric status variables (Copyright: Author's own image)

	Wilks' Lambda	F	df1	df2	Sig.
Suicidal	0.998	1.428	2	1538	0.240
Alcoholic	0.984	12.808	2	1538	0.000
Anxdepre	0.987	10.305	2	1538	0.000
Mentalill	0.958	34.000	2	1538	0.000
Pshospit	0.951	39.892	2	1538	0.000
Pmedicat	0.947	42.844	2	1538	0.000
Dementia	0.995	4.059	2	1538	0.017

Table 15.20 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of three marital status categories of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	0.066	74.3	74.3	0.248
2	0.023	25.7	100.0	0.149

Table 15.21 Standardised canonical discriminant function coefficients in differentiation of three marital status categories of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function	
	1	2
Suicidal	–0.164	–0.534
Alcoholic	0.282	0.564
Anxdepre	–0.059	0.802
Mentalill	0.037	0.743
Pshospit	0.443	–0.192
Pmedicat	0.509	–0.800
Dementia	0.185	–0.032

Table 15.22 Structure matrix in differentiation of three marital status categories of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function	
	1	2
Pmedicat	0.912	–0.223
Phospit	0.889	–0.061
Mentalill	0.821	0.035
Dementia	0.260	0.192
Anxdepre	0.210	0.680
Alcoholic	0.339	0.633
Suicidal	0.114	0.210

Table 15.23 Values of discriminant functions at group centroids in differentiation of three marital status categories of missing persons by psychological and psychiatric status variables (Copyright: Author's own image)

	Function	
Marital status	1	2
Married	–0.148	0.072
Unknown	0.588	0.103
Not married	0.036	–0.291

Table 15.24 Tests of equality of living with parents' status group means regarding the psychological and psychiatric status variables (Copyright: Author's own image)

	Wilks' Lambda	F	df1	df2	Sig.
Suicidal	0.988	10.133	2	1716	0.000
Alcoholic	0.979	18.539	2	1716	0.000
Anxdepre	0.987	11.384	2	1716	0.000
Mentalill	0.954	41.523	2	1716	0.000
Phospit	0.954	41.630	2	1716	0.000
Pmedicat	0.955	40.774	2	1716	0.000
Dementia	0.955	40.562	2	1716	0.000

Table 15.25 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of three categories of living with parents' status by psychological and psychiatric status variables

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	0.073	65.1	65.1	0.262
2	0.039	34.9	100.0	0.195

Table 15.26 Standardised canonical discriminant function coefficients in differentiation of three categories of living with parents' status by psychological and psychiatric status variables

	Function	
	1	2
Suicidal	–0.026	0.441
Alcoholic	0.381	–0.059
Anxdepre	–0.113	–0.337
Mentalill	0.217	–0.537
Phospit	0.145	–0.340
Pmedicat	0.357	0.204
Dementia	0.525	0.717

Table 15.27 Structure matrix in differentiation of three categories of living with parents' status by psychological and psychiatric status variables

	Function	
	1	2
Pmedicat	0.749	–0.401
Phospit	0.687	–0.593
Mentalill	0.677	–0.612
Alcoholic	0.538	0.093
Anxdepre	0.421	0.079
Suicidal	0.351	0.265
Dementia	0.645	0.651

Table 15.28 Values of discriminant functions at group centroids in differentiation of three categories of living with parents' status by psychological and psychiatric status variables

	Function	
Lived with parents	1	2
No	0.058	0.176
Unknown	0.539	–0.318
Yes	–0.320	–0.167

(has the missing person shown any suicidal tendencies), X_2—*alcoholic* (is the missing person an alcoholic), X_3—*anxdepre* (has the missing person shown any signs of anxiety or depression), X_4—*mentalill* (has the missing person suffered from any mental illnesses), X_5—*pshospit* (has the missing person been treated in a psychiatric hospital), X_6—*pmedicat* (does the missing person have to regularly take prescribed psychiatric medications) and X_7—*dementia* (does the missing person suffer from dementia (Alzheimer's or Parkinson's disease, etc.). Their categories are: (1) absolutely not, (2) mostly not, (3) unknown, (4) mostly yes and (5) absolutely yes.

15.3.2.1 Differentiation of Five Age Groups of Missing Persons by Discriminant Analysis of Psychological and Psychiatric Status Variables

The first discriminant variable is the age categorised as follows: (1) 0–15 years old, (2) 15–20 years old, (3) 20–25 years old, (4) 25–55 years old and (5) over 55 years old.

In order to determine the variables which significantly contribute to the differentiation of groups, F-test for Wilks' Lambda has been used (Table 15.9).

F-test is significant for all seven variables (values of Sig. smaller than 0.05). That is the indicator of a good selection of seven independent variables.

Discriminant analysis was carried out for five age groups and it resulted in four discriminant functions, but only the first three were statistically significant and consequently yielded three significant eigenvalues. The highest eigenvalue (0.313) shows that the first discriminant function

has the strongest power of discrimination of the four functions. Also, the first two functions account for 97 % of the obtained group means dispersion, as compared to the other two functions, which, taken together, account for less than 4 % of the dispersion.

The canonical correlation coefficient, measuring the relation between the discriminant factorial coordinates and the grouping variable, shows that 23.8 %, that is $(0.488)^2$ of the total variance accounts for the differences among the five groups through the first discriminant function.

The discriminant function coefficients are used for calculating the discriminant score for each case in particular. Taking into account that the first three functions have the highest discriminating power the values of their coefficients indicate as follows:

The size of the coefficients on the first discriminant function indicates the highest discriminant power of the predictor variables *dementia* (X_7), *anxiety or depression* (X_3) and *mental illnesses.* On the second discriminant function such variables are *mental illnesses* (X_4), *anxiety or depression* (X_3), *dementia* (X_7) and *alcoholic* (X_2), and on the third discriminant function are *mental illnesses* (X_4), *alcoholic* (X_2) and *anxiety or depression* (X_3).

The structure matrix coefficient indicates the correlation between each predictor variable and the discriminant function. The values of the structure coefficients obtained are presented in Table 15.12.

The first discriminant function is mostly correlated with three predictors: presence of dementia and partially of anxiety and depression, but also with the absence of mental illnesses. A second function includes variables that indicate the presence of a wide range of mental illnesses and the absence of anxiety or depression and alcoholism. The third function indicates a wide range of psychical difficulties that are not of neurodegenerative diseases nature.

Functions at group centroids show how age groups differ on each discriminant function (Table 15.13).

The greatest differences among age groups are produced by certain tendency of the oldest group to suffer from dementia and partially from anxiety and depression more than the others. Also, the adult group (25 and more) mostly differs from younger groups regarding the presence of wide range of mental illnesses. Finally, the youngest group of missing persons differs from the others regarding the absence of psychical difficulties that are not of neurodegenerative diseases nature.

15.3.2.2 Differentiation of Male and Female Missing Persons by Discriminant Analysis of Psychological and Psychiatric Status Variables

The second discriminant variable is gender ((1) Male, (2) Female).

In order to determine the variables which significantly contribute to the differentiation of gender groups, F-test for Wilks' Lambda has been used (Table 15.14).

F-test is significant for four variables out of seven (values of Sig. smaller than 0.05 for the second, fourth, fifth and sixth variable).

Discriminant analysis was carried out for two gender groups and it resulted in one discriminant function (and consequently one eigenvalue, 0.024), which accounts for 100 % of the obtained group means dispersion.

The canonical correlation coefficient shows that 2.4 %, that is $(0.154)^2$ of the total variance accounts for the differences between the two groups through the first discriminant function.

The size of the coefficients on the first discriminant function indicates the highest discriminant power of the predictor variables *alcoholic* (X_2), *pmedicat* (X_6) and the absence of *anxiety* or *depression* (X_3).

The values of the structure matrix coefficients obtained are presented in Table 15.17.

The discriminant function is defined by three indicators: regularly taking prescribed medications, alcoholism and certain presence of anxiety or depression.

Functions at group centroids show how gender groups differ on discriminative function (Table 15.18).

The most gender differences come from males' more frequent taking prescribed medications, alcoholism and certain presence of anxiety or depression.

15.3.2.3 Differentiation of Three Categories of Missing Person's Marital Status by Discriminant Analysis of Psychological and Psychiatric Status Variables

The third discriminant variable is marital status categorised as follows: (1) Not married, (2) Unknown and (3) Married.

In order to determine the variables which significantly contribute to the differentiation of groups regarding marriage, F-test for Wilks' Lambda has been used (Table 15.19).

F-test is significant for all variables except the first one (values of Sig. smaller than 0.05), which points to good selection of independent variables.

Discriminant analysis was carried out for three marital status groups and it resulted in two discriminant functions and consequently two eigenvalues that are low. The higher eigenvalue (0.066) corresponds to the first discriminant function, which accounts for 74.3 % of the obtained group means dispersion.

The canonical correlation coefficient shows that 6.1 %, that is $(0.248)^2$ of the total variance accounts for the differences among the three groups through the first discriminant function.

The size of the coefficients on the first discriminant function indicates the highest discriminant power of the predictor variables *regularly taking prescribed psychiatric medications* (X_6), *treated in a psychiatric hospital* (X_5) and partially *alcoholism* (X_2). On the second discriminant function such variables are *anxiety or depression* (X_3), *mental illness* (X_4), *alcoholic* (X_2) and the absence of *regularly taking prescribed psychiatric medications* (X_6), and *suicidal* (X_1).

The values of the structure matrix coefficients obtained are presented in Table 15.22.

The first discriminant function is mostly defined by medical aspects of mental illnesses and partially by alcoholism. A second function includes variables that indicate alcoholism, anxiety or depression and partially suicidal tendencies.

Functions at group centroids show how the marital status groups differ on each discriminative function (Table 15.23).

The greatest differences among missing persons' marital status groups are produced by certain tendency of the unknown marital status group to exhibit medical aspects of mental illnesses more than the others. Additionally, to certain extent the unknown marital status group differs from the others regarding the presence of alcoholism, anxiety or depression and partially suicidal tendencies.

15.3.2.4 Differentiation of Three Categories of Missing Persons Living with Parents' Status by Discriminant Analysis of Psychological and Psychiatric Status Variables

The fourth discriminant variable is living with parents ((1) No, (2) Unknown and (3) Yes).

The variables which significantly contribute to the differentiation of groups regarding living with parents are assessed by F-test for Wilks' Lambda (Table 15.24).

F-test is significant for all seven variables (values of Sig. smaller than 0.05), which indicates good selection of independent variables.

Discriminant analysis was carried out for three groups of living with parents' variable and it resulted in two discriminant functions and consequently two eigenvalues that are. The higher eigenvalue (0.073) corresponds to the first discrimination function that accounts for 65 % of the obtained group means dispersion.

The canonical correlation coefficient shows that 6.90 %, that is $(0.262)^2$ of the total variance accounts for the differences among the three groups through the first discriminant function.

The size of the coefficients on the first discriminant function indicates the highest discriminant power of the predictor variables *dementia* (X_7), *alcoholic* (X_2) and *premedicat* (X_6). On the second discriminant function such variables are *dementia* (X_7) and *suicidal* (X_1), but also the absence of *mental illness* (X_4), *treated in a psychiatric hospital* (X_5) and *anxiety or depression* (X_3).

The values of the structure matrix coefficients obtained are presented in Table 15.27.

The first discriminant function is mostly determined by medical aspects of mental illness, dementia and alcoholism and partially by depressive and suicidal tendencies. A second discriminant function included dementia and partially suicidal tendencies, as well as the absence of medical aspects of mental illness.

Functions at group centroids show how living with parents' status groups differs on each discriminative function (Table 15.28).

The greatest differences are related to missing persons group whose living with parents status is not known: they have clearly higher scores on the first discriminant function (presence of medical aspects of mental illness, dementia and alcoholism and partially depressive and suicidal tendencies) and lower results on the second discriminant function (presence of dementia and the absence of medical aspects of mental illness).

15.3.3 Motives, Reasons and Circumstances of Disappearance

The above-cited Croatian study of missing persons from 2001 to 2002 lists some of the risk factors in younger population such as poor communication with the family (15.8 %), adventurism (10.04 %) and family disputes (5.13 %). In cases of older persons gone missing, relation was found with mental illness (16.94 %), old age dementia and spatial disorientation (84.19 %), and somatic disease (7.66 %).

In this study motives, reasons and circumstances of disappearance were determined using 34 variables. The information on the assumed reasons for disappearance was given by the reporter. The variables had five categories (not at all, partly no, unknown, partly yes, mostly yes). The most important findings were those on mental illness (21.8 %), voluntary abandonment of the usual place of residence and going into hiding (18.2 %), psychological disorders (17.9 %) and youth rebellion (15.4 %). Of the next six assumed reasons or circumstances of disappearance, each one appears between 5 and 8 %: problematic family relations, adventurism, loitering, alcohol, suicidal tendencies and inability to care for oneself.

The discriminant analysis is used to estimate the linear relationship between a discriminant (dependent) non-metrical variable having two or more categories (age and gender), and linear combination of ten independent metric variables of motives and reasons for disappearance assumed by the reporting person (Tables 15.29, 15.30, 15.31, 15.32, 15.33, 15.34, 15.35, 15.36, 15.37 and 15.38). The predictor variables do not have normal multivariate distribution but besides the sample size, discriminant analysis is relatively robust even when distributions are contradicted.

In this study independent variables are the variables of motives and reasons for disappearance. They are as follows: X_1—*voluntar* (voluntarily left home and kept his/her residence a secret), X_2—*familydis* (family disputes), X_3—*teenreb* (teenage rebellion), X_4—*adventure* (love of adventure), X_5—*loitering* (disappearance related to loitering), X_6—*alcohol* (disappearance related to alcohol consumption), X_7—*mentaldis* (mental disorder), X_8—*mentalill* (mental illness),

Table 15.29 Tests of equality of age group means regarding the motives and reasons for disappearance variables

	Wilks' Lambda	F	df1	df2	Sig.
Voluntar	0.851	74.684	4	1711	0.000
Familydis	0.930	32.083	4	1711	0.000
Teenrebe	0.475	473.590	4	1711	0.000
Adventure	0.769	128.506	4	1711	0.000
Loitering	0.809	100.942	4	1711	0.000
Alcohol	0.964	15.849	4	1711	0.000
Mentaldis	0.980	8.560	4	1711	0.000
Mentalill	0.938	28.491	4	1711	0.000
Suicide	0.982	7.660	4	1711	0.000
Helpdem	0.802	105.351	4	1711	0.000

Table 15.30 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of five age groups of missing persons by the motives and reasons for disappearance variables

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	1.301	79.5	79.5	0.752
2	0.292	17.9	97.3	0.475
3	0.032	2.0	99.3	0.177
4	0.011	0.7	100.0	0.105

Table 15.31 Standardised canonical discriminant function coefficients in differentiation of five age groups of missing persons by the motives and reasons for disappearance variables

	Function			
	1	2	3	4
Volontar	–0.069	0.1	0.201	0.193
Familydis	–0.076	0.098	–0.039	0.333
Teenrebe	0.846	0.093	–0.365	0.23
Adventure	0.235	–0.195	–0.036	–0.361
Loitering	0.282	–0.121	0.662	0.078
Alcohol	–0.148	–0.075	0.306	–0.2
Mentaldis	–0.081	–0.019	–0.342	0.733
Mentalill	–0.193	–0.288	0.314	0.436
Suicide	0.021	0.012	0.263	–0.523
Helpdem	–0.131	1.01	–0.065	–0.006

Table 15.32 Structure matrix in differentiation of five age groups of missing persons by the motives and reasons for disappearance variables

	Function			
	1	2	3	4
Teenreb	0.920	0.128	–0.066	0.235
Adventure	0.478	0.002	0.306	–0.113
Helpdeme	–0.048	0.909*	0.242	0.113
Loitering	0.403	0.088	0.819*	0.165
Alcohol	0.132	0.077	0.624*	0.005
Suicide	0.033	0.170	0.499*	–0.034
Voluntar	0.345	0.205	0.460*	0.206
Mentaldis	–0.103	0.022	0.172	0.673*
Mentalill	–0.201	–0.142	0.362	0.592*
Familydis	0.206	0.242	0.231	0.256*

Table 15.33 Values of discriminant functions at group centroids in differentiation of five age groups of missing persons by the motives and reasons for disappearance variables

	Function			
Age (years)	1	2	3	4
0–15	1.269	0.174	–0.487	–0.036
15–20	1.502	0.047	0.157	0.041
20–25	–0.047	–0.508	0.131	–0.408
25–50	–0.860	–0.529	–0.021	0.051
50–	–1.096	0.910	0.034	–0.011

Table 15.34 Tests of equality of gender group means regarding the motives and reasons for disappearance variables (Copyright: Author's own image)

	Wilks' Lambda	F	df1	df2	Sig.
Voluntar	0.992	13.344	1	1715	0.000
Familydis	0.992	14.014	1	1715	0.000
Teenrebe	0.970	53.499	1	1715	0.000
Adventure	0.980	34.806	1	1715	0.000
Loitering	0.998	3.242	1	1715	0.072
Alcohol	0.996	6.395	1	1715	0.012
Mentaldis	0.997	4.941	1	1715	0.026
Mentalill	0.996	6.931	1	1715	0.009
Suicide	0.999	1.101	1	1715	0.294
Helpdem	1.000	0.227	1	1715	0.634

Table 15.35 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of male and female missing persons by the motives and reasons for disappearance variables (Copyright: Author's own image)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	0.052	100.0	100.0	0.222

Table 15.36 Standardised canonical discriminant function coefficients in differentiation of male and female missing persons by the motives and reasons for disappearance variables (Copyright: Author's own image)

	Function
	1
Teenrebe	0.661
Adventure	0.510
Alcohol	–0.630

Table 15.37 Structure matrix in differentiation of male and female missing persons by the motives and reasons for disappearance variables (Copyright: Author's own image)

	Function
	1
Teenrebe	0.775
Adventure	0.625
Voluntar	0.342
Alcohol	–0.268
Loitering	0.234
Familydis	0.211
Mentaldis	–0.161
Mentalill	–0.140
Helpdem	–0.046
Suicide	–0.029

Table 15.38 Values of discriminant functions at group centroids in differentiation of male and female missing persons by the motives and reasons for disappearance variables (Copyright: Author's own image)

	Function
Gender	1
Male	–0.187
Female	0.277

X_9—*suicide* (suicidal predisposition) and X_{10}—*helpdem* (helpless situation in which he/she cannot take care of themselves, e.g. lost child, dementia, amnesia). Their categories are: (1) absolutely not, (2) mostly not, (3) unknown, (4) mostly yes and (5) absolutely yes.

15.3.3.1 Differentiation of Five Age Groups of Missing Persons by Discriminant Analysis of Motives, Reasons and Circumstances for Disappearance Variables

The first discriminant variable is the age categorised as follows: (1) 0–15 years old, (2) 15–20 years old, (3) 20–25 years old, (4) 25–55 years old and (5) over 55 years old (Tables 15.29, 15.30, 15.31, 15.32 and 15.33).

F-test for Wilks' Lambda (conducted to assess age discriminability of predictor variables) is significant for all ten predictors (values of Sig. smaller than 0.05), which indicates a good selection of ten independent variables (Table 15.29).

Discriminant analysis was carried out for five age groups and it resulted in four discriminant functions and consequently four eigenvalues, although the first two might be enough to explain almost all group means differences (Table 15.30).

The highest eigenvalue (1.301) corresponds to the first discrimination function, which shows that it has the strongest power of discrimination of the four functions. Furthermore, the first two functions account for 97 % of the obtained group means dispersion, as compared to the other two functions, which, taken together, account for less than 4 % of the dispersion.

The canonical correlation coefficient shows that 56.6 %, that is $(0.752)^2$ of the total variance accounts for the differences among the five groups through the first discriminant function.

The size of coefficients on the first discriminant function indicates the highest discriminant power of the predictor variables *teenage rebellion* (X_3), *loitering* (X_5) and *love of adventure* (X_4). On the second discriminant function such variable is *helpless situation-lost child, dementia, amnesia* (X_{10}) and partially, the absence of *mental illness* (X_8). The third discriminant function is mostly determined by variables *loitering* (X_5), and partially *alcohol* (X_6) and *mental illness* (X_8), but also partially by the absence of *teenage rebellion* (X_3) and *mental disorder* (X_7). The fourth discriminant function is mostly defined by variables *mental disorder* (X_7), *mental illness* (X_8) and partially by *family disputes* (X_2), but also by the absence of *suicidal predisposition* (X_9) and the *love of adventure* (X_4).

The values of the structure matrix coefficients obtained are presented in Table 15.32.

The first discriminant function is defined by teenage rebellion, and partially by love of adventure, loitering and leaving home voluntarily. The second function includes variables that indicate helpless situation, e.g. lost child, dementia and amnesia. The third function indicates loitering, alcohol consumption, suicide and leaving home voluntarily, and partially love of adventure and mental illness. The fourth function is mostly defined by mental disorder, mental illness and partially by family disputes, as the reasons of disappearance assumed by reporting person.

Functions at group centroids show how age groups differ on each discriminative function (Table 15.33).

The most of the differences stem from the tendency of the youngest groups (up to 20 years old) to show more typical motives and reasons for disappearance such as teenage rebellion, love of adventure, loitering, alcohol consumption and left home voluntarily (especially in relation to the oldest ones). On the other side, the oldest group typical motives and reasons to disappear are more frequently related to helpless situation, e.g. lost child, dementia and amnesia, especially in relation to 20–50 years old group. Finally, some age groups differences are produced by lower scores of the youngest groups on the third (loitering, alcohol consumption, suicide and leaving home voluntarily) and by lower scores of young adults

on the fourth (mental disorder, mental illness and partially family disputes) discriminant function.

15.3.3.2 Differentiation of Male and Female Missing Persons by Discriminant Analysis of Motives, Reasons and Circumstances for Disappearance Variables

The second discriminant variable is gender ((1) Male, (2) Female).

F-test for Wilks' Lambda (conducted to assess age discriminability of predictor variables) is significant for 7 out of 10 variables (values of Sig. smaller than 0.05).

Discriminant analysis was carried out for two gender groups and it resulted in 1 discriminant function (and consequently one eigenvalue, 0.052), which accounts for 100 % of the obtained group means dispersion.

The canonical correlation coefficient shows that 4.9 %, that is $(0.222)^2$ of the total variance accounts for the differences among the two groups through the first discriminant function.

The size of the coefficients on the discriminant function indicates the highest discriminant power of the predictor variables *teenreb* (X_3), *adventure* (X_4) and the absence of *alcohol* (X_6).

The values of the structure matrix coefficients obtained are presented in Table 15.37.

The discriminant function is defined by teenage rebellion, love of adventure and partially by the absence of alcohol consumption.

Functions at group centroids show how gender groups differ on discriminative function (Table 15.38).

There is a certain tendency (Table 15.38) that the reasons for disappearance for females, more than for males, are teenage rebellion, love of adventure and the absence of alcohol consumption. According to earlier results showing that females significantly participate in younger groups, those reasons could be associated with the group of young females.

In conclusion, it would appear that adult males of mature age prevail among missing persons. Moreover, they have significantly higher education than females and another of their characteristics is regular consumption of alcohol and drug abuse. Females prevail at young age, as children and juveniles. Manifest mental illness was found most frequently in participants over 55 years of age. However, juveniles of maturing age (15–20 years) were also found suffering from a wide range of mental difficulties not related to somatic disorders.

Figures show that persons gone missing are much less frequently married compared to the Croatian population of corresponding age, but marital status in not a protective factor in disappearance. Namely, married participants exhibit a tendency towards mental illness and alcoholism, whilst those unmarried tend to suffer from depression. Living with parents is not a protective factor for disappearance. Some of the latter participants have manifest signs of mental illness, dementia, alcoholism and suicidal behaviour. The picture is further aggravated in about one-third of cases by life away from family, e.g. in a foster home, in a reform institution or an old peoples' home.

Persons of mature and most productive age suffer with relative significance from psychological disorders and mental illness. Persons of formative age (15–20) exhibit a strong tendency towards antisocial behaviour through abuse of alcohol and vagrancy. Helplessness, i.e. inability to take care of oneself, is most present in the youngest (children) and oldest age group indicating probable parental neglect of children and lack of proper care for the elderly.

At the time of reporting, a third of the participants were in hospital or outpatient psychiatric treatment, and a fifth suffered from some mental illness. In addition, a third of the participants suffered from one of the following problems: alcohol or drug addiction, suicidal tendencies, anxiety, depression and dementia. The most frequent assumed motives and reasons of disappearance given by the reporters when contacting the police are voluntary abandonment of the usual place of residence and hiding, psychological disorder and teenage rebellion (51.5 %). Significantly less frequent are family problems, adventurism, loitering, alcohol, suicidal tendencies and inability to care for oneself.

To conclude, although missing persons in Croatia are far better-educated than the general population, poor social circumstances interacting with mental problems are found to lie behind the circumstances, motives and reasons of disappearance.

15.4 Reporting Missing Persons

There are only a small number of policy-oriented studies that have developed typologies of missing people (see Newiss, 1999) and considered the use of profiling techniques to inform the search process (Shalev, Schaefer, & Morgan, 2009). This problem is compounded by lack of guidance to police officers on what is good practice in dealing with these cases in general. Learning is largely 'on the job' and there is a lack of manuals to which to refer. It is all too easy to fall into the trap of dismissing missing persons as a time consuming, low priority area of policing. For this reason, the functionality of a particular procedure must be continuously checked in theory and in practice (Hedges, 2002).

The investigation into a missing person begins at the point of first notification to the police and as much detail as possible should be established (Guidance on the Management Recording and Investigation of Missing Persons, 2010). After the free-willing statement from the reporter, the police officer asks questions which aim to make the statement of the reporter more precise and updated. In many cases the reports of a missing person are ambiguous and confusing. The willingness of the reporter to disclose intimate or compromising information regarding the missing person or regarding themselves is of crucial importance. This dark figure of missing data frequently proves an obstacle for the police in efficient tracking down and locating a missing person. Following the established protocol comprised of a series of questions, the call handler will gather critical information (Fyfe, Stevenson, & Woolnough, 2014). A badly received report and the lack of information would not only prevent the timely search and finding of a missing person, it would also create a negative public image of the police.

Every report should be assessed and responded to with the appropriate level of priority. It is necessary, therefore, to develop a strategic framework that will help to deliver a problem-solving approach to cases. One of the difficulties in getting the correct response to a missing person report is that there are cases where the individual is at great risk but this is not often obvious from the information obtained when taking the initial report.

When taking a missing person report, it should be remembered that the act of going missing is likely to have been precipitated by a problem in the person's life. This may be related to their personal circumstances or something more sinister (Guidance on the Management Recording and Investigation of Missing Persons, 2010). It often happens that the questionnaires which contain the checking questions make the procedure a routine one, and bring the risk on the non-individualised approach to every case of the missing person.

To set the search measures in motion, the police need the information on the missing person and the circumstances of the disappearance in order to assess the situation and plan a proper course of action. The initial police response is focused on establishing a 'definition of the situation' and, in particular, on assessing whether the person may be at risk (Payne, 1995). To gather the information relevant to cases of missing persons, police officers in Croatia use the Protocol on Receiving the Missing Person Report. Three types of police databases are used in Croatia: the missing persons' registry, the daily activities bulletin of the missing persons and the missing person files kept by the police station for a given territory. These tools are quite useful, because they help the police officer to check which questions s(he) asked and which s(he) failed to ask. In most cases, this is sufficient for the initial, urgent, relevant and efficient search for the missing person (Butorac, Šuperina, & Mikšaj-Todorović, 2013). Evidence to support this may be found in the data collected in this study indicating that the police recorded and were able to identify the motives, reasons and circumstances of disappearance from the reporter in about 80 % cases. The study shows that social determinants were predominantly responsible for the disappearance.

In an earlier study by Šuperina and Dujmović (2011), the authors examined the structure of the reporters who notified the police that a person had gone missing (in 2001 and 2002). It was found that in the majority of cases the parents (mother or father) reported the case (48.4 %). Reports made by other blood relations raise this percentage to a total of 56.14 %. In about 18 % cases the reporters were various institutions (e.g. reform institutions for children, old age homes, hospitals and psychiatric institutions).

Data showing the most frequent reporters in this study are shown in Table 15.39.

As in the cited study, the majority of the reporters were parents and blood relatives (57.9 %). However, the portion of the reports made by institutions (psychiatric hospitals and reform institutions) is double compared to the earlier data (43.8 %). In most cases the report was made by notifying the police station in person (58 %), followed by a faxed report (22.6 %) and telephone (18 %). Family members favour direct contact in notifying the police, whereas institutions choose fax messages to communicate the information on a missing person to the police.

Reporters act relatively promptly when a person goes missing. Table 15.40 indicates the length of time from the moment of disappearance to the moment of notification.

In the first two categories showing how promptly the police were notified, police experience shows that the institution caring for the missing person is the reporter, which corroborates the data in the previous table. In all other cases, specific interpersonal relations between the reporter and the missing person and various other circumstances are of critical importance. Examination of the data shows that between 12 p.m. and 8 a.m. neither family nor institutions detect that a person has gone missing (detection rate for that time of day is only 1.2–5.5 %).

Table 15.39 Reporters notifying the Police (Copyright: Author's own image)

Reporter	%
Reform school for children and juveniles	17.6
Mother	16.8
Psychiatric hospital	15.7
Father	13.3
Other family members	13.3
Son	5.3
Other persons	4.6
Daughter	4.1

Table 15.40 Time between disappearance and notification (Copyright: Author's own image)

Time	%
0–3 h	29.9
3–6 h	12.2
6–12 h	14.1
12–24 h	17.1
1–2 days	14.9
3–6 days	8.2
1–4 weeks	2.3
More than 1 month	1.2

Most typically, reporters detect that a person has gone missing in the hours from 8 a.m. to 12 p.m. and this is the time of day in which they, as a rule, contact the police for help. This supports the earlier argument, derived from the social status and possible reasons and circumstances of disappearance, that absence from home in the late hours of the day indicates that neglect and lack of care are the likely causes of children, juveniles and the elderly going missing.

Section 15.3 provides evidence that the sociodemographic and psychological-psychiatric status of missing persons differ significantly from those in some other countries gathered from available data. As a result, Croatian police have developed their own Protocol on Receiving the Missing Person Report, a useful tool in addressing missing person cases, described in more detail in the section that follows. This study is only the first step in relating the results of empirical research with actual practise, but it will be a helpful tool in amending the Protocol. It is noteworthy that in studies compared, no data are available on who the reporter was or how the report was submitted.

Typically in Croatia the missing person report is given, in the majority of cases, by family members, followed by institutions such as reform institutions for children and juveniles and psychiatric hospitals. Most reporters come to the police station in person and give detailed information on

the personal appearance, socio-demographic, psychological and behavioural status of the person and other relevant context information required by the Protocol on Receiving the Missing Person Report. It is important to note that in 3/4 of all cases reporters report the missing person within 24 h of disappearance.

15.5 Searching for Missing Persons

Since a large number of missing person reports are made to the police annually, they must be given an order of priority, which generally starts in the control room. Supervisors should be aware of the grading of incidents to ensure that the correct level of priority is given. The call taker will have to make a decision, based on the information available at that time, about the level of priority response that the incident will receive. The decision will be based on a graded response policy and an assessment of the risk factors relating to the incident. This risk identification should determine the speed and scale of the initial police response (Guidance on the Management Recording and Investigation of Missing Persons, 2010).

Correct assessment of the situation is based on the information supplied by a reporter and activities undertaken by police and is followed by developing different versions of the incident that, in the end, will suggest a number of approaches to its solution. Different versions of the event will suggest likely or probable explanations of the disappearance, given the existent and non-existent facts relevant to the situation. The number of versions is in direct correspondence with the available facts. In every situation it is important to consider all likely versions of the event in order to gain full insight into the actual chain of events that led to the disappearance. Effectiveness, objectivity and completeness are the goal. Once all versions of the event have been explored, they need to be checked for logic. It is unfortunate that the police in Croatia do not have at their disposal a set of tools to assist in the assessment of the level of risk, as some other countries have (Newiss, 2004, 2005; Force Procedures Into Reports of Missing Persons, 1998; Missing Persons Policy, 1998; Guidance on the Management Recording and Investigation of Missing Persons, 2010; Interim Guidance on the Management, Recording and Investigation of Missing Persons 2013).

Risk assessment is subjective and depends on the police officer assigned to the case, his/her training and experience, and on the conduct of his/her superior. However, the hierarchical structure of the police force allows the transfer of information between police stations and police directorates. Prompt notification of all competent specialists is possible and timely recognition of high-risk disappearances is practically guaranteed.

Immediately after it has been established without a doubt that the missing person has become the victim of a crime (or if such suspicion is justified), a task force or a larger operative group is formed to proceed with the criminal investigation.

If the missing person is not found within 24 h of receiving the report, a search plan is devised subject to approval from the superior officer. Initial actions include gathering information from the reporter, family or close persons, inspecting/searching the missing person's place of residence, checking other locations where the person might be staying, locating the person's mobile phone, searching the area, etc. as described by Newiss (1999, p. 11). Part of the search procedure is posting the missing person's profile on the website of the Ministry of the Interior. Similar steps are taken by the Australian police force. If the person is not found within a short time and the police assessment indicates the need for more intensive search, a follow-up investigation is instigated (James et al., 2008).

The search organised by the police is coordinated with the efforts undertaken by family members and other close persons. If need be, the police will use their own supplementary resources (special police) and cooperate with other persons, institutions and non-government organisations.

Encouraged by the practises of the Australian police, the Public Relations Office at the Ministry of the Interior has started an interactive portal *www.nestali.hr* avoiding visual design typical of

police websites. The portal is part of the project known as NENO (National Register of Missing Persons) containing the names of all missing persons searched for by the police. NENO provides information on the procedure and complex methodology deployed in searching for missing persons. More importantly, it encourages family members, friends and the community to cooperate actively and directly with the police for they are the most useful source of information on the missing person's habits and lifestyle. The portal has an open profile on Facebook (*facebook.com/nestali.hr*).

15.5.1 Results of Searching for Missing Persons

The results of searches for missing persons, including those who returned of their own free will, indicate that 92.1 % of missing persons were found and identified alive. The percentages of the dead and those not found were almost equal (c. 4 %). In 39.5 % cases the persons returned at their own initiative. Police search measures resulted in locating 42.8 % missing persons, while family members and other persons were responsible for finding the missing person in 15 % cases (Table 15.41).

The most common cause of death was natural death (over 3/4) followed by causes such as suicide, accidents and consequences of a violent act (0.2 %). Interestingly, the reporters had no suspicion in any of the reported cases that the missing person may have been the victim of a criminal act. However, the fact that 4 % of the missing persons were not located during this study indicates that their disappearance may have been caused by human trafficking or by an unidentified cause of death.

Table 15.41 Incidence of death and physical injury in found missing persons (Copyright: Author's own image)

	Consequence		
Number of reported missing persons	Death	Severe physical injury	Slight physical injury
1724	69 (4 %)	22 (1.3 %)	28 (1.6 %)

About 25 % of the found persons needed hospitalisation due to mental health difficulties or physical injury. The police interviewed 41.4 % of the found persons. Apart of reporting persons, other involved persons were interviewed in over 1/3 of all the cases.

15.5.2 Police Search Measures

Police search measures undertaken to locate missing persons were tested using 67 variables. Data were categorised in two groups. In the first was the information gathered from all family members, friends, peers, neighbours, acquaintances and others in the missing person's social environment. Mothers as source of information appear in a large number of cases (24.3 %), followed by fathers (17.5 %), members of the extended family (18.1 %) and neighbours (14.6 %). In the second group are the activities undertaken by the police *ex officio,* with the most common ones shown in Table 15.42.

The effectiveness of the police and their partners is estimated by the shortest time elapsed between the time of receiving the report and the time the missing person is located (Table 15.43).

Over 1/4 of missing persons is found within 6 h of disappearance, and 61 % is found within 24 h. Consolidated figures indicate that 81.2 % is found within a week. Only 1.9 % of missing persons is found after more than 1 year.

Australian data for the State of Victoria are practically identical with the data given above: 90 % of missing persons are located within 1

Table 15.42 Most common police measures and actions (Copyright: Author's own image)

Police measures and actions	%
Circulates photographs and information on the missing person to all police stations	66.8
Locates the mobile phone used by the missing person	35
Inspects the home and other places of residence, ascertains the missing person's movements and use of vehicle	52.4
Patrols road intersections	62.2
Patrols open areas	45.2

Table 15.43 Length of time between receiving the report and finding the missing person (Copyright: Author's own image)

No. of hours/days/weeks	%
0–6 h	27.0
6–12 h	15.4
12–24 h	18.6
1–2 days	7.5
3–6 days	12.7
1–2 weeks	8.4
More than 2 weeks	7.4

week (James et al., 2008). However, UK data are significantly different. According to Parr and Fyfe (2012) up to 80 % of missing people return within 24 h and about 1 % remain outstanding a year after going missing.

Differences in police effectiveness in finding missing persons in UK and Croatia may be to a great extent attributed to a dramatically higher incidence of persons gone missing in UK (one person missing every two minutes), whereas in Croatia this incidence in one missing person every 5 days. As a result, given the incidence and complexity of the issue, in many countries special units have been formed with specialised expertise, tools and procedures devised to deal with the problem.

15.5.3 Differentiation of Three Categories of Missing Person's Finding Status due to Police Effectiveness by Discriminant Analysis of Motives, Reasons and Circumstances for Disappearance Variables

The discriminant analysis is used to estimate the linear relationship between a discriminant (dependent) non-metrical variable having two or more categories (Was the missing person found because of the measures and actions undertaken by the police), and linear combination of 10 independent metric variables of motives and reasons for disappearance assumed by the reporting person (Tables 15.44, 15.45, 15.46, 15.47 and 15.48).

Table 15.44 Tests of equality of missing persons' finding status group means regarding the motives and reasons for disappearance variables (Copyright: Author's own image)

	Wilks' Lambda	F	df1	df2	Sig.
Voluntar	0.965	30.976	2	1703	0.000
Familydis	0.986	12.391	2	1703	0.000
Tenrebe	0.966	30.361	2	1703	0.000
Adventure	0.972	24.446	2	1703	0.000
Loitering	0.960	35.723	2	1703	0.000
Alcohol	0.996	3.350	2	1703	0.035
Mentaldis	0.994	4.829	2	1703	0.008
Mentalill	0.980	17.011	2	1703	0.000
Suicide	0.996	3.657	2	1703	0.026
Helpdem	0.991	7.751	2	1703	0.000

Table 15.45 Eigenvalues, explained variance and canonical correlation of discriminant functions in differentiation of three categories of missing persons' finding status by the motives and reasons for disappearance variables (Copyright: Author's own image)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical correlation
1	0.083	85.7	85.7	0.276
2	0.014	14.3	100.0	0.117

Table 15.46 Standardised canonical discriminant function coefficients in differentiation of three categories of missing persons' finding status by the motives and reasons for disappearance variables (Copyright: Author's own image)

	Function	
	1	2
Voluntar	0.239	–0.001
Familydis	0.105	–0.150
Teenrebe	0.114	–0.265
Adventure	0.184	–0.376
Loitering	0.607	0.435
Alcohol	–0.259	–0.161
Mentaldis	–0.108	0.024
Mentalill	–0.448	–0.178
Suicide	–0.032	0.436
Helpdem	0.025	0.697

Table 15.47 Structure matrix in differentiation of three categories of missing persons' finding status by the motives and reasons for disappearance variables (Copyright: Author's own image)

	Function	
	1	2
Loitering	0.703	0.276
Voluntar	0.662	0.071
Teenrebe	0.647	–0.263
Adventure	0.583	–0.207
Mentalill	–0.489	0.119
Familydis	0.419	0.007
Alcohol	0.211	0.137
Helpdem	0.102	0.772
Suicide	0.068	0.532
Mentaldis	–0.234	0.288

Table 15.48 Values of discriminant functions at group centroids in differentiation of three categories of missing persons' finding status by the motives and reasons for disappearance variables (Copyright: Author's own image)

	Function	
Missing person found by the police	1	2
No	0.239	–0.041
Not found	0.349	0.676
Yes	–0.337	0.009

The predictor variables do not have normal multivariate distribution but besides the sample size, discriminant analysis is relatively robust even when distribution is contradicted.

In this study independent variables are the variables of motives and reasons for disappearance, defined in Sect. 15.3.3.

Discriminant variable (was the missing person found because of the measures and actions undertaken by the police) is categorised as follows: (1) No, (2) Hasn't been found and (3) Yes.

In order to determine the variables which significantly contribute to the differentiation of groups regarding police role in finding missing persons F-test for Wilks' Lambda has been used (Table 15.44).

The F-test is significant for all predictors (values of Sig. smaller than 0.05), indicating a good selection of ten independent variables.

Discriminant analysis was carried out for three groups defined by police role in finding missing persons and it resulted in two discriminant functions and consequently two eigenvalues (Table 15.45), which were relatively low. The higher eigenvalue (0.083) corresponds to the first discrimination function, which accounts for 85.7 % of the group means dispersion.

The canonical correlation coefficient shows that 7.6 %, that is $(0.276)^2$ of the total variance accounts for the differences among the three groups through the first discriminant function.

The size of coefficients on the first discriminant function indicates the highest discriminant power of the predictor variables *loitering* (X_5), *mental illness* (X_8), *alcohol* (X_6) and *voluntarily left home* (X_1). On the second discriminant function such variables are *helpless situation-lost child, dementia, amnesia* (X_{10}), *suicide* (X_9), *loitering* (X_5), *adventure* (X_4) and *teenage rebellion* (X_3).

The values of the structure matrix coefficients obtained are presented in Table 15.47.

The first discriminant function is defined by loitering, voluntarily leaving home, teenage rebellion, love of adventure, the absence of mental illness and partially by family disputes. The second discriminant function is mostly defined by suicidal tendencies and helplessness including dementia, amnesia, etc., and partially by mental disorder, loitering and absence of teenage rebellion.

Group centroids show how groups defined by police role in finding missing persons differ (Table 15.48).

Table 15.48 suggests that the most groups' differences come from the assumed motives and reasons for disappearance of the missing persons who were not found by the police. This group's motives and reasons for disappearance more frequently are loitering, voluntarily leaving home, teenage rebellion, love of adventure, and the absence of mental illness, but also the suicidal tendencies and helplessness including dementia, amnesia, etc. Such a finding suggests two extreme age subgroups included in this not-found missing persons' group.

The indicators of police effectiveness in Croatia show the police response to be relatively prompt, the undertaken measures and actions sufficiently comprehensive, and the cooperation and partnership with the community satisfactory.

The greatest challenge for a successful police search present the so-called active cases of missing persons, i.e. those who are unable to take care of themselves (see Tables 15.29, 15.30, 15.31, 15.32 and 15.33), in particular people suffering from dementia and those with suicidal predispositions. The least challenging are the cases of voluntary departure, youth rebellion and adventurism where a certain number of the persons gone missing return on their own or are found by the persons close to them. Consequently, the police primarily direct their efforts and resources towards the most vulnerable and high-risk cases that are not resolved by implementing the initial set of measures.

15.6 Concluding Remarks

This study has helped to establish the profile of missing persons in Croatia. Unlike other studies, only a third of the sample are children and adolescents, however without any recorded cases of abduction. Compared to the general population characterised by an almost equal proportion of men and women, in the missing person population the percentage of men in the study is somewhat higher than that of women, but women are significantly more represented at young age (children and juveniles). It was found that the overall missing person population has better than average education, with men better educated than women. Over one half lives with family or a partner, and the remaining segment of the sample, in almost equal proportion, lives in reform institutions or on their own. However, the presence of close persons or persons who act as social support figures was not found to be a protective factor. Evidence shows that psychological or psychiatric disorders are the determinants responsible for disappearance, particularly in married participants. Missing persons living alone are likely to be suffering from depression. Manifest mental illness is highest in the segment of the missing person population over 55. Similarly, young people of juvenile age (15–20) are also afflicted by a wide range of psychological problems that are not somatic in nature. Disappearance of younger people corresponds, for the most part, to the findings of other studies, especially in females: teenage rebellion, adventurism, voluntary abandoning of home, loitering and alcohol. In older population, characteristic reasons for going missing is helplessness mainly attributed to dementia, amnesia and Alzheimer's disease.

Given that Croatia is one of the five states in the European Union with highest unemployment and poverty rates, it needs to be emphasised that 4/5 of the missing persons are not part of the working population (they are pupils, students, unemployed, retired) and are therefore financially dependent on family who should look after their welfare, or they live in care-providing institutions. The quality of care that families can provide is questionable, however, many find themselves in jeopardised situations after losing their job or if their income is too low. In the context of general deterioration of the social and economic situation, all age groups are affected and it has become apparent that their emotional and cognitive ability to cope with crises in their lives is deficient.

In most missing person situations, reporters are family members who notify the police in person within 24 h of disappearance. They supply information required by the protocol and missing person report. These tools are quite useful because they help the police officer to check which questions s(he) has asked and which s(he) has failed to ask. In most cases the gathered information is sufficient to initiate urgent and efficient search for the missing person. Evidence shows that in about 80 % cases in this study the police were able to reconstruct and identify the motives, reasons and circumstances of disappearance from the information provided by the reporter. In this respect, the study has shown that the reports predominantly establish social determinants.

However, in individual cases there is a risk of error that may be caused by preconceptions, unjustified premature judgements, stereotyping and halo effect with regard to the reporter and/or missing person, and equating or generalising a particular incident with earlier similar events. Moreover, the police in Croatia have no tools to

assist in risk assessment as some other states do. Development of parameters such as these is one of the future goals of this project.

Indicators of police effectiveness in Croatia show a relatively prompt response by the police, adequacy of the spectre of measures and actions undertaken, and a satisfactory degree of partnership and cooperation with the community. Police resources are primarily directed towards active, most vulnerable and high-risk cases not solved by implementing only the initial set of measures and actions. Given that the incidence of missing persons is growing (base index in 2013 compared to 2000 is 175.78), brought about by socio-economic deprivation, it is most likely that permanent special units will need to be formed for this specialised line of work and a set of operating tools and procedures will need to be developed for these units to follow. Their work will be all the more important given that non-government organisations in Croatia as a rule do not provide any assistance in any stage of search for missing persons and neither do they offer support to families and missing persons once they have been found.

A portion of data gathered for the purposes of this study has been analysed in hope to construct a better picture of the profile of missing persons, and to ascertain the quality of reporting and searching for missing persons. Starting from the fact that both the missing persons phenomenon and the society's response of each country are related to the socio-economic and cultural characteristics of the certain social environment, this study comprises the most important characteristics of missing persons of all ages in the respective context. It points to the most effective police search measures and actions with regard to these characteristics as well. However, there is a serious lack of similar comprehensive studies. Studies of incidence, forensic studies and policy guidance manuals with special attention given to the issue of missing children in existing publications are predominant. In this regard it would be beneficial to carry out extensive comparative studies including different profiles of missing persons and the evaluation of the police work in relation to the profiling results. The overall contribution of the such studies would be to exchange experience and knowledge in order to develop and employ a best evidence-based practice.

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