

MARITAL STATUS OF CITIZENS AND FLOODS: CITIZEN PREPAREDNESS FOR RESPONSE TO NATURAL DISASTERS

Vladimir M. Cvetković*

Academy of Criminalistic and Police Studies, Belgrade

This paper presents the results of quantitative research into the influence of marital status on citizen preparedness for response to natural disaster caused by flood in the Republic of Serbia. The aim of such research is a scientific explanation of relationship between marital status and preparedness. In order to realize research, nineteen communities were randomly selected in which 2,500 persons were surveyed, in 2015. On that occasion, households were questioned using the multi-stage random sample. The research results suggest that married would in the highest percentage give money to help flood victims, long-lasting rains make them to think about preparedness for floods, they know what flood is, they are familiar with viruses and infections that accompany the period during and after the flood, they know where in local community elders, disabled and infants live, they know safety procedures for responding during floods, they would evacuate to a friend's place. On the other side, divorced citizens in the lowest percentage take preventive measures to reduce tangible consequences caused by floods, they are not yet prepared, but will start preparing next month, they know what flood is, they would evacuate to the upper floors of the house, say that someone at primary/secondary school and within family educated them on floods, they know what to do after an official warning about approach of flood, they got information about floods at faculty, through informal education and through media. The research results can be used in designing strategies and campaigns aimed to raise the level of preparedness of citizens with regard to their marital status.

Key words: *security, natural disaster, flood, citizens, marital status, preparedness, Serbia*

Introduction

Analyses of geospatial and temporal distributions of natural disasters indicate an increase in the number and severity of flood consequences (Cvetković, 2014; Cvetković & Dragicević, 2014; Cvetković, Gačić, & Jakovljević, 2015a, 2015b; Cvetković,

* Vladimir M. Cvetković, Ph.D, vladimir.cvetkovic@kpa.edu.rs

Milojković, & Stojković, 2014; Devlin, Waterhouse, Taylor, & Brodie, 2001; Dragičević et al., 2013; Guan, Zheng, Zhang, & Qin, 2015; Martinez & Le Toan, 2007; Türkeş & Sümer, 2004). In domestic and foreign scientific literature, there are various definitions of flood. Flood as a natural disaster is usually defined as the occurrence of unusually large amount of water at a certain place due to the effects of natural forces or artificial causes (dams failure, war, etc.) (Stojanović, 1984: 95); the phenomenon of high water spills from riverbed where high water is the highest reached level of water in the river during a flood (Dragičević & Filipović, 2009: 193); type of natural disaster that occurs due to spills of high water from natural and artificial recipients, i.e. riverbed and water reservoirs (Milojković & Mlađan, 2010: 173); result of the overflow of water out of natural and artificial boundaries, that is, when water flow exceeds the capacity of natural and artificial boundaries, that is, when water flow exceeds the capacity of the natural retention or infiltration (Đarmati & Aleksić, 2004: 117); in water management and hydrotechnical practice the term flood (high water) means the status of water regime when the water level, that is, the river flow increases causing discharge of water from the riverbed and flooding coastal terrain (Prohaska, Ilić, Miloradović, & Petković, 2009, p. 191); result of spillover beyond the river embankments and spreading across nearby valley (Marlene & Carmichael, 2007:45); result of raising of water level above natural or artificial dams (embankments) which by its expansion endangers lives and property of people (Smith & Petley, 2009, p. 239); flood as a natural disaster can involve raising of water level above the boundaries of its coasts accompanied by uncontrolled expansion of water in accordance with characteristics of terrain, causing consequences to people, the environment and their property (Cvetković, 2015: 63).

In the theory of disasters, great attention is paid to research into preparedness of citizens for response to various natural disasters (Momani & Salmi, 2012; Ronan, Alisic, Towers, Johnson, & Johnston, 2015; Tomio, Sato, Matsuda, Koga, & Mizumura, 2014; Uscher-Pines, Chandra, & Acosta, 2013; Cvetković, 2015a, 2015b, 2015c, 2016b; Cvetković, Gačić, & Jakovljević, 2015). Gillespie et al. (Gillespie, Colignon, Banerjee, Murty, & Rogge, 1993: 36) define preparedness as measures undertaken before the disaster in order to improve response and recovery from the resulting consequences. Thus, the authors integrate measures of planning, procedural training and procurement of inventories. International Organization of the Red Cross considers preparedness as any measures taken aimed at anticipation and possible prevention, mitigation of consequences of disaster on vulnerable populations and efficient response that is dealing with resulting consequences (Societies, 2000, p. 6). Tierney et al (Tierney, Lindell, & Perry, 2002, p. 27) suggest that preparedness involves activities undertaken to strengthen capabilities and opportunities of social groups to respond to situations caused by disasters. Thereby, they emphasize the inconsistency of preparedness with a clear focus on its two objectives: 1. to help people to avoid the threat (Cvetković, 2016a; Cvetković & Gačić, 2016; Štrbac & Terzić, 2007); 2. to develop capacities and mechanisms with the aim of an effective response to disasters. Authors also focused on examination of correlation between marital status and preparedness to respond (Russell, Goltz, & Bourque, 1995; Spittal, McClure, Siegert, & Walkey, 2008). Tomio et al suggest that older, female and better educated individuals are positively associated with a higher level of disaster preparedness at the household level, while at the community level such correlation exists with length of residence, marital status, presence of an older family member (Tomio et al., 2014).

For these reasons, the paper that represents the quantitative research examines the influence of marital status on preparedness of citizens to respond to a natural disaster caused by floods in the Republic of Serbia. The research results can be used for the adoption of strategy to improve preparedness of citizens for response.

Methodology and data

Study area

For realization of the study some communities were selected with high and low risk of onset of lowland and flash flooding. The survey was conducted on the territory of a large number of local communities with different demographic and social characteristics to be generalized to the whole population in Serbia. The urban and rural communities in different parts of Serbia were selected. Specifically, the study was conducted in the following communities: Obrenovac, Šabac, Kruševac, Kragujevac, Sremska Mitrovica, Priboj, Batočina, Svilajnac, Lapovo, Paraćin, Smederevska Palanka, Jaša Tomić, Loznica, Bajina Bašta, Smederevo, Novi Sad, Kraljevo, Rekovac and Užice.

Study design with variables

Operationalization of the theoretical notion of preparedness to respond has given three dimensions that have been studied by identification of larger number of variables for each one. Perception of preparedness includes variables on preparedness at different levels; barriers for raising the level of preparedness; variables on the expectation on help from different categories of people and organizations; assessment of effectiveness of first responders to respond. Knowledge through variables related to the level of knowledge was examined; flood risk map; knowing where they are and how to use them, willingness to train, willingness for methods of education, way to obtain the information about floods. And the third dimensions, supplies relate to having oral/written plans, having supplies of food and water, a transistor radio, flashlight, hoe, shovel, hoe and spade, first aid kit, insurance.

Sample

The population consists of all adult residents of local communities in which there is a risk to occur flash flood or flood caused by dam failure. The sample size has been adjusted with the geographical (local communities from all regions of Serbia will be represented) and demographic size of the communities themselves. It was randomly selected sample of 19 out of 150 municipalities and 23 towns and the city of Belgrade (Table 1). The research was undertaken in those areas that were most affected related to the amount of water or potential risk. In the survey, questioning strategy was applied to households with the use of a multi-stage random sample. In the first step, which refers to the primary causal units, parts of community in the research were selected. This process was accompanied by creation of map and determination of percentage share of each such segment in the total sample. In the second stage, streets or sections of streets were determined on the level of primary causal units. Each

research core was determined as the path with specified start and end points of movement. In the next step, households in which the survey would be conducted were defined. The number of households is harmonized with population count of community. The final step referred to selection of respondents within households previously defined. The selection of respondents was conducted following the procedure of next birthday for adult members of household. The process of interviewing for each local authority was held three days in a week (including weekends) at different times of days. The study surveyed with 2.500 persons.

Table 1 – *The number of the respondents in local communities in the study*

Local community	Total square area	Localities	Population	Number of households	Number of respondents	Percentages (%)
Obrenovac	410	29	72682	7752	178	7.12
Šabac	797	52	114548	19585	140	5.60
Kruševac	854	101	131368	19342	180	7.20
Kregujevac	835	5	179417	49969	191	7.64
Sremska Mitrovica	762	26	78776	14213	174	6.96
Priboj	553	33	26386	6199	122	4.88
Batočina	136	11	11525	1678	80	3.20
Svilajnac	336	22	22940	3141	115	4.60
Lapovo	55	2	7650	2300	39	1.56
Paraćin	542	35	53327	8565	147	5.88
Smederevska Palanka	421	18	49185	8700	205	8.20
Sečanj – Jaša Tomić	82	1	2373	1111	97	3.88
Loznica	612	54	78136	6666	149	5.96
Bajina Bašta	673	36	7432	3014	50	2.00
Smederevo	484	28	107048	20948	145	5.80
Novi Sad	699	16	346163	72513	150	6.00
Kraljevo	1530	92	123724	19360	141	5.64
Rekovac	336	32	10525	710	50	2.00
Užice	667	41	76886	17836	147	5.88
Total: 19	10784	634	1500091	283602	2500	100

According to Statistical Office of Serbia, women have a share of 51.3% and men 48.7% in overall population. Observed in absolute numbers, of total 7,498,001 inhabitants, in Serbia live 3,852,071 women and 3,645,930 men. Similar as in the entire population, the sample has more women (50.2%) than men (49.8%). In 2014, the average age of respondents was 39.95 (men 40.9 and women 38.61). Observing the educational structure of citizens who are included in the survey sample, it also can be noted that majority of population (41.3%) has secondary/four years school. The smallest percentage of

population has completed master (2.9%) and doctoral studies (0.4%). Marital status can be viewed from the aspect of legal marital status and factual marital status which also includes persons living in extramarital community. In the sample, married people account to 54.6%, widow/widower 3%, unmarried (single) 18.8%, engaged 2.7% and in relationship 16.9%. Table 2 gives a detailed overview of sample structure of surveyed citizens.

Table 2 – Sample structure of interviewed citizens

Variables	Categories	Frequency	Percentages (%)
Gender	Male	1244	49.8
	Female	1256	50.2
Age	18-28	711	28.4
	28-38	554	22.2
	38-48	521	20.8
	48-58	492	19.7
	58-68	169	6.8
	Over 68	53	2.2
Education	Primary	180	7.2
	Secondary/3 years	520	20.8
	Secondary/4 years	1032	41.3
	Higher	245	9.8
	High	439	17.6
	Master	73	2.9
Marital status	Doctorate	11	0.4
	Single	470	18.8
	In relationship	423	16.9
	Engaged	67	2.7
	Married	1366	54.6
	Divorced	99	4.0
Distance between household and river (km)	Widow / widower	75	3.0
	Up to 2 km	1479	59.2
	From 2 to 5	744	29.8
	From 5 to 10	231	9.2
Number of household members	Over 10	46	1.8
	Up to 2	63	2.5
	From 2 to 4	1223	48.9
	From 4 to 6	639	25.6
Employment status	Over 6	575	23.0
	Yes	1519	60.8
Size of apartment / house (m ²)	No	883	35.3
	Up to 35	128	3.9
	35-60	237	7.2
	60-80	279	8.5
	80-100	126	3.9
Income level - monthly	Over 100	45	1.4
	Up to 25,000 RSD	727	29.1
	Up to 50,000 RSD	935	37.4
	U to 75,000 RSD	475	19.0
	Over 90,000 RSD	191	7.6

* 1 US Dollar = 111 RSD

Instrument

For validity and reliability studies of the data gathering instrument five steps were taken. In the first step, we determined some scales used for measuring the preparedness of citizens to respond to disasters in general or to specific natural disaster. The third step included the aforementioned operationalization of preparedness for response and deciding on the three basic dimensions (perception of preparedness to respond, knowledge and supplies). In the fourth step, we defined variables for each dimension (perceptions of preparedness to respond – 46 variables; knowledge – 50 and supplies – 18), then for each variable it was taken, adapted or specially designed question in instrument. The fifth and final step was carried out preliminary (pilot) study in Batočina with the aim of checking constructed instrument (its internal compliance of the scale, i.e. degree of relatedness of items of which it is composed, and whether instructions, questions and values on scale are clear).

Data analysis

Statistical analysis of collected data was performed by IBM's software package SPSS. Chi-square test of independence (χ^2) was used for testing of the connection between marital status and categorical variables on perception, knowledge and having supplies and plans for a natural disaster caused by flood. On that occasion additional assumptions were completed about minimum expected frequency in each cell, which amounted to five or more. Assessment of impact level was performed by phi coefficient representing the correlation coefficient ranging from 0 to 1, where a higher number indicates a stronger relationship between the two variables. Koen criteria were used: from 0.10 for small, 0.30 for medium and 0.50 for large effect (Cohen, 1988). For tables larger than 2 by 2, to assess the impact level it was used Cramer's v coefficient which takes into account the number of degrees of freedom. Accordingly, for R-1 or K-1 is equal to 1, we used the following criteria of impact size: small = 0.01, medium = 0.30 and large = 0.50. To test the connection between marital status and continuous dependent variables on the perception, knowledge and having supplies and plans for natural disasters caused by floods, it was selected independent samples t-test and ANOVA. Before proceeding to the implementation of the test, we examined general and specific assumptions for its implementation.

Research results

The results of Chi-square test of independence (χ^2) showed a statistically significant relationship between marital status and the following variables: preventive measures ($p = 0.000 < 0.05$, $v = 0.09$ - small influence); financial resources ($p = 0.002 < 0.05$, $v = 0.08$ - small influence); engaged in the field ($p = 0.000 < 0.05$, $v = 0.12$ - small influence); engaged in a detention center ($p = 0.000 < 0.05$, $v = 0.12$ - small influence); long-lasting rains ($p = 0.000 < 0.05$, $v = 0.10$ - small influence); media reports ($p = 0.000 < 0.05$, $v = 0.11$ - small influence); and level of preparedness ($p = 0.000 < 0.05$, $v = 0.07$ - small influence). On the other hand, there was no statistically significant relationship with variables: visiting to the flooded areas ($p = 0.061 > 0.05$), and raising of water level ($p = 0.170 > 0.05$) (Table 1).

According to the results, in the highest percentage:

- Citizens who live alone would engage to help threatened population in the field (23.2%), would engage in detention centers to provide help to flood victims (9.3%);
- Citizens who are in relationships think about preparedness for floods because of visiting to the flooded areas (13.8%);
- Citizens who are engaged take preventive measures to reduce tangible consequences of floods (22.7%), they are still not prepared, but will start preparing next month (16.7%), have recently begun to prepare (9.1%), have prepared for at least 6 months (32.4%);
- Citizens who are married would give money to help flood victims (32.9%), long-lasting rains make them to think on preparedness (43.9%);
- Citizens who are divorced are not yet prepared, but intend to get prepared in the next 6 months (23.2%);
- Citizens who have lost their husband/wife think on preparedness for response to floods due to media reports (55.6%), do not do anything to prepare themselves (69%);

On the other hand, in the smallest percentage:

- Citizens who are in relationships would engage in detention centers to provide help to flood victims (2.3%);
- Citizens who are engaged think about preparedness for floods due to visiting to the flooded areas (6.1%), media reports (21.2%), do not do anything to prepare themselves (47%);
- Citizens who are divorced take preventive measures to reduce tangible consequences of floods (6.4%) they are still not prepared, but will start preparing next month (2.4%), have recently begun to prepare (1.2%);
- Citizens who have lost their spouses would give money to help flood victims (10.6%) have performed preparation for at least 6 months (2.8%);
- Citizens who have lost their spouses would engage to help threatened population in the ground (0.1%), think on preparedness for floods due to long-lasting rains (25.8%) they are still not prepared, but intend to get prepared in the next 6 months (9.7%).

Table 3 – Results of the chi-square test of independence (χ^2) between marital status and mentioned variables on the perception of preparedness for response

	value	df	Asymp. Sig. (2 - sided)	Cramers v
Preventive measures	39,143	10	,000*	,093
Money	18,709	5	,002*	,089
Field deployed	37,901	5	,000*	,127
Detention center deployed	37,680	5	,000*	,126
Visiting to the flooded areas	11,507	5	,061	,051
Long-lasting rain periods	26,992	5	,000*	,108
Raising of river levels	7,753	5	,170	,057
Media reports	27,814	5	,000*	,110
Level of preparedness	57,548	25	,000*	,071

*statistically significant correlation - $p \leq 0.05$

One-way ANOVA was used for studying the effect of marital status of citizens on the following continuous dependent variables. Subjects were divided according to marital status into 6 groups (single, in a relationship, engaged, married, divorced and widower/widow). Using homogeneity of variance test it was examined equality of variances in the results for each of

the 6 groups. Bearing in mind the results of Levene Statistic, the assumption of homogeneity of variance is not violated in the following variables: importance of taken measures; first responders; I am not threatened; I have no time for that; I have no support; I can not prevented it; international humanitarian organizations; the police; self-organized individuals; awareness; citizens in flooded areas; efficiency of the emergency service; efficiency of staff for emergency situations. For variable in which the assumption is violated, there is a table „Robust Tests of Equality of Means” and the results of two tests, Welsh's (Welsh) and Brown's (Brown - Forsythe) tests, resistant to the violation of the assumption of homogeneity of variance.

According to the results, there is a statistically significant difference between the means of those groups in the following continuous dependent variables: individual preparedness ($F = 6.19$, $p = .000$, eta squared = 0.018 - small influence); household preparedness ($F = 4.00$, $p = 0.002$, eta squared = 0.009); preparedness of local community ($F = 2.49$, $p = .002$, eta squared = 0.005 - small influence); personal abilities ($F = 11.592$, $p = .000$, eta squared = 0.031 - small influence); It is very expensive ($F = 2.84$, $p = 0.016$, eta squared = 0.005 - small influence); It will not influence on safety ($F = 4.009$, $p = 0.002$, eta squared = 0.008 - small influence); household members ($F = 5.48$, $p = 0.000$, eta squared = 0.018 - small influence); neighbors ($F = 11.61$, $p = 0.000$, eta squared = 0.029 - small influence); NHO - ($F = 6.46$, $p = .000$, eta squared = 0.013 - small influence); first responders ($F = 5.22$, $p = .000$, eta squared = 0.013 - small influence); emergency service ($F = 2.65$, $p = .023$, eta squared = 0.006 - small influence); Army ($F = 5.28$, $p = 0.000$, eta squared = 0.013 - small influence); interest ($F = 7.98$, $p = .000$, eta squared = 0.019 - small influence); Help would not mean much ($F = 9.024$, $p = .000$, eta squared = 0.026); Others have helped ($F = 2.94$, $p = 0.13$, eta squared = 0.006 - small influence); Job of state authorities ($F = 11.65$, $p = .000$, eta squared = 0.019 - small influence); I have no time for that ($F = 4.602$, $p = .000$, eta squared = 0.01 - small influence); police efficiency ($F = 0.278$, $p = 0.001$, eta squared = 0.005); efficiency of first responders ($F = 3.83$, $p = 0.02$, eta squared = 0.008 - small influence); efficiency of the army ($F = 6.09$, $p = 0.000$, eta squared = 0.016 - small influence); character before. rate ($F = 9.95$, $p = 0.000$, eta squared = 0.019 - a small effect); I am not affected ($F = 7.73$, $p = 0.000$, eta squared = 0.015 - small influence); I have no time for that ($F = 3.23$, $p = .006$, eta squared = 0.006 - small influence); I have no support ($F = 4.15$, $p = .001$, eta squared = 0.008 - small influence); I can not prevent it ($F = 2.93$, $p = 0.012$, eta squared = 0.006 - small influence); MHO ($F = 4.27$, $p = .001$, eta squared = 0.008 - small influence); Police ($F = 3.26$, $p = .006$, eta squared = 0.006 - small influence); self-organized individuals ($F = 4.06$, $p = 0.001$, eta squared = 0.008); awareness ($F = 8.44$, $p = .000$, eta squared = 0.016 - small influence); Citizens of flooded areas ($F = 3.14$, $p = .008$, eta squared = 0.006); efficiency of emergency medical services ($F = 5.73$, $p = 0.000$, eta squared = 0.011 - small influence); and efficiency of staff for emergency situations ($F = 4.52$, $p = .000$, eta squared = 0.009 - small influence).

Subsequent comparisons using Tukey HSD shows that the observed mean value of:

- Individual preparedness for response to floods statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 2.33$, $SD = 1.44$) and divorced ($M = 2.71$, $SD = 1.36$), engaged ($M = 2.67$, $SD = 1.036$) and singles ($M = 3.07$, $SD = 0.950$). Citizens who live alone have the highest level of individual preparedness for response, while the lowest is recorded among citizens who lost their spouses;

- household preparedness for response to floods statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 2.63$, $SD = 1.19$) and the citizens who live alone ($M = 3.14$, $SD = 0.97$), who are married ($M = 3.01$, $SD = 0.95$), and in a relationship ($M = 3.10$, $SD = 0.97$). Citizens who live alone have the highest level of household preparedness for response, while the lowest is recorded among citizens who lost their spouses;
- preparedness of local community for response to floods statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 2.56$, $SD = 1.27$), and those who are in a relationship ($M = 2.97$, $SD = 1.02$). Citizens who are in a relationship have the highest level of preparedness of local community for response, and the lowest is recorded among citizens who lost their spouses;
- confidence in personal abilities and capabilities to cope with consequences of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.08$, $SD = 1.03$), and who have lost their spouses ($M = 1.99$, $SD = 1.21$). Citizens who live alone have the highest level of confidence in personal abilities and capabilities to deal with consequences, while the lowest is recorded among citizens who lost their spouses;
- importance of taking measures of preparedness statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 2.56$, $SD = 1.24$), and those who live alone ($M = 3.32$, $SD = 1.05$); reason „I do not consider myself personally or my household at risk“ for not taking preventive measures statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.13$, $SD = 1.45$) and citizens who have lost their spouses ($M = 2.41$, $SD = 1.36$). Citizens who live alone have the highest level of agreement with the stated reason in relation to citizens who have lost their spouses;
- reason „I have no time for that“ for not taking preventive measures statistically significantly ($p < 0.05$), and mutually differs among citizens who are in a relationship ($M = 2.87$, $SD = 1.42$), and citizens who are divorced ($M = 2.47$, $SD = 1.11$). Citizens who are in a relationship have the highest level of agreement with the stated reason in relation to citizens who are divorced;
- reason „I think it will not influence on my personal or household safety“ for not taking preventive measures statistically significantly ($p < 0.05$), and mutually differs among citizens who are in a relationship ($M = 2.97$, $SD = 1.29$) and citizens who are divorced ($M = 2.39$, $SD = 1.39$). Citizens who are in a relationship have the highest level of agreement with the stated reason in relation to citizens who are divorced;
- reason „I have no support from the local community“ for not taking preventive measures statistically significantly ($p < 0.05$), and mutually differs among citizens who are married ($M = 2.67$, $SD = 1.7$) and citizens who have lost their spouses ($M = 3.27$, $SD = 1.42$). Citizens who have lost their spouses have the highest level of agreement with the stated reason in relation to citizens who are married;
- reason „I can not prevent the consequences in any way“ for not taking preventive measures statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 3.25$, $SD = 1.52$), and citizens who are divorced ($M = 2.53$, $SD = 1.40$). Citizens who have lost their spouse have the highest level of agreement with the stated reason in relation to citizens who are divorced;
- reliance on family members in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 4.37$, $SD = 1.21$) and citizens who are divorced ($M = 3.46$, $SD = 1.64$). Citizens who have lost their spouses have the highest level of reliance on family members in relation to citizens who are divorced who have the lowest level;

- reliance on neighbors in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.74$, $SD = 1.23$) and citizens who are divorced ($M = 2.61$, $SD = 1.43$). Citizens who live alone have the highest level of reliance on neighbors in relation to divorced citizens who have the lowest level;

- reliance on non-governmental humanitarian organizations in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 4.37$, $SD = 1.21$) and citizens who are divorced ($M = 3.46$, $SD = 1.64$). Citizens who have lost their spouses have the highest level of reliance on non-governmental humanitarian organization in relation to divorced citizens who have the lowest level;

- reliance on international humanitarian organizations in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$) and mutually differs for citizens who are in a relationship ($M = 2.51$, $SD = 1.19$) and citizens who are divorced ($M = 1.98$, $SD = 1.06$). Citizens who are in a relationship have the highest level of reliance on international humanitarian organization in relation to divorced citizens divorced who have the lowest level;

- reliance on the police in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.42$, $SD = 1.29$) and citizens who are divorced ($M = 2.99$, $SD = 1.37$). Citizens who live alone have the highest level of reliance on the police in such situations compared to divorced citizens who have the lowest level;

- reliance on first responders in the first 72 hours after the occurrence of floods statistically significant ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.76$, $SD = 1.19$) and citizens who are divorced ($M = 3.01$, $SD = 1.42$). Citizens who live alone have the highest level of reliance on first responders in these situations compared to divorced citizens who have the lowest level;

- reliance on the army in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.67$, $SD = 1.25$) and citizens who are divorced ($M = 2.91$, $SD = 1.53$). Citizens who live alone have the highest level of reliance on the army in these situations compared to divorced citizens who have the lowest level;

- reliance on self-organized individuals in the first 72 hours after the occurrence of floods statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.20$, $SD = 1.32$) and citizens who have lost their spouses ($M = 2.60$, $SD = 1.37$). Citizens who live alone have the highest level of reliance on self-organized individuals in such situations compared to citizens who have lost their spouses who have the lowest level;

- awareness of potential flood risks in local community statistically significantly ($p < 0.05$), and mutually differs among citizens who are in a relationship ($M = 2.88$, $SD = 1.95$) and citizens who have lost their spouses ($M = 1.95$, $SD = 1.13$). For citizens who are in a relationship have the highest level of awareness in relation to citizens who have lost their spouses and who have the lowest level;

- reason „My help would not mean much” for not engaging in the field to help other people statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 2.55$, $SD = 1.12$) and who are divorced ($M = 2.37$, $SD = 1.27$). Citizens who live alone have the highest level of agreement with the stated reasons compared to divorced citizens who have lowest level;

- reasons „Others have helped enough” for not engaging in the field to help other people statistically significantly ($p < 0.05$), and mutually differs among citizens who are married ($M = 2.78$, $SD = 1.22$) and who are divorced ($M = 2.29$, $SD = 1.23$). Citizens who are married have the highest level of agreement with the stated reason compared to divorced citizens who have the lowest level;

- reason „it is a job of competent state authorities” for not engaging in the field to help other people statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 3.84$, $SD = 1.04$) and who are divorced ($M = 2.60$, $SD = 1.46$). Citizens who have lost their spouses have the highest level of agreement with the stated reason compared to divorced citizens who have the lowest level;

- reason „I expected primarily be engaged citizens from flood-affected areas” for not engaging in the field to help other people statistically significantly ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 3.24$, $SD = 1.23$), and citizens who live alone ($M = 2.68$, $SD = 1.22$). Citizens who have lost their spouses have the highest level of agreement with the stated reason compared to divorced citizens who have the lowest level;

- reason „I did not have enough time” for not engaging in the field to help other people statistically significant ($p < 0.05$), and mutually differs among citizens who have lost their spouses ($M = 3.26$, $SD = 1.52$) and who are divorced ($M = 2.25$, $SD = 1.21$). Citizens who have lost their spouses have the highest level of agreement with the stated reason compared to divorced citizens who have the lowest level;

- assessment of efficiency of the police response to natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs among citizens who are married ($M = 3.32$, $SD = 1.27$) and divorced people ($M = 2.84$, $SD = 1.29$). Citizens who are married have the highest level of efficiency evaluation of police response in relation to divorced citizens who have the lowest level;

- assessment of efficiency of response of first responders in natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs among citizens who are engaged ($M = 3.78$, $SD = 1.21$) and divorced people ($M = 3.08$, $SD = 1.39$). Citizens who are engaged recorded the highest level of efficiency evaluation of response of first responders in relation to divorced citizens who recorded the lowest level;

- assessment of efficiency of emergency response medical assistance in natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs among citizens who are engaged ($M = 3.82$, $SD = 1.21$) and divorced people ($M = 3.06$, $SD = 1.36$). Citizens who are engaged recorded the highest level of efficiency evaluation of response of emergency service in relation to divorced citizens who recorded the lowest level;

- assessment of efficiency of military response to natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs among citizens who are engaged ($M = 3.80$, $SD = 1.43$) and divorced people ($M = 2.96$, $SD = 1.58$). Citizens who are engaged recorded the highest level of efficiency evaluation of military response in relation to divorced citizens who recorded the lowest level;

- assessment of efficiency of staff for emergency situations to natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs among citizens who are engaged ($M = 3.49$, $SD = 1.48$) and divorced people ($M = 2.49$, $SD = 1.39$). Citizens who are engaged recorded the highest level of efficiency evaluation of response of staff for emergency situations in relation to divorced citizens who recorded the lowest level.

Table 4 – Results of one-way ANOVA of different marital status groups and continuous dependent variables on the perception of preparedness for response

Homogeneity of variance test				
	Levene Statistic	df1	df2	Sig.
Individual preparedness	14,006	5	2465	,000
Household preparedness	6,634	5	2473	,000
Preparedness of loc. community	7,206	5	2458	,000
State preparedness	5,260	5	2463	,000
Personal abilities	7,357	5	2450	,000
Importance of taken measures	1,581	5	2459	,162*
ISS	2,062	5	2426	,067*
I am not threatened	,606	5	2441	,695*
I have no time for that	1,916	5	2418	,088*
It is very expensive	3,458	5	2408	,004
It will not influence on safety	2,341	5	2413	,039
I am not capable	4,393	5	2407	,001
I have no support	,827	5	2419	,530*
I can not prevent it	1,971	5	2404	,080*
Household members	8,709	5	2431	,000
Neighbors	4,417	5	2432	,001
Non-governmental humanitarian organizations	3,145	5	2416	,008
International humanitarian organizations	1,715	5	2415	,128*
Religious community	4,302	5	2413	,001
Police	,441	5	2429	,820*
First responders	7,183	5	2432	,000
Emergency service	3,219	5	2431	,007
Army	5,065	5	2433	,000
Self-organized individuals	1,948	5	2431	,083*
Awareness	1,659	5	2466	,141*
Interest	3,920	5	2454	,002
Help would not mean much	4,654	5	2317	,000
Others have helped	4,627	5	2316	,000
Job of state authorities	3,989	5	2311	,001
Citizens in flooded areas	,993	5	2293	,421*
Lack of time	3,594	5	2303	,003
It is too costly	4,458	5	2301	,000
Efficiency of the police	2,615	5	2408	,023
Efficiency of first responders	2,428	5	2409	,033
Efficiency of emergency service	1,421	5	2408	,213*
Efficiency of the army	9,586	5	2395	,000
Efficiency of stuff for emergency situations	1,501	5	2405	,186*

* Presumption of homogeneity of variance is not violated – Sig. > 0,05

Marital Status of Citizens and Floods: Citizen Preparedness for Response to Natural Disasters

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Individual preparedness	Different group	51,474	5	10,295	9,461	,000
	Within a group	2682,117	2465	1,088		
	Total	2733,591	2470			
Household preparedness	Different group	23,730	5	4,746	4,961	,000
	Within a group	2365,815	2473	,957		
	Total	2389,546	2478			
Preparedness of loc. community	Different group	16,983	5	3,397	2,763	,017
	Within a group	3021,867	2458	1,229		
	Total	3038,851	2463			
State preparedness	Different group	10,034	5	2,007	1,501	,186
	Within a group	3293,036	2463	1,337		
	Total	3303,070	2468			
Personal abilities	Different group	84,333	5	16,867	16,146	,000
	Within a group	2559,348	2450	1,045		
	Total	2643,681	2455			
Importance of taken measures	Different group	63,239	5	12,648	9,957	,000*
	Within a group	3123,634	2459	1,270		
	Total	3186,872	2464			
First responders	Different group	14,332	5	2,866	1,624	,150
	Within a group	4281,666	2426	1,765		
	Total	4295,998	2431			
I am not threatened	Different group	80,339	5	16,068	7,730	,000*
	Within a group	5073,752	2441	2,079		
	Total	5154,092	2446			
I have no time for that	Different group	29,007	5	5,801	3,235	,006*
	Within a group	4336,339	2418	1,793		
	Total	4365,346	2423			
It is very expensive	Different group	23,798	5	4,760	2,737	,018
	Within a group	4187,559	2408	1,739		
	Total	4211,357	2413			
It will not influence on safety	Different group	36,425	5	7,285	4,275	,001
	Within a group	4112,058	2413	1,704		
	Total	4148,483	2418			
I am not capable	Different group	7,937	5	1,587	,904	,478
	Within a group	4228,471	2407	1,757		
	Total	4236,408	2412			
I have no support	Different group	35,517	5	7,103	4,155	,001*
	Within a group	4136,029	2419	1,710		
	Total	4171,546	2424			
I can not prevent it	Different group	26,990	5	5,398	2,933	,012*
	Within a group	4424,527	2404	1,840		
	Total	4451,517	2409			
Household members	Different group	68,956	5	13,791	9,211	,000
	Within a group	3639,755	2431	1,497		
	Total	3708,711	2436			

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Neighbors	Different group	111,087	5	22,217	14,572	,000
	Within a group	3707,954	2432	1,525		
	Total	3819,041	2437			
Non-governmental humanitarian organizations	Different group	44,783	5	8,957	6,573	,000
	Within a group	3291,989	2416	1,363		
	Total	3336,772	2421			
International humanitarian organizations	Different group	28,029	5	5,606	4,271	,001*
	Within a group	3169,501	2415	1,312		
	Total	3197,530	2420			
Religious community	Different group	8,255	5	1,651	1,093	,362
	Within a group	3644,023	2413	1,510		
	Total	3652,278	2418			
Police	Different group	28,208	5	5,642	3,264	,006*
	Within a group	4198,016	2429	1,728		
	Total	4226,224	2434			
First responders	Different group	51,466	5	10,293	6,854	,000
	Within a group	3652,339	2432	1,502		
	Total	3703,805	2437			
Emergency medical service	Different group	25,099	5	5,020	3,268	,006
	Within a group	3734,482	2431	1,536		
	Total	3759,581	2436			
Army	Different group	59,291	5	11,858	6,673	,000
	Within a group	4323,541	2433	1,777		
	Total	4382,832	2438			
Self-organized individuals	Different group	36,343	5	7,269	4,062	,001*
	Within a group	4350,010	2431	1,789		
	Total	4386,354	2436			
Awareness	Different group	65,445	5	13,089	8,444	,000*
	Within a group	3822,432	2466	1,550		
	Total	3887,877	2471			
Interest	Different group	65,729	5	13,146	9,690	,000
	Within a group	3329,319	2454	1,357		
	Total	3395,048	2459			
Help would not mean much	Different group	96,328	5	19,266	12,619	,000
	Within a group	3537,388	2317	1,527		
	Total	3633,716	2322			
Others have helped	Different group	22,647	5	4,529	3,048	,010
	Within a group	3441,200	2316	1,486		
	Total	3463,847	2321			
Job of state authorities	Different group	70,674	5	14,135	9,294	,000
	Within a group	3514,815	2311	1,521		
	Total	3585,489	2316			
Citizens in flooded areas	Different group	23,582	5	4,716	3,145	,008*
	Within a group	3438,832	2293	1,500		
	Total	3462,414	2298			

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Lack of time	Different group	46,125	5	9,225	5,545	,000
	Within a group	3831,327	2303	1,664		
	Total	3877,453	2308			
It is too costly	Different group	4,725	5	,945	,657	,656
	Within a group	3309,249	2301	1,438		
	Total	3313,974	2306			
Efficiency of the police	Different group	23,488	5	4,698	2,872	,014
	Within a group	3938,703	2408	1,636		
	Total	3962,191	2413			
Efficiency of first responders	Different group	34,173	5	6,835	4,121	,001
	Within a group	3995,576	2409	1,659		
	Total	4029,749	2414			
Efficiency of emergency service	Different group	42,705	5	8,541	5,734	,000*
	Within a group	3586,769	2408	1,490		
	Total	3629,473	2413			
Efficiency of the army	Different group	71,787	5	14,357	8,197	,000
	Within a group	4195,029	2395	1,752		
	Total	4266,816	2400			
Efficiency of stuff for emergency situations	Different group	42,016	5	8,403	4,526	,000*
	Within a group	4464,936	2405	1,857		
	Total	4506,952	2410			

* There is a statistically significant difference between the means of dependent variables in 6 groups - Sig. ≤ 0.05

Robust Tests of Equality of Means					
		Statistic ^a	df1	df2	Sig.
Individual preparedness	Welch	6,194	5	283,466	,000*
	Brown - Forsythe	7,358	5	442,488	,000*
Household preparedness	Welch	4,001	5	290,962	,002*
	Brown - Forsythe	4,363	5	537,780	,001*
Preparedness of local community	Welch	2,496	5	286,825	,031*
	Brown - Forsythe	2,486	5	539,198	,031*
State preparedness	Welch	1,290	5	288,458	,268
	Brown - Forsythe	1,300	5	510,577	,262
Personal abilities	Welch	11,592	5	289,008	,000*
	Brown - Forsythe	13,460	5	513,730	,000*
It is very expensive	Welch	2,849	5	271,781	,016*
	Brown - Forsythe	2,621	5	497,971	,024*

Robust Tests of Equality of Means					
		Statistic ^a	df1	df2	Sig.
It will not influence on safety	Welch	4,009	5	273,515	,002*
	Brown - Forsythe	4,210	5	563,688	,001*
I am not capable	Welch	,927	5	272,742	,464
	Brown - Forsythe	,850	5	534,877	,515
Household members	Welch	5,483	5	283,628	,000*
	Brown - Forsythe	8,121	5	535,636	,000*
Neighbors	Welch	11,614	5	293,762	,000*
	Brown - Forsythe	14,645	5	641,758	,000*
Non-governmental humanitarian organizations	Welch	6,465	5	288,496	,000*
	Brown - Forsythe	6,813	5	637,446	,000*
Religious community	Welch	1,031	5	289,112	,400
	Brown - Forsythe	1,080	5	593,876	,370
First responders	Welch	5,224	5	285,146	,000*
	Brown - Forsythe	5,763	5	483,547	,000*
Emergency medical service	Welch	2,654	5	289,080	,023*
	Brown - Forsythe	2,865	5	542,564	,015*
Army	Welch	5,286	5	285,106	,000*
	Brown - Forsythe	5,645	5	484,376	,000*
Interest	Welch	7,980	5	287,224	,000*
	Brown - Forsythe	8,575	5	520,577	,000*
Help would not mean much	Welch	9,024	5	269,832	,000*
	Brown - Forsythe	12,046	5	492,920	,000*
Others have helped	Welch	2,940	5	273,929	,013*
	Brown - Forsythe	2,725	5	474,929	,019*
Job of state authorities	Welch	11,653	5	276,276	,000*
	Brown - Forsythe	8,878	5	523,069	,000*
Lack of time	Welch	4,602	5	266,013	,000*
	Brown - Forsythe	5,157	5	479,765	,000*

Robust Tests of Equality of Means					
		Statistic ^a	df1	df2	Sig.
It is too costly	Welch	,585	5	267,120	,712
	Brown - Forsythe	,618	5	557,160	,686
Efficiency of the police	Welch	2,783	5	282,747	,018*
	Brown - Forsythe	2,597	5	503,345	,025*
Efficiency of first responders	Welch	3,830	5	280,082	,002*
	Brown - Forsythe	3,810	5	551,698	,002*
Efficiency of the army	Welch	6,092	5	277,856	,000*
	Brown - Forsythe	6,936	5	497,771	,000*

a. Asymptotically F distributed.

* There is a statistically significant difference between the means of dependent variables in 6 groups - Sig. ≤ 0.05

The results of Chi-square test of independence (χ^2) showed a statistically significant relationship between marital status and the following variables of knowledge on natural disasters caused by floods: knowledge on floods ($p = 0.000 < 0.05$, $v = 0.08$ - medium influence); familiarity with safety procedures ($p = 0.000 < 0.05$, $v = 0.10$ - medium influence); evacuation ($p = 0.000 < 0.05$, $v = 0.09$ - medium impact); education at school ($p = 0.000 < 0.05$, $v = 0.08$ - medium influence); education at work ($p = 0.000 < 0.05$, $v = 0.13$ - medium influence); elders, disabled ($p = 0.000 < 0.05$, $v = 0.08$ - medium influence); help - elders, disabled ($p = 0.000 < 0.05$, $v = 0.13$ - medium influence); official warning ($p = 0.000 < 0.05$, $v = 0.14$ - medium influence); potential infection ($p = 0.000 < 0.05$, $v = 0.13$ - medium influence); water valve ($p = 0.000 < 0.05$, $v = 0.16$ - medium influence); gas valve ($p = 0.000 < 0.05$, $v = 0.14$ - medium influence); electricity switch ($p = 0.000 < 0.05$, $v = 0.12$ - medium influence); handling valve for water ($p = 0.000 < 0.05$, $v = 0.15$ - medium influence); handling valve for gas ($p = 0.000 < 0.05$, $v = 0.18$ - medium influence); handling electricity switch ($p = 0.000 < 0.05$, $v = 0.12$ - medium influence); information from household members ($p = 0.000 < 0.05$, $v = 0.10$ - medium influence); information from neighbors ($p = 0.000 < 0.05$, $v = 0.11$ - medium influence); information from a friend ($p = 0.000 < 0.05$, $v = 0.12$ - medium influence); information at school ($p = 0.000 < 0.05$, $v = 0.10$ - medium influence); information through informal system ($p = 0.000 < 0.05$, $v = 0.10$ - medium influence); information at work ($p = 0.000 < 0.05$, $v = 0.12$ - medium influence); information on television ($p = 0.000 < 0.05$, $v = 0.11$ - medium influence); information over the Internet ($p = 0.000 < 0.05$, $v = 0.14$ - medium influence); desire for training ($p = 0.000 < 0.05$, $v = 0.09$ - medium influence); TV ($p = 0.000 < 0.05$, $v = 0.11$ - medium influence); radio ($p = 0.000 < 0.05$, $v = 0.10$ - medium influence); video games ($p = 0.001 < 0.05$, $v = 0.09$ - medium influence); internet ($p = 0.000 < 0.05$, $v = 0.15$ - medium influence) (Table 3).

The results indicate that:

- Married citizens: in the highest percentage – know what flood is (83.7%) are familiar with viruses and infections that accompany the period during and after floods (53.6%), know where in local community elders, disabled and infants live (46.3%) know safety procedures for responding during floods (27.6%), would evacuate to a friend's place (36.8%), say that someone at work educated them on floods (39.1 %), know how to handle the valve for water (81.9%), valve for gas (60.5%), electricity switch (78.4%), got information about floods in the press (34.1%); in the smallest percentage – they got information about floods at school (11.9%);

- Divorced citizens in the highest percentage – would evacuate to neighbors (18.1%), they know where electricity switch is (94.3%), gained information about floods from household members (37.6%), want to be educated on the radio (26.1%); in the smallest percentage - know what flood is (68%), would evacuate to the upper floor of the house (31.9%), would evacuate to detention centers (10.6%), say that someone at primary/secondary school (19.4%) and within family (32.3%) educated them about floods, they know what to do after an official warning about the approach of a flood wave (34.7%), gained information about floods at faculty (3.2%), acquired information about floods through an informal system of education (2.2%), the press (22.6%) want to be educated through video-games (0.1%);

- Citizens who have lost their spouses: in the highest percentage - would be evacuated in collective centers (30.9%), they know what helped is required by elders, disabled and infants (60%), they know where water valve is (92%), gas valve (72.9%), gained information about floods from neighbors (33.8%) want to be educated on television (86.5%); in the smallest percentage - know safety procedures for responding during floods (12.3%) are familiar with viruses and infections that accompany the period during and after floods, would evacuate to neighbors' places (1.1%), know where in local community elders, disabled and infants live (30.3%), gained information about floods from friends (4.4%) over the Internet (4.4%), want to undergo some form of training for dealing with natural disasters caused by floods (9%), they want to be educated over the Internet (4.5%);

- Citizens who are engaged in the greatest percentage – would evacuate to the upper floor of the house (40.4%), gained information about floods at faculty (9.7%), an informal system of education (12.9%); in the smallest percentage - acquired information about floods from household members (16.1%) want to be educated on the radio (1.6%);

- Citizens who are not in a relationship: in the highest percentage - point out that someone at primary/secondary school educated them on floods (23%), acquired information about floods from friends (16.7%), they would like to undergo some form of training for dealing with natural disasters caused by floods (44.8%) want to be educated through video-games (3.6%); in the smallest percentage - point out that someone at work educated them about floods (21.4%), they know what to do after an official warning about the approach of a flood wave (19.5%), they know where water valve is (66.4 %);

- Citizens who are in a relationship: in the highest percentage - point out that someone within family educated them about floods (47.9%), gained information about floods at school (20.6%) over the Internet (39.5%), they want to be educated over the Internet (33.2%); in the smallest percentage know what help is required by elders, disabled and infants (40.8%), they know where electricity switch is (69.1%), know how to handle water valve to (62.1%), gas valve (35%), gained information about floods from neighbors (10.9%) want to gain information through television (56%).

Table 5 – Review of the results of Chi-square test of independence (χ^2) of marital status and knowledge as an element of preparedness for response

	value	df	Asymp. Sig. (2 - sided)	Cramer's v
Knowledge on floods	35,270	10	,000*	,086
Familiarity with safety procedures	43,971	10	,000*	,098
Evacuation	63,277	20	,000*	,084
Education at school	34,095	10	,000*	,085
Education within family	24,469	10	,006	,072
Education at work	85,838	10	,000*	,137
Elders, disabled, infants	33,072	10	,000*	,084
Consent for evacuation	3,381	5	,642	,038
Help – elders, disabled	88,520	10	,000*	,135
Neighbors - independently	24,407	10	,007	,072
Flood risk map	24,125	10	,007	,071
Official warning	98,381	10	,000*	,146
Potential infection	87,595	10	,000*	,136
Water valve	130,492	10	,000*	,165
Gas valve	78,524	10	,000*	,143
Electricity switch	70,615	10	,000*	,124
Handling water valve	118,782	10	,000*	,157
Handling gas valve	127,672	10	,000*	,181
Handling electricity switch	71,072	10	,000*	,124
Information from household members	27,947	5	,000*	,109
Information from neighbors	31,574	5	,000*	,116
Information form friends	39,060	5	,000*	,129
Information form relatives	6,865	5	,231	,054
Information at school	26,112	5	,000*	,106
Information at faculty	8,533	5	,129	,060
Information through an informal system	24,359	5	,000*	,103
Information at work	34,584	5	,000*	,122
Information in religious community	7,586	5	,181	,057
Information on television	30,254	5	,000*	,113
Information on the radio	8,124	5	,150	,059
Information from the press	16,925	5	,006	,085
Information over the Internet	49,340	5	,000*	,145
Trained	5,483	5	,360	,048
Desire for training	39,335	10	,000*	,092
Education through television	29,324	5	,000*	,112
Education on the radio	27,663	5	,000*	,109
Education through video-games	22,005	5	,001*	,098
Education over the Internet	55,052	5	,000*	,154
Education through lectures	5,594	5	,348	,049
Informal system	8,589	5	,127	,060

* Statistically significant correlation - $p \leq 0.05$

One-way ANOVA was used to study the influence of marital status on continuous dependent variables of knowledge. Subjects were divided according to marital status in 6 groups (single, in a relationship, engaged, married, divorced, widow/widower). Firstly, using homogeneity of variance test it was examined equality of variances in the results for each of the 6 groups. Bearing in mind the results of Levene Statistic the assumption

of homogeneity of variance is violated in all variables, except for the stuff for emergency situations ($p = 0.054$). Accordingly, it is presented the table „Robust Tests of Equality of Means” and the results of two tests, Welsh's (Welsh) and Brown's (Brown – Forsythe) tests that are resistant to violation of the assumption of homogeneity of variance.

According to the results, there is a statistically significant difference between the means of the groups in the following dependent continuous variables: level of knowledge ($F = 4.08$, $p = .001$, eta squared = 0.01 - small influence); flood risk - 1 year ($F = 4.16$, $p = .001$, eta squared = 0.008 - small influence); warning systems ($F = 8.46$, $p = .000$, eta squared = 0.01 - small influence); Police ($F = 5.03$, $p = .000$, eta squared = 0.01 - small influence); first responders ($F = 7.86$, $p = .000$, eta squared = 0.01 - small influence); escape routes ($F = 5.05$, $p = 0.000$, eta squared = 0.008 – small influence); nearby shelters ($F = 5.49$, $p = .000$, eta squared = 0.01 - a small influence); vulnerability assessment and plan ($F = 6.37$, $p = .000$, eta squared = 0.011 - a small influence) (Table 4).

Subsequent comparisons using Tukey HSD shows that the mean of:

- level of knowledge about floods statistically significantly ($p < 0.05$), and mutually differs among citizens who live alone ($M = 3.02$, $SD = 1.01$), engaged ($M = 2.53$, $SD = 1.35$) citizens who have lost their spouses ($M = 2.58$, $SD = 1.02$). Thus, it can be said that citizens who live alone recorded the highest level of knowledge about natural disasters caused by floods, while it is the lowest among citizens who are engaged;

- Assessment of risks of flooding within a year statistically significantly ($p < 0.05$), and mutually differs among citizens who are married ($M = 2.65$, $SD = 1.41$), and citizens who are in a relationship ($M = 2.42$, $SD = 1.35$). In married people, assessment of flooding risk is at a higher level compared to citizens who are in a relationship;

- Awareness of warning systems statistically significantly ($p < 0.05$), and mutually differs for citizens who have lost their spouses ($M = 1.65$, $SD = 0.86$), who are married ($M = 2.30$, $SD = 1.20$), which live alone ($M = 2.25$, $SD = 1.19$) and divorced ($M = 2.46$, $SD = 1.33$). Awareness of warning systems is at the highest level among citizens who are divorced, while the smallest among citizens who have lost their spouses;

- Awareness of duties of the police in natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs for citizens who have lost their spouses ($M = 2.12$, $SD = 1.21$) who live alone ($M = 2.67$, $SD = 1.21$), and citizens who are in a relationship ($M = 2.57$, $SD = 1.15$). Citizens who live alone largely marked that they are informed on duties of the police;

- Awareness of duties of first responders in natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs for citizens who are engaged ($M = 2.22$, $SD = 1.22$) live alone ($M = 2.77$, $SD = 1.22$), in a relationship ($M = 2.72$, $SD = 1.13$), and who are married ($M = 2.87$, $SD = 1.34$). Citizens who are married to the greatest extent say that they are informed on duties of first responders in natural disaster caused by floods;

- Awareness of escape routes in natural disasters caused by floods statistically significantly ($p < 0.05$), and mutually differs for citizens who have lost their spouses ($M = 1.84$, $SD = 1.07$) live alone ($M = 2.45$, $SD = 1.26$), married ($M = 2.46$, $SD = 1.32$). Married people mostly say that they are informed about escape routes in case of floods;

¹ Eta-squared = sum of the squares of the different groups / total sum of squares. Cohen classifies 0.01 as a small influence, 0.06 as a medium influence and 0.14 as a large influence (Cohen, 1988 284).

- Awareness of nearby shelters in natural disasters statistically significantly ($p < 0.05$), and mutually differs for citizens who have lost their spouses ($M = 1.89$, $SD = 1.12$) live alone ($M = 2.34$, $SD = 1.17$), in ca relationship ($M = 2.42$, $SD = 1.14$) and divorced ($M = 2.69$, $SD = 1.38$). Divorced people largely indicate that they are familiar with locations of nearby shelters;

- Awareness of vulnerability assessments and plans of protection and sleeping in natural disasters statistically significantly ($p < 0.05$) and mutually differs for citizens who are divorced ($M = 2.75$, $SD = 1.22$), in a relationship ($M = 2, 35$, $SD = 1.14$), engaged ($M = 2.11$, $SD = 1.12$), married ($M = 2.25$, $SD = 1.22$), and who have lost their spouses ($M = 1.91$, $SD = 0.98$). The most informed about vulnerability assessments and plans for responding are divorced people.

Table 6 – Results of one-way ANOVA of different marital status groups and continuous dependent variables of knowledge

Homogeneity of variance test				
	Levene Statistic	df1	df2	Sig.
Level of knowledge	6,617	5	2366	,000
Flooding risk – 1 year	11,398	5	2458	,000
Flooding risk – 5 years	4,400	5	2403	,001
Warning systems	3,905	5	2412	,002
Police	3,379	5	2419	,005
First responders	6,007	5	2415	,000
Stuff for emergency situations	2,179	5	2413	,054*
Escape routes	3,491	5	2410	,004
Nearby shelters	2,581	5	2415	,025
Vulnerability assessment and plans	2,392	5	2407	,036

* The assumption of the equality of variance is not violated - Sig. > 0.05

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Level of knowledge	Different group	25,756	5	5,151	4,965	,000
	Within a group	2454,674	2366	1,037		
	Total	2480,430	2371			
Flooding risk – 1 year	Different group	36,534	5	7,307	4,008	,001
	Within a group	4481,167	2458	1,823		
	Total	4517,701	2463			
Flooding risk – 5 years	Different group	19,850	5	3,970	2,083	,065
	Within a group	4580,151	2403	1,906		
	Total	4600,001	2408			

Warning systems	Different group	37,419	5	7,484	5,328	,000
	Within a group	3388,242	2412	1,405		
	Total	3425,661	2417			
Police	Different group	37,168	5	7,434	4,733	,000
	Within a group	3799,348	2419	1,571		
	Total	3836,515	2424			
First responders	Different group	60,818	5	12,164	7,407	,000
	Within a group	3965,718	2415	1,642		
	Total	4026,535	2420			
Stuff for emergency situations	Different group	25,896	5	5,179	3,183	,007
	Within a group	3926,243	2413	1,627		
	Total	3952,140	2418			
Escape routes	Different group	31,701	5	6,340	3,889	,002
	Within a group	3928,988	2410	1,630		
	Total	3960,689	2415			
Nearby shelters	Different group	41,933	5	8,387	5,568	,000
	Within a group	3637,686	2415	1,506		
	Total	3679,619	2420			
Vulnerability assessments and plans	Different group	41,377	5	8,275	5,745	,000
	Within a group	3466,993	2407	1,440		
	Total	3508,370	2412			

*There is a statistically significant difference between the means of dependent variables in 6 groups - Sig. ≤ 0.05

Robust Testss of Equality of Means					
		Statistic ^a	df1	df2	Sig.
Level of knowledge	Welch	4,082	5	276,788	,001*
	Brown - Forsythe	4,639	5	410,061	,000*
Flooding risk – 1 year	Welch	4,168	5	292,987	,001*
	Brown - Forsythe	3,816	5	479,677	,002*
Flooding risk – 5 years	Welch	1,928	5	284,149	,090
	Brown - Forsythe	1,909	5	503,565	,091
Warning systems	Welch	8,465	5	294,780	,000*
	Brown - Forsythe	5,375	5	556,345	,000*

Robust Testss of Equality of Means					
		Statistic ^a	df1	df2	Sig.
Police	Welch	5,036	5	293,171	,000*
	Brown - Forsythe	4,846	5	608,115	,000*
First responders	Welch	7,865	5	293,441	,000*
	Brown - Forsythe	7,770	5	601,947	,000*
Stuff for emergency situations	Welch	3,325	5	292,318	,006*
	Brown - Forsythe	3,203	5	575,515	,007*
Escape routes	Welch	5,057	5	295,092	,000*
	Brown - Forsythe	4,255	5	644,058	,001*
Nearby shelters	Welch	5,490	5	292,072	,000*
	Brown - Forsythe	5,487	5	566,753	,000*
Vulnerability assessments and plans	Welch	6,370	5	293,882	,000*
	Brown - Forsythe	6,291	5	681,558	,000*

a. Asymptotically F distributed.

* There is a statistically significant difference between the means of dependent variables in 6 groups
- Sig. ≤ 0.05

The results of Chi-square test of independence (χ^2) showed a statistically significant relationship between marital status and the following variables on supplies and plans: supplies at home ($p = 0.000 < 0.05$, $v = 0.10$ - medium influence); food supply ($p = 0.019 < 0.05$, $v = 0.11$ - medium influence); water supply ($p = 0.000 < 0.05$, $v = 0.16$ - medium influence); radio-transistor ($p = 0.004 < 0.05$, $v = 0.11$ - medium influence); restocking ($p = 0.000 < 0.05$, $v = 0.11$ - medium influence); supplies in the car ($p = 0.000 < 0.05$, $v = 0.11$ - medium influence); first aid kit at home ($p = 0.000 < 0.05$, $v = 0.12$ - medium influence); first aid kit in the vehicle ($p = 0.000 < 0.05$, $v = 0.14$ - medium influence); first aid kit - easily accessible ($p = 0.000 < 0.05$, $v = 0.13$ - medium influence); plan for response ($p = 0.000 < 0.05$, $v = 0.07$ - medium influence); Discussion on the plan ($p = 0.000 < 0.05$, $v = 0.09$ - medium influence); copies of documents ($p = 0.000 < 0.05$, $v = 0.12$ - medium influence); insurance ($p = 0.000 < 0.05$, $v = 0.17$ - medium influence) (Table 181).² More generally speaking, in relation to marital status:

- Engaged citizens in the highest percentage: have supplies (34.3%), food supply for a day (23.8%), water supply for 4 days (77.8%), annually replenish supplies (51.4%);
- Citizens who live alone in the highest percentage (28.5%) have supplies of food for two days; in the highest percentage (30.5%) have supplies of water for one day;
- Married citizens in the highest percentage (66.1%) have food supplies for 4 days, hold a first aid kit in an easily accessible place (70.9%), discuss with family members about plans (17.7%);
- Citizens who are in a relationship: in the highest percentage (30.5%) have supplies of water for two days, unwritten plans in case of floods (14.2%);

² Since the case is a table bigger than 2 x 2, to assess the size of the influence it is used Cramers V indicator which takes into account the number of degrees of freedom. Accordingly, we used the following criteria: R-1 or K-1 is 1: small = 0.01, medium = 0.30 and large = 0.50; R-1 or K-1 is 2 (three categories): Small = 0.07, medium = 0.21 and large = 0.35; and R-1 or K-1 is 3 (four categories): small = 0.06, medium = 0.17 and large = 0.29 (Gravetter & Wallnau, 2004).

- Divorced people in the highest percentage (34.1) have a transistor radio, insurance of house/apartment against the consequences of floods (17.2%) supplies in the car (12.2%) have a first aid kit at home (53.7%) replenish supplies once a month (38.6%);
- Citizens who have lost their spouses in the highest percentage (2.7%) have written plans in case of floods, copies of important financial and other personal documents (35.3%).

Table 7 – Review of the results of Chi-square test of independence (χ^2) of marital status and possession of supplies and response plans

Categorical variables	value	df	Asymp. Sig. (2 - sided)	Cramers v
Supplies at home	48,822	10	,000*	,101
Food supplies	21,395	10	,019*	,119
Water supplies	38,757	10	,000*	,166
Radio-transistor	17,106	5	,004*	,117
Flashlight	10,225	5	,069	,090
Shovel	6,901	5	,228	,074
Hack	8,109	5	,150	,080
Hoe and spade	7,064	5	,216	,074
Apparatus for firefighting	6,711	5	,243	,075
Restocking	34,854	10	,000*	,116
Supplies in the car	81,809	15	,000*	,110
First aid kit at home	70,140	10	,000*	,124
First aid kit in the vehicle	78,924	10	,000*	,146
First aid kit- easily accessible	74,223	10	,000*	,136
Plan for response	44,555	15	,000*	,079
Discussion of the plan	39,311	10	,000*	,094
Copies of documents	66,363	10	,000*	,123
Insurance	139,969	10	,000*	,172

* statistically significant correlation - $p \leq 0.05$

Conclusion with recommendations

Examining the correlation between marital status and preparedness of citizens for response to a natural disaster caused by flood in the Republic of Serbia we came to diverse conclusions. In the highest percentage:

- Citizens who are not in a relationship would engage in providing help to population in the field and the collective centers for providing help to victims of floods, they say that someone at primary/secondary school educated them about floods, have acquired information about floods from a friend, they would like to undergo some form of training for dealing with natural disasters caused by floods, they want to be educated through video - games;

- Citizens who are in relationship think about preparedness for floods due to visiting to flooded areas, they point out that someone educated them about floods in the family, have acquired information about floods at school, through the Internet, they want to be educated through the Internet, have water supplies for two days, unwritten plans in case of floods;

- Citizens who are engaged take preventive measures to reduce tangible consequences of floods, are not yet prepared, but will start preparing next month, have recently started to prepare, have prepared for at least 6 months, would be evacuated to the upper floors of the house, acquired information on floods at faculty, through an informal system of education, they have supplies, food supplies for a day, supplies of water for 4 days, they replenish their supplies once a year;

- Citizens who are married would give money to help flood victims, long-lasting rains make them to think about preparedness for floods, they know what the flood, are familiar with viruses and infections that accompany the period during and after the flood, they know where in local community elders, disabled and infants live, know safety procedures for responding during floods, would be evacuated to a friend's place, say that someone at work educated them about floods, know how to handle water valve, gas valve, electricity switch, acquired information about floods in the press, have food supplies for 4 days, hold a first aid kit in an easily accessible place, discuss with family members about the plans,

- Citizens who are divorced are not yet prepared, but intend to get prepared in the next 6 months, would evacuate to neighbors' places, they know where electricity switch is, have gained information about floods from household members, they want to be educated on the radio;

- Citizens who have lost their spouses media reports make them to think about preparedness for responding to floods, do not do anything to prepare themselves, would evacuate in detention centers, they know what help is required by elders, disabled and infants, they know where water valve is, gas valve, gained information about floods from neighbors, they want to be educated through television;

On the other hand, in the smallest percentage:

- Citizens who are not in a relationship point out that someone at work educated them about floods, they know what to do after an official warning about the approach of the flood, they know where the water valve is;

- Citizens who are in a relationship would be engaged in reception centers to assist victims of floods, they know what assistance is required by elders, disabled and infants, they know where electricity switch is, know how to handle water valve, gas valve, gained information on floods from neighbors, want to gain information through television;

- Citizens who are engaged think on preparedness for floods due to visiting to flooded areas, media reports, do not do anything to prepare themselves, have acquired information about floods from household members (16.1%) want to be educated through the radio (1.6%);

- Citizens who are divorced take preventive measures to reduce tangible consequences of floods, are not yet prepared, but will start preparing next month, have recently started preparations, they know what flood is, would be evacuated to the upper floors of the house, would be evacuated to reception centers, say that someone at primary/second school and within family educated them on floods, know what to do after an official warning about the approach of the flood, gained information about floods at faculty, acquired information about floods through informal system of education, in the press, they want to be educated through video - games;

- Citizens who are married acquired information on floods at school;

- Citizens who have lost their spouses would give money to help flood victims, have prepared for at least 6 months; would engage to provide help to threatened population in

the field, think about preparedness for floods due to long-lasting rains, are not yet prepared, but intend to get prepared in the next 6 months, they are familiar with safety procedures for responding during floods, are familiar with viruses and infections accompanying the period during and after the floods, would be evacuated to neighbors' places, they know where in local community elders, disabled and infants live, acquired information about floods from a friend, over the Internet, want to undergo some form of training for dealing with natural disasters caused by floods, they want to be educated over the Internet;

Furthermore, the results showed: citizens who live alone showed the highest level of preparedness of households and individual preparedness for response, while the lowest among citizens who lost their spouses; citizens who are in a relationship recorded the highest level of preparedness of the local community for response, and the lowest among citizens who lost their spouses; citizens who live alone recorded the highest level of confidence in their own abilities and capabilities to cope with consequences, while the lowest among citizens who lost their spouses; citizens who are in a relationship recorded the highest level of awareness about flood risks compared to citizens who have lost their spouses who showed the lowest level; citizens who live alone recorded the highest level of knowledge about natural disasters caused by flooding, while the lowest is among citizens who are engaged; in married people, assessment of flooding risk is higher compared to citizens who are in a relationship; the best informed about threat assessments and plans are divorced people.

In terms of marital status, it should influence on citizens who are in a relationship to engage in collective centers to provide assistance to flood victims. Furthermore, citizens who are in a relationship, should be educated over the Internet about location of electricity switch, how to handle valves for water and gas. Citizens who have lost their spouses should be encouraged to take measures of preparedness through visit to flooded areas and media reports. They should be informed on potential flooding risks. Citizens who are divorced should be encouraged to take preventive measures to reduce tangible consequences of floods. They need to be educated about floods and what they should do after an official warning about the approach of the flood wave. Citizens who are not in a relationship showed the highest affinity for response training. Also, it is necessary to educate them what they should do after an official warning about the approach of the flood, and where water valve is. Citizens who are married should provide water supplies for four days, transistor radio, flashlight. They need to be informed about duties of the police, first responders and the army.

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