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## UTICAJ ZAPOSLENOSTI NA SPREMNOST GRAĐANA ZA REAGOVANJE NA PRIRODNU KATASTROFU IZAZVANU POPLAVOM

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**Sažetak:** Posledice poplava koje su zadesile područje Srbije u toku 2014. godine ukazale su na veoma nizak stepen spremnosti stanovništva za reagovanje u takvim prirodnim katastrofama. Cilj kvantitativnog istraživanja predstavlja ispitivanje uticaja zaposlenosti na spremnost građana za reagovanje na prirodnu katastrofu izazvanu poplavom u Republici Srbiji. Imajući u vidu sve lokalne zajednice u Srbiji u kojima se dogodila ili postoji visok rizik da se dogodi poplava, metodom slučajnog uzorka odabrano je 19 od ukupno 150 opština, 23 grada i grada Beograda. U samom anketnom ispitivanju u kojem je učestvovalo 2.500 građana bila je primenjena strategija ispitivanja u domaćinstvima uz primenu višestapnog slučajnog uzorka. Originalnost istraživanja ogleda se u činjenici da u Srbiji nikada nije sprovedeno istraživanje kojim bi se ispitalo stanje spremnosti građana za reagovanje. Rezultati istraživanja se mogu iskoristiti prilikom kreiranja strategija za unapređenje nivoa spremnosti građana za reagovanje s obzirom na njihovu zaposlenost. Istraživanje ukazuje na koji način treba uticati na građane s obzirom na status zaposlenosti kako bi se spremnost podigla na viši nivo.

**Ključne reči:** prirodne katastrofe, poplave, građani, zaposlenost, spremnost za reagovanje.

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## Uvod

Posledice poplava nedvosmisleno predstavljaju jednu od najozbiljnijih opasnosti za ljudsku zajednicu.<sup>2</sup> Iako su jedno vreme pojave ugrožavanja bezbednosti pojavama prirodnog porekla bile zanemarene, danas one itekako dobijaju na značaju.<sup>3</sup> Prvobitne ljudske zajednice oduvek su se susretale sa raznovrsnim prirodnim katastrofama. Učestale i ozbiljne posledice koje su bacale na kolena čitave zajednice, zbog nepostojanja njihovog racionalnog objašnjenja, dugo su posmatrane kao način „Božijeg obraćanja, tj. kažnjavanja ljudi zbog lošeg ponašanja ljudi“.<sup>4</sup> Konkretnije rečeno, posmatrane su kao specijalne poruke koje se šalju direktno od Boga s ciljem kažnjavanja grešnika.<sup>5</sup> Iako je takvo shvatanje katastrofa imalo važnu regulatornu društvenu funkciju, pogrešno je sugerisalo da se ljudi od prirodnih katastrofa ne mogu adekvatno zaštititi<sup>6</sup>, odnosno da je jedini način da se zaštite ispravno i smerno postupanje u skladu sa religijskim principima, kako bi bili u božijoj milosti. To je, između ostalog, rasterećivalo ljude u deljenju, odnosno preuzimanju odgovornosti za nastale posledice, jer su prirodne katastrofe bile pripisivane, kao što je i spomenuto, delovanju viših sila.<sup>7</sup> Kada je reč o poplavama, polako ali sigurno vekovima primenjivan princip „borbe protiv poplava“ počinje zamenjivati novi koji nosi naziv „živeti sa poplavama“.<sup>8</sup> Da bi ljudi mogli živeti sa poplavama, potrebno je integrisano upravljanje prirodnim katastrofama koje podrazumeva ublažavanje posledica, spremnost, odgovor i oporavak od

2 V. Cvetković, Strah i poplave u Srbiji: spremnost građana za reagovanje na prirodne katastrofe, *Zbornik Matice srpske za društvena istraživanja*, vol. 155, br. 2/2016.

3 V. Cvetković, *Spatial and temporal distribution of floods like natural emergency situations*, objavljeno u: *International scientific conference Archibald Reiss days*, Beograd, str. 371–389, 2013; V. Cvetković, Geoprostorna i vremenska distribucija vulkanskih erupcija, *NBP – Journal of Criminalistics and Law*, vol. XIX, 2/2014, Beograd, str. 153–171; V. Cvetković; S. Dragicević, Spatial and temporal distribution of natural disasters, *Journal of the Geographical Institute Jovan Cvijic*, Beograd, vol. 64, br. 3/2014, str. 293.

4 D. Paton; D. Johnston, Disasters and communities: vulnerability, resilience and preparedness, *Disaster Prevention and Management*, vol. 10, br. 4/2001, Bingley, str. 270.

5 D. Mileti, *Disasters by Design: A Reassessment of Natural Hazards in the United States*, New York, 1999, str. 101; M. K. Lindell; K. J. Tierney; R. W. Perry, *Facing the Unexpected: Disaster Preparedness and Response in the United States*, New York, 2001.

6 V. Cvetković, Policija i prirodne katastrofe, Zadužbina Andrejević, Beograd, 2016; M. Šikman; G. Amidžić; Nadležnosti i uloga policije u vanrednim situacijama u RS, *Bezbednost*, vol. LVI, br. 3/2014, Beograd, str. 129; N. Bojičić, Development of the protection and rescue system in the Serbian Ministry of Interior, *Bezbednost*, vol. LV, br. 1/2013, Beograd, str. 160; J. Gačić; V. Jakovljević, Specifičnosti savremenog sistema upravljanja u vanrednim situacijama, *Bezbednost*, vol. LVI, br. 3/2014, Beograd, str. 64.

7 V. Cvetković, Geoprostorna i vremenska distribucija vulkanskih erupcija, *NBP – Journal of Criminalistics and Law*, vol. XIX, br. 2/2014, Beograd, str. 153.

8 B. Milojković, Geotopografsko obezbeđenje upotrebe jedinica policije u akcijama zaštite i spasavanja od poplava u maju 2014. godine, *Bezbednost*, vol. LVI, br. 3/2014, Beograd, str. 6.

posledica poplava.<sup>9</sup> Spremnost kao koncept u teoriji katastrofa podrazumeva aktivnosti preduzete pre prirodne katastrofe u cilju poboljšanja odgovora i oporavka od nastalih posledica.<sup>10</sup> Pri tome, spremnost podrazumeva znanja i sposobnosti u vezi sa reagovanjem (poznavanje lokalnih poplavnih rizika, sistema upozorenja i načina reagovanja), kao i posedovanje zaliha i planova.<sup>11</sup>

Istraživanje uticaja zaposlenosti na spremnost građana za reagovanje na posledice poplava ne može dati potpun odgovor na sva aktuelna pitanja, ali svakako može doprineti stvaranju potpunije slike o njoj. Iako su učinjeni ogromni napori da se sveobuhvatnim pristupom rasvetli većina nedoumica, može se reći da veliki broj pitanja ostaje da se i dalje istražuje. Rezultati istraživanja mogu doprineti unapređenju spremnosti građana za reagovanje na takve pojave.

## 1. Metodologija istraživanja

Operacionalizacijom teorijskog pojma spremnosti za reagovanje utvrđene su tri dimenzije koje su proučavane tako što je za svaku utvrđen veći broj varijabli (slika 1). Percepcija spremnosti za reagovanje obuhvata varijable o: spremnosti na različitim nivoima, barijerama za podizanje nivoa spremnosti, očekivanju pomoći od različitih kategorija ljudi i organizacija i efikasnosti reagovanja interventno-spasilačkih službi. Znanje je ispitivano kroz varijable koje se odnose na: nivo znanja, kartu poplavnog rizika, znanje o mestu i načinima rukovanja opremom, motivisanost za obuku, načine obrazovanja i načine dolaska do informacija o poplavama. I treća dimenzija (zalihe) odnosi se na posedovanje polise osiguranja, usmenih/pismenih planova zaštite i spasavanja, zaliha hrane i vode, sredstava poput radio-tranzistora, baterijskih lampi, krampova, lopata, motika i ašova, kompleta za prvu pomoć i sl.

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9 V. Cvetković, Faktori uticaja na znanje i percepciju učenika srednjih škola u Beogradu o prirodnim katastrofama izazvanim klizištima, *Bezbednost*, vol. LVII, br. 1/2015, Beograd, str. 32.

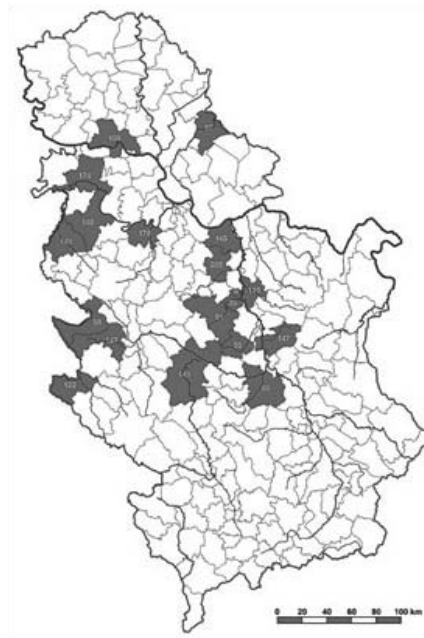
10 D. F. Gillespie; L. C. Streeter, Conceptualizing and measuring disaster preparedness, *International Journal of Mass Emergencies and Disasters*, vol. 5, br. 2/1987, Mattoon, str. 155; Y. Matsuda; N. Okada, Community diagnosis for sustainable disaster preparedness, *Journal of Natural Disaster Science*, vol. 28, br. 1/2006, Kyoto, str. 25.

11 V. Cvetković, et al, Knowledge and perception of secondary school students in Belgrade about earthquakes as natural disasters, *Polish journal of environmental studies*, vol. 24, br. 4/2015, Olsztyn, str. 1553; V. Cvetković, Spremnost za reagovanje na prirodnu katastrofu – pregled literature, *Bezbednost, policija i građani*, vol. XI, br. 1–2/2015, Banja Luka, str. 165.



**Slika 1:** Dizajn istraživanja – operacionalizacija teorijskog određenja spremnosti

Imajući u vidu predmet istraživanja, za realizaciju istraživanja odabrane su lokalne zajednice sa visokim i niskim rizikom nastanka ravničarskih i bujičnih poplava. Shodno uslovima pod kojima se rezultati naučnog istraživanja mogu generalizovati na celokupnu populaciju građana Srbije, istraživanje je sprovedeno na teritoriji većeg broja lokalnih zajednica različitih po svojim demografsko-socijalnim karakteristikama. Obuhvaćene su gradske i seoske lokalne zajednice u različitim delovima Srbije: Obrenovac, Šabac, Kruševac, Kragujevac, Sremska Mitrovica, Priboj, Batočina, Svilajnac, Lapovo, Paraćin, Smederevska Palanka, Jaša Tomić, Loznica, Bajina Bašta, Smederevo, Novi Sad, Kraljevo, Rekovac i Užice (Slika 2).



**Slika 2:** Pregledna karta geoprostornog razmeštaja anketiranih ispitanika po lokalnim zajednicama u Republici Srbiji

### 1.1. Uzorak

Populaciju čine svi punoletni stanovnici lokalnih zajednica u kojima se događala ili postoji rizik da se dogodi ravničarska/bujična poplava ili poplava uzrokovana pucanjem brane. Veličina uzorka je usklađivana sa geografskom (biće zastupljene lokalne zajednice iz svih regiona Srbije) i demografskom veličinom same zajednice (tabela 1). Imajući u vidu sve lokalne zajednice u Republici Srbiji u kojima se dogodila ili postoji visok rizik da se dogodi poplava, metodom slučajnog uzorka odabrano je njih 19 od ukupno 150 opština, 23 grada i grada Beograda. U odabranim lokalnim zajednicama istraživanje se obavilo u onim delovima koji su bili najugroženiji u odnosu na visoke vode ili potencijalni rizik. U samom anketnom ispitivanju bila je primenjena strategija ispitivanja u domaćinstvima uz primenu višestapnog slučajnog uzorka. U prvom koraku, koji se odnosi na primarne jedinice uzorka, bili su određeni delovi zajednice u kojima će se obaviti istraživanje. Taj proces pratilo je kreiranje karte i određivanje procentualnog učešća svakog takvog segmenta u ukupnom uzorku. U drugom koraku, koji se odnosi na istraživačka jezgra, određene su ulice ili delovi ulica na nivou primarnih jedinica uzorka. Svako istraživačko jezgro bilo je određeno kao putanja sa preciziranom početnom i krajnjom tačkom kretanja. U sledećem koraku određena su domaćinstva u kojima je sprovedeno anketiranje. Broj domaćinstava je usklađivan sa brojnošću zajednice. Konačni korak odnosio se na proceduru izbora ispitanika unutar prethodno definisanog domaćinstva. Selekcija ispitanika je sprovedena procedurom sledećeg rođendana za punoletne članove domaćinstva. Sam proces anketiranja za svaku lokalnu samoupravu obavljao se tri dana u toku nedelje (uključujući i vikende) u različita doba dana. U istraživanju je ukupno anketirano 2.500 građana.

**Tabela 1:** Pregled lokalnih zajednica u kojima je sprovedeno anketiranje građana o spremnosti za reagovanje na prirodne katastrofe izazvane poplavom

Lokalna zajednica	Ukupna kvadratna površina km <sup>2</sup>	Naselja	Broj stanovnika	Broj domaćinstva	Broj anketiranih	Procenti %
Obrenovac	410	29	72.682	7.752	178	7,12
Šabac	797	52	114.548	19.585	140	5,60
Kruševac	854	101	131.368	19.342	180	7,20
Kragujevac	835	5	179.417	49.969	191	7,64
Sremska Mitrovica	762	26	78.776	14.213	174	6,96

Priboj	553	33	26.386	6.199	122	4,88
Batočina	136	11	11.525	1.678	80	3,20
Svilajnac	336	22	22.940	3.141	115	4,60
Lapovo	55	2	7.650	2.300	39	1,56
Paraćin	542	35	53.327	8.565	147	5,88
Smed. Palanka	421	18	49.185	8.700	205	8,20
Sečanj – Jaša Tomić	82	1	2.373	1.111	97	3,88
Loznica	612	54	78.136	6.666	149	5,96
Bajina Bašta	673	36	7.432	3.014	50	2,00
Smederevo	484	28	107.048	20.948	145	5,80
Novi Sad	699	16	346.163	72.513	150	6,00
Kraljevo	1.530	92	123.724	19.360	141	5,64
Rekovac	336	32	10.525	710	50	2,00
Užice	667	41	76.886	17.836	147	5,88
Ukupno: 19	10.784	634	1.500.091	283.602	2.500	100,00

Prema podacima Republičkog zavoda za statistiku žene u Srbiji u ukupnoj populaciji imaju udeo od 51,3%, a muškarci 48,7%. Posmatrano u apsolutnim brojevima, od ukupno 7.498.001 stanovnika u Srbiji živi 3.852.071 žena i 3.645.930 muškaraca. Slično kao i u celokupnoj populaciji i u uzorku ima više žena (50,2%) nego muškaraca (49,8%). U toku 2014. godine, prosečna starost ukupnog stanovništva u Republici Srbiji iznosila je 42,6 godina (muškarci 41,2 i žene 43,9), dok je prosečna starost ispitanika iznosi 39,95 (muškaraca 40,9 i žena 38,61). Obrazovna struktura građana Srbije je sledeća: bez školske sprema je 2,68% građana, sa nepotpunim osnovnim obrazovanjem 11%, sa osnovnim obrazovanjem 20,76%, sa srednjim obrazovanjem 48,93%, sa višim obrazovanjem 4,51%, i sa visokim 10,59%<sup>12</sup>. Dakle, najveći broj stanovnika ima završenu srednju školu, dok je manje onih sa visokim obrazovanjem. Kada se sagleda obrazovna struktura građana koji su obuhvaćeni uzorkom, takođe se primećuje da je najviše građana sa završenom srednjom/četvorogodišnjom školom 41,3%. Najmanje je građana sa završenim master studijama (2,9%) i doktorskim studijama (0,4%). Bračni status može se posmatrati sa aspekta zakonskog bračnog statusa i suštinskog bračnog statusa koji uključuje i lica koja žive u vanbračnoj zajednici. Prema podacima, u Srbiji neoženjenih/neudatih građana je 27,91%, oženjenih/udatih je 55,12%, udovaca/udovica je 11,64%, i razvedenih je 4,93%.<sup>13</sup> U uzorku, oženjenih/udatih je 54,6%, udovaca/udovica je 3%, neoženjenih/neudatih (samac/samica) je 18,8%, verenih je 2,7% i u vezi je 16,9%. U tabeli 2 je dat detaljniji pregled strukture uzorka anketiranih građana.

<sup>12</sup> Republički zavod za statistiku, dostupno na: [http://popis2011.stat.rs/?page\\_id=2134](http://popis2011.stat.rs/?page_id=2134), 2011.

<sup>13</sup> *Ibidem*.

**Tabela 2:** Pregled strukture uzorka anketiranih građana

Variable	Kategorije	Frekvencija	Procenti %
Pol	Muški	1.244	49,8
	Ženski	1.256	50,2
Godine starosti	Od 18 do 28 godina	711	28,4
	Od 28 do 38 godina	554	22,2
	Od 38 do 48 godina	521	20,8
	Od 48 do 58 godina	492	19,7
	Od 58 do 68 godina	169	6,8
	Preko 68 godina	53	2,2
Obrazovanje	Osnovno	180	7,2
	Srednje/trogodišnje	520	20,8
	Srednje/četvorogodišnje	1.032	41,3
	Više	245	9,8
	Visoko	439	17,6
	Master	73	2,9
Bračni status	Doktorat	11	0,4
	Samac/samica	470	18,8
	U vezi	423	16,9
	Veren/verena	67	2,7
	Oženjen/udata	1.366	54,6
	Razveden/razvedena	99	4,0
Udaljenost domaćinstva od reke	Udovac/udovica	75	3,0
	Do 2 km	1.479	59,2
	Od 2 do 5 km	744	29,8
	Od 5 do 10 km	231	9,2
	Preko 10 km	46	1,8
Broj članova domaćinstva	Do 2 člana	63	2,5
	Od 2 do 4 člana	1.223	48,9
	Od 4 do 6 člana	639	25,6
	Preko 6 člana	575	23,0
Status zaposlenosti	Da	1.519	60,8
	Ne	883	35,3

Veličina stana/kuće	Od 35 m <sup>2</sup>	128	3,9
	Od 35–60 m <sup>2</sup>	237	7,2
	Od 60–80 m <sup>2</sup>	279	8,5
	Od 80–100 m <sup>2</sup>	126	3,9
	Preko 100 m <sup>2</sup>	45	1,4
Visina prihoda	Do 25.000 dinara	727	29,1
	Do 50.000 dinara	935	37,4
	Do 75.000 dinara	475	19,0
	Preko 90.000 dinara	191	7,6

## 1.2. Instrument

Prilikom razvijanja validnog i pouzdanog instrumenta, preduzeto je više koraka. U prvom, identifikovana su sva istraživanja u kojima su bile korišćene skale za merenje spremnosti građana za reagovanje na katastrofe. U drugom koraku utvrđene su sve dimenzije spremnosti građana za reagovanje na poplavu. Treći korak je podrazumevao već pomenutu operacionalizaciju spremnosti za reagovanje i opredeljivanje za tri osnovne dimenzije (percepcija spremnosti za reagovanje, znanje i zalihe). U četvrtom koraku su utvrđivane varijable za svaku dimenziju (percepcija spremnosti za reagovanje – 46 varijabli; znanje – 50; zalihe – 18), a onda je za svaku varijablu preuzeto, adaptirano ili posebno konstruisano pitanje u instrumentu. U petom i poslednjem koraku sprovedeno je preliminarno (pilot) istraživanje u Batočini, na uzorku od 50 ispitanika s ciljem provere konstruisanog instrumenta (njegova unutrašnja saglasnost skale, tj. stepen srodnosti stavki od kojih se sastoji, kao i da li su uputstva, pitanja i vrednosti na skalama jasni).

## 1.3. Analiza podataka

Statistička analiza prikupljenih podataka rađena je u IBM-ovom softverskom paketu SPSS. Hi-kvadrat test nezavisnosti ( $\chi^2$ ) korišćen je za ispitivanje veze između zaposlenosti i kategorijskih varijabli o percepciji, znanju i posedovanju zaliha i planova za prirodnu katastrofu izazvanu poplavom. Tom prilikom bile su ispunjene dodatne pretpostavke o najmanjoj očekivanoj učestalosti u svim ćelijama koja je iznosila pet i više. Za ocenu veličine uticaja korišćen je koeficijent *fi* (*phi coefficient*), koji predstavlja koeficijent korelacije u opsegu od 0 do 1, pri čemu veći broj pokazuje jaču vezu između dve promenljive. Korišćeni su Koenovi kriterijumi: od 0,10 za mali, 0,30 za srednji i 0,50 za veliki uticaj.<sup>14</sup> Za tabele veće od dva sa dva, za ocenu veličine uticaja korišćen je Kramerov pokazatelj V (Cramers V) koji uzima u obzir broj stepeni slobode. Shodno tome, da

<sup>14</sup> J. W. Cohen, *Statistical power analysis for the behavioral sciences*, Hillsdale, 1988.



je za R-1 ili K-1 jednako 1, korišćeni su sledeći kriterijumi veličine uticaja: mali = 0,01, srednji = 0,30 i veliki = 0,50.<sup>15</sup> Za ispitivanje povezanosti straha i neprekidnih zavisnih varijabli o percepciji, znanju i posedovanju zaliha i planova za prirodne katastrofe izazvane poplavom, izabran je t-test nezavisnih uzoraka (*independent samples T test*). Pre pristupanja sprovođenja testa, bile su ispitane opšte i posebne pretpostavke za njegovo sprovođenje.

## 2. Rezultati istraživanja

Hi-kvadrat testom nezavisnosti ( $\chi^2$ ) istražena je veza između zaposlenosti građana i kategorijskih promenljivih o percepciji spremnosti za reagovanje na prirodnu katastrofu izazvanu poplavom.<sup>16</sup> Rezultati Hi-kvadrat testa nezavisnosti ( $\chi^2$ ) (uz korekciju neprekidnosti prema Jeitsu gde se radilo o tabelama 2 sa 2) pokazali su da postoji statistički značajna veza između zaposlenosti i sledećih promenljivih: preventivne mere ( $p = 0,004 < 0,05$ ,  $v = 0,070$  – mali uticaj); novčana sredstva ( $p = 0,000 < 0,05$ ,  $\phi = 0,144$  – mali uticaj); angažovani na terenu ( $p = 0,034 < 0,05$ ,  $\phi = 0,046$  – mali uticaj); angažovani u prih. centru ( $p = 0,000 < 0,05$ ,  $\phi = -0,07$  – mali uticaj); obilazak poplavljenih mesta ( $p = 0,001 < 0,05$ ,  $\phi = -0,07$  – mali uticaj); podizanje nivoa reka ( $p = 0,001 < 0,05$ ,  $\phi = 0,068$  – mali uticaj); izveštaji medija ( $p = 0,004 < 0,05$ ,  $\phi = -0,062$  – mali uticaj); dugotrajne kiše ( $p = 0,030 < 0,05$ ,  $\phi = 0,046$  – mali uticaj); nivo spremnosti ( $p = 0,004 < 0,05$ ,  $\phi = 0,088$  – mali uticaj). S druge strane, nije utvrđena statistički značajna povezanost sa promenljivom dugotrajne kiše ( $p = 0,034 < 0,05$ ) (tabela 3).

Na osnovu rezultata, primećuje se da su zaposleni građani u odnosu na nezaposlene:

- u većem procentu – preduzeli određene preventivne mere u cilju smanjenja materijalnih posledica poplave (zaposleni građani – 16,2%, nezaposleni – 13,2%); uplatili novčana sredstva na neki od računa za pomoć žrtvama poplava (zaposleni građani – 36,4%, nezaposleni – 22,5%); angažovali bi se u pružanju pomoći žrtvama poplava na terenu (zaposleni građani – 18,1%, nezaposleni – 14,6%); podstiču ih dugotrajne kiše na razmišljanje o spremnosti za reagovanje (zaposleni građani – 41,3%, nezaposleni – 36,7%), podizanje nivoa vode (zaposleni građani – 40,8%, nezaposleni – 34%); vršili su pripreme najmanje šest meseci (zaposleni građani – 4,4%, nezaposleni – 2,1%); ne rade ništa da bi nivo spremnosti podigli na viši nivo (zaposleni građani – 61,3%, nezaposleni – 58,4%);

- u manjem procentu – angažovali bi se u nekom od prihvatnih centara za žrtve poplavljenih područja (zaposleni građani – 3,7%, nezaposleni – 7,2%);

<sup>15</sup> F. J. Gravetter; L. B. Wallnau, *Statistics for the behavioral sciences*, Belmont, 2004.

<sup>16</sup> Bile su ispunjene dodatne pretpostavke o najmanjoj očekivanoj učestalosti u svim ćelijama koja je iznosila pet i više.

podstiče ih obilazak poplavljenih područja na razmišljanje o spremnosti za reagovanje na poplavu (zaposleni građani – 7,9%, nezaposleni – 12,3%), izveštaji medija (zaposleni građani – 26,2%, nezaposleni – 31,9%); još uvek nisu spremni, ali nameravaju da to urade u narednih šest meseci (zaposleni građani – 11,5%, nezaposleni – 14,8%).

**Tabela 3:** Prikaz rezultata Hi-kvadrat testa nezavisnosti ( $\chi^2$ ) zaposlenosti i navedenih promenljivih o percepciji spremnosti za reagovanje

	Value	df	Asymp. Sig. (2-sided)	Phi coefficient
Preventivne mere	10,809	2	0,004*	0,070**
Novčana sredstva	46,630	1	0,000*	0,144
Angažovani na terenu	4,474	1	0,034*	0,046
Angažovani u prih. centru	12,896	1	0,000*	-0,077
Obilazak poplavljenih mesta	11,295	1	0,001*	-0,073
Dugotrajne kiše	4,708	1	0,030*	0,046
Podizanje nivoa reka	10,114	1	0,001*	0,068
Izveštaji medija	8,301	1	0,004*	-0,062
Nivo spremnosti	17,171	5	0,004*	0,088**

\* Statistički značajna povezanost –  $p \leq 0,05$

\*\* Kramerov koeficijent za tabele veće od 2 sa 2

Za ispitivanje povezanosti statusa zaposlenosti građana i neprekidnih zavisnih promenljivih o percepciji, izabran je t-test nezavisnih uzoraka (*independent samples T test*). Njime je ispitana statistički značajna razlika između srednjih vrednosti svih neprekidnih promenljivih o percepciji kod zaposlenih i nezaposlenih građana.<sup>17</sup> Statistički značajne razlike rezultata kod zaposlenih i nezaposlenih građana bilo je kod sledećih neprekidnih promenljivih: spremnost države (zaposleni građani:  $M = 2,99$ ,  $SD = 1,03$ ; nezaposleni:  $M = 2,91$ ,  $SD = 1,18$ ;  $t(1.779,3) = 2,13$   $p = 0,035$ ,  $ek = 0,0025$  – mali uticaj); sop. sposobnosti (zaposleni građani:  $M = 3,05$ ,  $SD = 1,00$ ; nezaposleni:  $M = 2,90$ ,  $SD = 1,07$ ;  $t(1.751,4) = 3,26$   $p = 0,001$ ,  $ek = 0,006$  – mali uticaj); značaj pred. mera (zaposleni građani:  $M = 3,30$ ,  $SD = 1,13$ ; nezaposleni:  $M = 3,14$ ,  $SD = 1,15$ ;  $t(2.378) = 3,34$   $p = 0,001$ ,  $ek = 0,004$  – mali uticaj); to je veoma skupo (zaposleni građani:  $M = 2,67$ ,  $SD = 1,29$ ; nezaposleni:  $M = 2,89$ ,  $SD = 1,37$ ;  $t(2.339) = -3,34$   $p = 0,001$ ,  $ek = 0,004$  – mali uticaj); nemam podršku (zaposleni građani:  $M = 2,67$ ,  $SD = 1,28$ ; nezaposleni:  $M = 2,87$ ,  $SD = 1,37$ ;  $t(1.706,9) = -3,47$   $p = 0,001$ ,  $ek = 0,007$  – mali uticaj); ukućani (zaposleni građani:  $M = 4,18$ ,  $SD = 1,30$ ; nezaposleni:  $M = 4,37$ ,  $SD = 1,11$ ;  $t(2.029) = -3,79$   $p = 0,000$ ,  $ek = 0,007$  – mali uticaj); komšije (zaposleni građani:  $M = 3,56$ ,  $SD = 1,28$ ; nezaposleni:  $M$

<sup>17</sup> Pre sprovođenja testa ispitane su opšte i posebne pretpostavke za njegovo sprovođenje.

= 3,37, SD = 1,21;  $t(1.894,4) = -2,19$   $p = 0,028$ ,  $ek = 0,002$  – mali uticaj); NHO (zaposleni građani:  $M = 2,42$ ,  $SD = 1,17$ ; nezaposleni:  $M = 2,53$ ,  $SD = 1,17$ ;  $t(1.795,9) = -2,154$   $p = 0,031$ ,  $ek = 0,002$  – mali uticaj); verska zajednica (zaposleni građani:  $M = 2,32$ ,  $SD = 1,20$ ; nezaposleni:  $M = 2,50$ ,  $SD = 1,26$ ;  $t(2.342) = -3,42$   $p = 0,001$ ,  $ek = 0,004$  – mali uticaj); obaveštenost (zaposleni građani:  $M = 2,85$ ,  $SD = 1,25$ ; nezaposleni:  $M = 2,73$ ,  $SD = 1,24$ ;  $t(2.391) = 2,62$   $p = 0,024$ ,  $ek = 0,0028$  – mali uticaj); posao drž. organa (zaposleni građani:  $M = 2,89$ ,  $SD = 1,23$ ; nezaposleni:  $M = 3,04$ ,  $SD = 1,27$ ;  $t(2.243) = -2,74$   $p = 0,006$ ,  $ek = 0,0033$  – mali uticaj); previše košta (zaposleni građani:  $M = 2,28$   $SD = 1,11$ ; nezaposleni:  $M = 2,50$ ,  $SD = 1,34$ ;  $t(1.410,1) = -3,99$   $p = 0,000$ ,  $ek = 0,011$  – mali uticaj); efikasnost VSJ (zaposleni građani:  $M = 3,58$ ,  $SD = 1,24$ ; nezaposleni:  $M = 3,39$ ,  $SD = 1,34$ ;  $t(1.663,6) = 3,35$   $p = 0,001$ ,  $ek = 0,0067$  – mali uticaj); efikasnost SHMP (zaposleni građani:  $M = 3,58$ ,  $SD = 1,16$ ; nezaposleni:  $M = 3,36$ ,  $SD = 1,31$ ;  $t(1.598,5) = 4,11$   $p = 0,000$ ,  $ek = 0,010$  – mali uticaj); efikasnost vojske (zaposleni građani:  $M = 3,79$ ,  $SD = 1,28$ ; nezaposleni:  $M = 3,63$ ,  $SD = 1,41$ ;  $t(1.632,5) = 2,75$   $p = 0,006$ ,  $ek = 0,0046$  – mali uticaj); efik. štaba za VS (zaposleni građani:  $M = 3,43$ ,  $SD = 1,32$ ; nezaposleni:  $M = 3,24$ ,  $SD = 1,42$ ;  $t(1.666) = 3,34$   $p = 0,001$ ,  $ek = 0,0066$  – mali uticaj) (tabela 4).

Kod zaposlenih građana zabeležen je viši nivo: ocene spremnosti države za reagovanje na poplave; samopouzdanja u sopstvene sposobnosti i sigurnosti da se izbore sa posledicama poplava; pridavanja značaja preventivnim merama preduzetim u cilju smanjenja materijalnih posledica poplava; očekivanja pomoći od komšija u prva 72 sata od nastanka poplave; nivo obaveštenosti o poplavnim rizicima u njihovim lokalnim samoupravama; ocene efikasnosti reagovanja vojske i štaba za vanredne situacije u prirodnim katastrofama izazvanim poplavama;

– zabeležen je niži nivo: slaganja sa razlogom „to je veoma skupo“, „nemam podršku od strane lokalne zajednice“, za nepreduzimanje preventivnih mera na ličnom planu; očekivanja pomoći od nevladinih humanitarnih organizacija, verskih organizacija u prva 72 sata od nastanka poplave; slaganja sa razlogom „to je posao državnih organa“ i „previše košta“ za neangažovanje u pružanju pomoći ugroženim ljudima od poplava; ocene efikasnosti reagovanja vatrogasno-spasilačkih jedinica i službe hitne medicinske pomoći u prirodnim katastrofama izazvanim poplavama.

**Tabela 4:** Rezultati t-testa (independent samples T test) poređenja srednje vrednosti raznovrsnih varijabli o percepciji spremnosti u odnosu na zaposlenost građana

Zavisne promenljive	Livinov test jednakosti varijanse		T-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Individ. spremnost	11,709	0,001	1,459	1.780,281	0,145	0,066	0,045	-0,023	0,154
Sprem. domaćinstva	12,508	0,000	-1,422	1.776,648	0,155	-0,060	0,042	-0,143	0,023
Spremnost države	9,332	0,002	2,115	1.779,332	0,035*	0,100	0,047	0,007	0,193
Spremnost lok. zajed	7,277	0,007	1,246	1.767,605	0,213	0,062	0,050	-0,035	0,159
Sop. sposobnosti	11,413	0,001	3,262	1.751,423	0,001*	0,146	0,045	0,058	0,234
Značaj pred. mera	0,203	0,653	3,340	2.378	0,001*	0,162	0,048	0,067	0,257
ISS	14,173	0,000	-0,104	1.697,415	0,917	-0,006	0,058	-0,120	0,108
Nisam ugrožen	0,078	0,780	0,229	2.368	0,819	0,014	0,062	-0,108	0,136
Nemam vremena za to	5,488	0,019	-1,394	1.703,923	0,163	-0,082	0,059	-0,197	0,033
To je veoma skupo	1,965	0,161	-3,349	2.339	0,001*	-0,190	0,057	-0,301	0,079
Neće uticati na bezb.	0,561	0,454	-1,000	2.342	0,317	-0,056	0,056	-0,167	0,054
Nisam sposoban	23,921	0,000	-1,289	1.641,626	0,198	-0,076	0,059	-0,191	0,040
Nemam podršku	4,241	0,040	-3,477	1.706,949	0,001*	-0,199	0,057	-0,312	-0,087
Ne mogu sprečiti	10,152	0,001	0,295	1.738,900	0,768	0,017	0,059	-0,099	0,134
Ukućani	44,119	0,000	-3,796	2.029,491	0,000*	-0,193	0,051	-0,292	-0,093
Komšije	7,502	0,006	-2,194	1.894,462	0,028*	-0,116	0,053	-0,220	-0,012
NHO	0,016	0,901	-2,153	2.345	0,031*	-0,108	0,050	-0,207	-0,010
MHO	1,331	0,249	-1,286	2.344	0,198	-0,064	0,049	-0,160	0,033
Verska zajednica	2,148	0,143	-3,424	2.342	0,001*	-0,180	0,053	-0,283	-0,077
Policija	0,197	0,657	-0,103	2.354	0,918	-0,006	0,057	-0,117	0,105
VSJ	2,061	0,151	1,658	2.359	0,097	0,087	0,053	-0,016	0,190
SHMP	3,966	0,047	1,108	1.723,401	0,268	0,060	0,054	-0,046	0,166
Vojska	0,000	0,998	-1,209	2.358	0,227	-0,069	0,057	-0,182	0,043

## UTICAJ ZAPOSLENOSTI NA SPREMNOST GRAĐANA ZA REAGOVANJE...

Samoorg. pojedinci	2,240	0,135	-0,508	2.358	0,611	-0,029	0,058	-0,142	0,084
Obaveštenost	0,620	0,431	2,262	2.391	0,024*	0,120	0,053	0,016	0,224
Pomoć ne bi značila	17,075	0,000	-0,991	1.517,027	0,322	-0,056	0,057	-0,167	0,055
Drugi su pomogli	13,677	0,000	-0,159	1.543,632	0,873	-0,009	0,055	-0,117	0,100
Posao drž. organa	0,909	0,340	-2,740	2.243	0,006*	-0,151	0,055	-0,259	-0,043
Građani iz pop. pod.	19,787	0,000	0,153	1.506,684	0,878	0,009	0,056	-0,101	0,118
Nedostatak vremena	5,233	0,022	0,960	1.600,537	0,337	0,056	0,058	-0,058	0,170
Previše košta	45,819	0,000	-3,990	1.410,187	0,000*	-0,223	0,056	-0,333	-0,113
Efikasnost policije	11,627	0,001	0,775	1.631,301	0,439	0,044	0,056	-0,067	0,154
Efikasnost VSJ	8,628	0,003	3,352	1.663,683	0,001*	0,188	0,056	0,078	0,299
Efikasnost SHMP	24,430	0,000	4,110	1.598,512	0,000*	0,222	0,054	0,116	0,329
Efikasnost vojske	21,515	0,000	2,750	1.632,508	0,006*	0,161	0,059	0,046	0,276
Efik. štaba za VS	6,756	0,009	3,344	1.666,040	0,001*	0,200	0,060	0,083	0,317

\* Statistički značajna razlika rezultata testiranja –  $p \leq 0,05$

Rezultati Hi-kvadrat testa nezavisnosti ( $\chi^2$ ) pokazali su da postoji statistički značajna povezanost statusa zaposlenosti građana i sledećih promenljivih o znanju o prirodnim katastrofama izazvanim poplavama: znanje o poplavi ( $p = 0,001 < 0,05$ ,  $v = 0,077$  – mali uticaj); poznavanje bezb. procedura ( $p = 0,002 < 0,05$ ,  $v = 0,075$  – mali uticaj); evakuacija ( $p = 0,000 < 0,05$ ,  $v = 0,112$  – mali uticaj); obrazovanje u školi ( $p = 0,000 < 0,05$ ,  $v = 0,122$  – mali uticaj); obrazovanje u porodici ( $p = 0,009 < 0,05$ ,  $v = 0,065$  – mali uticaj); obrazovanje na poslu ( $p = 0,000 < 0,05$ ,  $v = 0,228$  – mali uticaj); stariji, hendikepirani ( $p = 0,000 < 0,05$ ,  $v = 0,109$  – mali uticaj); pristanak na evakuaciju ( $p = 0,001 < 0,05$ ,  $v = 0,068$  – mali uticaj); pomoć – stariji, invalidi ( $p = 0,000 < 0,05$ ,  $v = 0,109$  – mali uticaj); komšije – samostalno ( $p = 0,000 < 0,05$ ,  $v = 0,098$  – mali uticaj); potencijalne zaraze ( $p = 0,000 < 0,05$ ,  $v = 0,130$  – mali uticaj); ventil za vodu ( $p = 0,000 < 0,05$ ,  $\phi = 0,141$  – mali uticaj); ventil za gas ( $p = 0,000 < 0,05$ ,  $\phi = 0,152$  – mali uticaj); prekidač za električnu energiju ( $p = 0,011 < 0,05$ ,  $\phi = 0,063$  – mali uticaj); rukovanje ventilom za vodu ( $p = 0,000 < 0,05$ ,  $\phi = 0,141$  – mali uticaj); rukovanje ventilom za gas ( $p = 0,000 < 0,05$ ,  $\phi = 0,147$  – mali uticaj); rukovanje prek. el. energije ( $p = 0,000 < 0,05$ ,  $\phi = 0,094$  – mali uticaj); informacije od ukućana ( $p = 0,001 < 0,05$ ,  $\phi = -0,072$  – mali uticaj); komšija ( $p = 0,038 < 0,05$ ,  $\phi = -0,045$  – mali uticaj), drugara/ica ( $p = 0,000 < 0,05$ ,  $\phi = -0,113$  – mali uticaj); familije ( $p = 0,030 < 0,05$ ,  $\phi = -0,047$  – mali uticaj); nef. sistem ( $p = 0,006 < 0,05$ ,  $\phi = -0,060$  – mali uticaj); poslu ( $p = 0,000 < 0,05$ ,  $\phi = 0,204$  – mali uticaj); televiziji ( $p = 0,003 < 0,05$ ,  $\phi = -0,063$  – mali

uticaj); interneta ( $p = 0,032 < 0,05$ ,  $\phi = 0,046$  – mali uticaj); prošli obuku ( $p = 0,028 < 0,05$ ,  $\phi = 0,047$  – mali uticaj); televizija ( $p = 0,000 < 0,05$ ,  $\phi = -0,081$  – mali uticaj); predavanja ( $p = 0,011 < 0,05$ ,  $\phi = 0,054$  – mali uticaj). S druge strane, nije utvrđena statistički značajna povezanost sa promenljivama: karta poplavnog rizika ( $p = 0,562 > 0,05$ ); zvanično upozorenje ( $p = 0,027 > 0,05$ ); informacije u školi ( $p = 0,142 > 0,05$ ); informacije na fakultetu ( $p = 0,768 > 0,05$ ); informacije u verskoj zajednici ( $p = 0,313 > 0,05$ ); informacije na radiju ( $p = 0,495 > 0,05$ ); informacije iz štampe ( $p = 0,148 > 0,05$ ); želja za obukom ( $p = 0,455 > 0,05$ ); radio ( $p = 0,306 > 0,05$ ); video-igrice ( $p = 0,503 > 0,05$ ); internet ( $p = 0,116 > 0,05$ ); neformalni sistem ( $p = 0,726 > 0,05$ ) (tabela 5).

Na osnovu rezultata, uviđa se da zaposleni građani u odnosu na nezaposlene:

– u većem procentu: znaju šta je poplava (zaposleni građani – 83,6%, nezaposleni – 77,6%); poznaju bezbednosne procedure za reagovanje (zaposleni građani – 26,2%, nezaposleni – 20,3%); evakuisali bi se na višim spratovima kuće (zaposleni građani – 39,7%, nezaposleni – 32,6%), kod prijatelja (zaposleni građani – 36,9%, nezaposleni – 34,1%); ističu da ih je neko u osnovnoj/srednjoj školi (zaposleni građani – 26,2%, nezaposleni – 27,7%) i poslu (zaposleni građani – 40,5%, nezaposleni – 19,1%) edukovao o poplavama; znaju gde žive stariji, hendikepirani i odojčad u lokalnoj zajednici (zaposleni građani – 44,9%, nezaposleni – 38,8%); pristali bi na evakuaciju (zaposleni građani – 92,6%, nezaposleni – 88,6%); znaju kakvu pomoć iziskuju starije osobe, invalidi i odojčad (zaposleni građani – 57,2%, nezaposleni – 45,9%); misle da im se komšije mogu samostalno spasiti u slučaju poplava (zaposleni građani – 40%, nezaposleni – 36,4%); nisu sigurni šta treba raditi nakon zvaničnog upozorenja o nailasku poplavnog talasa (zaposleni građani – 38,5%, nezaposleni – 33,6%); upoznati su sa virusima i zarazama koje prate period nakon poplave (zaposleni građani – 50,7%, nezaposleni – 37,8%); znaju gde se nalazi ventil za vodu (zaposleni građani – 82,2%, nezaposleni – 74,2%), ventil za gas (zaposleni građani – 55%, nezaposleni – 50,9%), prekidač električne energije (zaposleni građani – 79,5%, nezaposleni – 77,6%); znaju da rukuju ventilom za vodu (zaposleni građani – 79,3%, nezaposleni – 67%), ventilom za gas (zaposleni građani – 55,9%, nezaposleni – 43,4%), prekidačem električne energije (zaposleni građani – 75,6%, nezaposleni – 67,1%); stekli informacije o poplavama na poslu (zaposleni građani – 20,3%, nezaposleni – 5,2%), preko interneta (zaposleni građani – 30,3%, nezaposleni – 26%); želeli bi da budu edukovani preko predavanja (zaposleni građani – 32,6%, nezaposleni – 27,4%);

– u manjem procentu: evakuisali bi se kod komšija (zaposleni građani – 9%, nezaposleni – 11,6%) i u prihvatnim centrima (zaposleni građani – 11,4%, nezaposleni – 17,7%); stekli informacije o poplavama preko ukućana (zaposleni građani – 28,5%, nezaposleni – 35,4%), komšija (zaposleni građani – 14,4%, nezaposleni – 17,8%), drugara (zaposleni građani – 8,6%, nezaposleni

– 15,9%), preko familije (zaposleni građani – 10,7%, nezaposleni – 13,9%), neformalnog sistema obrazovanja (zaposleni građani – 7,3%, nezaposleni – 10,8%), televizije (zaposleni građani – 56,6%, nezaposleni – 63%); prošli obuku za postupanje u vanrednim situacijama (zaposleni građani – 6,6%, nezaposleni – 4,3%); želeli bi da budu edukovani preko televizije (zaposleni građani – 59,4%, nezaposleni – 67,6%); ističu da im niko nije u porodici pričao o poplavama (zaposleni građani – 40,2%, nezaposleni – 44,3%).

**Tabela 5:** Prikaz rezultata Hi-kvadrat testa nezavisnosti ( $\chi^2$ ) statusa zaposlenosti građana i znanja kao elementa spremnosti za reagovanje

	Value	df	Asymp. Sig. (2-sided)	Phi
Znanje o poplavi	13,618	2	0,001	0,077**
Poznavanje bezb. procedura	12,635	2	0,002	0,075**
Evakuacija	27,205	4	0,000	0,112**
Obrazovanje u školi	33,716	2	0,000	0,122**
Obrazovanje u porodici	9,524	2	0,009	0,065**
Obrazovanje na poslu	115,133	2	0,000	0,228**
Stariji, hendikepirani	27,917	2	0,000	0,109**
Pristanak na evakuaciju	10,249	1	0,001	0,068
Pomoć – stariji, invalidi	27,917	2	0,000	0,109**
Komšije – samostalno	22,267	2	0,000	0,098**
Karta poplavnog rizika	1,152	2	0,562	0,022**
Zvanično upozorenje	7,189	2	0,027	0,057**
Potencijalne zaraze	38,618	2	0,000	0,130**
Ventil za vodu	46,227	2	0,000	0,141
Ventil za gas	42,947	2	0,000	0,152
Prekidač za električnu energiju	8,983	2	0,011	0,063
Rukovanje ventilom za vodu	46,811	2	0,000	0,141**
Rukovanje ventilom za gas	40,970	2	0,000	0,147**
Rukovanje prek. el. energije	19,706	2	0,000	0,094**
Informacije od ukućana	11,489	1	0,001	-0,072
Informacije o komšija	4,308	1	0,038	-0,045
Informacije od drugara/ca	28,127	1	0,000	-0,113
Informacije od familije	4,694	1	0,030	-0,047
Informacije u školi	2,156	1	0,142	-0,032
Informacije na fakultetu	0,087	1	0,768	-0,008
Informacije kroz nef. sistem	7,479	1	0,006	-0,060
Informacije na poslu	93,291	1	0,000	0,204
Informacije u verskoj zajednici	1,016	1	0,313	-0,024
Informacije na televiziji	8,811	1	0,003	-0,063

Informacije na radiju	0,465	1	0,495	-0,016
Informacije iz štampe	2,094	1	0,148	0,031
Informacije preko interneta	4,576	1	0,032	0,046
Prošli obuku	4,812	1	0,028	0,047
Želja za obukom	1,574	2	0,455	0,026**
Edukac. preko televizije	14,829	1	0,000	-0,081
Edukac. preko radija	1,048	1	0,306	-0,023
Edukac. preko video-igrice	0,448	1	0,503	0,018
Edukac. preko interneta	2,472	1	0,116	0,034
Edukac. preko predavanja	6,400	1	0,011	0,054
Neformalni sistem	0,123	1	0,726	0,009

\* Statistički značajna povezanost –  $p \leq 0,05$

\*\* Kramerov koeficijent za tabele veće od 2 sa 2

Za ispitivanje povezanosti statusa zaposlenosti i neprekidnih zavisnih promenljivih o znanju, izabran je t-test nezavisnih uzoraka (*independent samples T test*).<sup>18</sup> Statistički značajne razlike rezultata kod muškaraca i žena bilo je kod sledećih neprekidnih promenljivih o znanju (tabela 6): sistemi upozorenja (zaposleni građani:  $M = 2,34$ ,  $SD = 1,20$ ; nezaposleni:  $M = 2,10$ ,  $SD = 1,14$ ;  $t(1.859,6) = 4,80$   $p = 0,000$ ,  $ek = 0,012$  – mali uticaj); policija (zaposleni građani:  $M = 2,68$ ,  $SD = 1,26$ ; nezaposleni:  $M = 2,51$ ,  $SD = 1,24$ ;  $t(2.353) = 3,21$   $p = 0,001$ ,  $ek = 0,0043$  – mali uticaj); VSJ (zaposleni građani:  $M = 2,86$ ,  $SD = 1,31$ ; nezaposleni:  $M = 2,63$ ,  $SD = 1,25$ ;  $t(2.349) = 4,26$   $p = 0,000$ ,  $ek = 0,002$  – veliki uticaj); štab za vanredne situacije (zaposleni građani:  $M = 2,70$ ,  $SD = 1,28$ ; nezaposleni:  $M = 2,52$ ,  $SD = 1,25$ ;  $t(2.347) = 3,25$   $p = 0,001$ ,  $ek = 0,0076$  – mali uticaj).

Građani koji su zaposleni su u većoj meri upoznati sa sistemima upozorenja, nadležnostima policije, vatrogasno-spasilačkih jedinica i štabova u prirodnim katastrofama izazvanim poplavama.

<sup>18</sup> Pre pristupanja sprovođenja testa, bile su ispitane opšte i posebne pretpostavke za njegovo sprovođenje.



**Tabela 6:** Rezultati *t*-testa (independent samples *T* test) poređenja srednje vrednosti raznovrsnih varijabli o znanju u odnosu na status zaposlenosti građana

Zavisne promenljive	Levene's Test for Equality of variances		T-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Nivo znanja	5,854	0,017	-0,547	11,893	0,594	-0,183	0,335	-0,914	0,547
Mogućnost plav. – 1 god.	3,673	0,055	-1,610	2.379	0,107	-0,092	0,057	-0,204	0,020
Mogućnost plav. – 5 god.	0,000	0,989	-1,610	2.328	0,108	-0,095	0,059	-0,210	0,021
Sistemi upozorenja	10,317	0,001	4,803	1.859,696	0,000	0,239	0,050	0,141	0,336
Policija	0,013	0,910	3,211	2.353	0,001	0,173	0,054	0,067	0,278
VSJ	0,001	0,977	4,268	2.349	0,000	0,236	0,055	0,127	0,344
Štab za vanredne situacije	0,109	0,742	3,254	2.347	0,001	0,178	0,055	0,071	0,285
Putevi evakuacije	1,572	0,210	1,832	2.344	0,067	0,101	0,055	-0,007	0,208
Obližnja skloništa	0,681	0,409	-0,399	2.349	0,690	-0,021	0,053	-0,124	0,082
Procena ugrož. i planovi	3,636	0,057	-2,453	2.341	0,014	-0,126	0,052	-0,227	-0,025

\* Statistički značajna razlika rezultata testiranja –  $p \leq 0,05$

Rezultati Hi-kvadrat testa nezavisnosti ( $\chi^2$ ) pokazali su da postoji statistički značajna veza između zaposlenosti građana i sledećih promenljivih o zalihama i planovima: zalihe u domu ( $p = 0,015 < 0,05$ ,  $v = 0,06$  – mali uticaj); zalihe hrane ( $p = 0,04 < 0,05$ ,  $v = 0,09$  – mali uticaj); zalihe vode ( $p = < 0,05$ ,  $\phi = 0,07$  – mali uticaj); kramp ( $p = 0,11 < 0,05$ ,  $\phi = 0,075$  – mali uticaj); aparat za gašenje početnih požara ( $p = 0,000 < 0,05$ ,  $\phi = 0,141$  – mali uticaj); zalihe u automobilu ( $p = 0,000 < 0,05$ ,  $v = 0,122$  – mali uticaj); komplet prve pomoći u domu ( $p = 0,009 < 0,05$ ,  $v = 0,130$  – mali uticaj); komplet prve pomoći u vozilu ( $p = 0,000 < 0,05$ ,  $v = 0,130$  – mali uticaj); komplet prve pomoći – lako do stupno ( $p = 0,001 < 0,05$ ,  $v = 0,086$  – mali uticaj); plan za reagovanje ( $p = 0,001 < 0,05$ ,  $v = 0,085$  – mali uticaj); diskusija o planu ( $p = 0,004 < 0,05$ ,  $v = 0,072$  –

mali uticaj); kopije dokumenata ( $p = 0,000 < 0,05$ ,  $v = 0,154$  – mali uticaj); osiguranje ( $p = 0,000 < 0,05$ ,  $v = 0,130$  – mali uticaj). S druge strane, nije utvrđena statistički značajna povezanost sa promenljivama: radio-tranzistor ( $p = 0,163 > 0,05$ ), baterijska lampa ( $p = 0,716 > 0,05$ ), lopata ( $p = 0,076 > 0,05$ ), motika i ašov ( $p = 0,696 > 0,05$ ), obnavljanje zaliha ( $p = 0,289 > 0,05$ ) (tabela 7).

Na osnovu rezultata, primećuje se da zaposleni građani u odnosu na nezaposlene:

– u većem procentu poseduju: zalihe (zaposleni 25,7%, nezaposleni 23,5%); zalihe hrane za jedan dan (zaposleni 20,6%, nezaposleni 19,2%), za četiri dana (zaposleni 63,8%, nezaposleni 57,6%); zalihe vode za jedan dan (zaposleni 24,8%, nezaposleni 21,6%) i za četiri dana (zaposleni 50,2%, nezaposleni 36,5%); lopatu (zaposleni 41,3%, nezaposleni 36%), kramp (zaposleni 27%, nezaposleni 20,3%), motiku (zaposleni 32,3%, nezaposleni 68,9%), aparat za gašenje početnih požara (zaposleni 16,9%, nezaposleni 7,1%), zalihe u automobilu (zaposleni 6,4%, nezaposleni 5,7%), poseduju prvu pomoć u kući (zaposleni 52%, nezaposleni 51%), drže komplet prve pomoći na lako dostupnom mestu (zaposleni 68%, nezaposleni 61%), pisani plan za reagovanje (zaposleni 12,4%, nezaposleni 10,6%), diskutuju sa članovima domaćinstva o planu (zaposleni 16%, nezaposleni 13,3%); osigurana im je kuća od posledica poplava (zaposleni 8,6%, nezaposleni 8,2%);

– u manjem procentu poseduju: zalihe hrane za dva dana (zaposleni 15,6%, nezaposleni 23,1%); zalihe vode za dva dana (zaposleni 25%, nezaposleni 41,9%); radio-tranzistor (zaposleni 16%, nezaposleni 19,3%), baterijsku lampu (zaposleni 37,9%, nezaposleni 39,1%); poseduju pisani plan za reagovanje (zaposleni 1%, nezaposleni 2,1%); kopije važnih finansijskih i ličnih dokumenata (zaposleni 26,8%, nezaposleni 28,4%).

**Tabela 7:** Prikaz rezultata Hi-kvadrat testa nezavisnosti ( $\chi^2$ ) zaposlenosti i posedovanja zaliha i planova za reagovanje.

	Value	df	Asymp. Sig. (2-sided)	Cramer's v
Zalihe u domu	8,337	2	0,015	0,060
Zalihe hrane	6,247	2	0,044	0,093
Zalihe vode	21,332	2	0,000	0,178
Radio-tranzistor	1,942	1	0,163	-0,042**
Baterijska lampa	0,132	1	0,716	-0,012**
Lopata	3,158	1	0,076	0,052**
Kramp	6,492	1	0,011	0,075**
Motika i ašov	0,153	1	0,696	0,013**
Aparat za gašenje početnih požara	21,831	1	0,000	0,141**
Obnavljanje zaliha	2,480	2	0,289	0,045

## UTICAJ ZAPOSLENOSTI NA SPREMNOST GRAĐANA ZA REAGOVANJE...

Zalihe u automobilu	32,795	3	0,000	0,122
Komplet prve pomoći u domu	9,467	2	0,009	0,066
Komplet prve pomoći u vozilu	30,055	2	0,000	0,130
Komplet prve pomoći – lako dostupno	14,451	2	0,001	0,086
Plan za reagovanje	16,637	3	0,001	0,085
Diskusija o planu	11,164	2	0,004	0,072
Kopije dokumenat	50,720	2	0,000	0,154
Osiguranje	38,890	2	0,000	0,130

\* Statistički značajna povezanost –  $p \leq 0,05$

\*\*  $\Phi$  (phi) koeficijent, tabela 2 sa 2

### Zaključak

Imajući u vidu rezultate istraživanja, došlo se do sledećih zaključaka. U odnosu na nezaposlene građane, zaposleni su u većem procentu (većoj meri) preduzeli određene preventivne mere u cilju smanjenja materijalnih posledica poplave; uplatili bi novčana sredstva na neki od računa za pomoć žrtvama poplava; angažovali bi se u pružanju pomoći žrtvama poplava na terenu; dugotrajne kiše i podizanje nivoa vode ih podstiču na razmišljanje o spremnosti za reagovanje; vršili su pripreme najmanje šest meseci; ne rade ništa da bi nivo spremnosti podigli na viši nivo; ocenjuju spremnost države za reagovanje na poplave; samopouzđani su u pogledu sopstvenih sposobnosti i sigurnosti da se izbore sa posledicama poplava; pridaju značaj preventivnim merama preduzetim u cilju smanjenja materijalnih posledica poplava; očekuju pomoć od komšija u prva 72 sata od nastanka poplave; obavješteni su o poplavnim rizicima u njihovim lokalnim samoupravama; ocenjuju efikasnost reagovanja vojske i štaba za vanredne situacije; znaju šta je poplava; poznaju bezbednosne procedure za reagovanje; evakuisali bi se na više spratove kuće, kod prijatelja; ističu da ih je neko u osnovnoj/srednjoj školi i poslu edukovao o poplavama; znaju gde žive stariji, hendikepirani i odojčad u lokalnoj zajednici; pristali bi na evakuaciju; znaju kakvu pomoć iziskuju starije osobe, invalidi i odojčad; misle da im se komšije mogu samostalno spasiti u slučaju poplava; nisu sigurni šta treba raditi nakon zvaničnog upozorenja o nailasku poplavnog talasa; upoznati su sa virusima i zarazama koje prate period nakon poplave; znaju gde se nalazi ventil za vodu, ventil za gas, prekidač električne energije; znaju da rukuju ventilom za vodu, ventilom za gas, prekidačem električne energije; stekli su informacije o poplavama na poslu, preko interneta; želeli bi da budu edukovani preko predavanja; upoznati su sa sistemima upozorenja, nadležnostima policije, vatrogasno-spasilačkih jedinica i štabova u prirodnim katastrofama izazvanim poplavama; poseduju: zalihe, zalihe hrane za jedan dan, i za

četiri dana, zalihe vode za jedan dan i za četiri dana, lopatu, kramp, motiku, aparat za gašenje početnih požara, zalihe u automobilu, poseduju prvu pomoć u kući, drže komplet prve pomoći na lako dostupnom mestu, pisani plan za reagovanje, diskutuju sa članovima domaćinstva o planu, osigurana im je kuća od posledica poplava.

S druge strane, građani koji nisu zaposleni, u većem procentu (većoj meri) bi se angažovali u nekom od prihvatnih centara za žrtve poplavljenih područja; obilazak poplavljenih područja i izveštaji medija podstiču ih na razmišljanje o spremnosti za reagovanje na poplavu; još uvek nisu spremni, ali namerajavu da to urade u narednih šest meseci; kao razloge za nepreduzimanje mera na ličnom planu navode: „to je veoma skupo“, „nemam podršku od strane lokalne zajednice“; očekuju pomoć od nevladinih humanitarnih organizacija, verskih organizacija u prva 72 sata od nastanka poplave; slažu se sa razlogom „to je posao državnih organa“ i „previše košta“ za neangažovanje u pružanju pomoći ugroženim ljudima od poplava; ocenjuju efikasnost reagovanja vatrogasno-spasilačkih jedinica i službe hitne medicinske pomoći; evakuisali bi se kod komšija i u prihvatne centre; stekli su informacije o poplavama preko ukućana, komšija, drugara, preko porodice, neformalnog sistema obrazovanja, televizije; prošli su obuku za postupanje u vanrednim situacijama; želeli bi da budu edukovani preko televizije; ističu da im niko nije u porodici pričao o poplavama; poseduju: zalihe hrane za dva dana, zalihe vode za dva dana, radio-tranzistor, baterijsku lampu, pisani plan za reagovanje, kopije važnih finansijskih i ličnih dokumenata.

Imajući u vidu iznete zaključke, mogu se dati sledeće preporuke za unapređenje spremnosti za reagovanje s obzirom na status zaposlenosti građana. Zaposlene građane treba podstaći da se angažuju u nekom od prihvatnih centara za žrtve poplave i da preduzmu mere spremnosti organizovanjem obilaska poplavljenih područja. Nasuprot njima, građane koji su nezaposleni treba podstaći da preduzmu preventivne mere, da uplate novčana sredstva za pomoć žrtvama poplava i da se angažuju u pružanju pomoći žrtvama poplava. Treba ih podstaći na razmišljanje o spremnosti za reagovanje (npr. prikazivanjem fotografija i video-snimaka o dugotrajnim kišama); edukovati ih o poplavama i bezbednosnim procedurama reagovanja (između ostalog, informisati ih o tome gde se nalaze ventili za vodu i gas i prekidači električne energije); informisati ih o mestima prebivališta starijih, hendikepiranih i odojčadi. Posebnu pažnju treba posvetiti podizanju nivoa svesti o neophodnosti evakuacije i načinu postupanja nakon zvaničnog upozorenja o nailasku poplavnog talasa.

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13. Gačić, J; Jakovljević, V; Specifičnosti savremenog sistema upravljanja u vanrednim situacijama, *Bezbednost*, vol. LVI, br. 3/2014, MUP Republike Srbije, Beograd.

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15. Matsuda, Y; Okada, N; Community diagnosis for sustainable disaster preparedness, *Journal of Natural Disaster Science*, vol. 28, br. 1/2006, J-STAGE, Kyoto.
16. Mileti, D; *Disasters by Design: A Reassessment of Natural Hazards in the United States*, Joseph Henry Press, New York, 1999.
17. Milojković, B; Geotopografsko obezbeđenje upotrebe jedinica policije u akcijama zaštite i spasavanja od poplava u maju 2014. godine, *Bezbednost*, vol. LVI, br. 3/2014, MUP Republike Srbije, Beograd.
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## Rezime

Posledice poplava koje su zadesile područje Srbije u toku 2014. godine ukazale su na veoma nizak stepen spremnosti stanovništva za reagovanje u takvim prirodnim katastrofama. Cilj kvantitativnog istraživanja predstavlja ispitivanje uticaja zaposlenosti na spremnost građana za reagovanje na prirodnu katastrofu izazvanu poplavom u Republici Srbiji. Imajući u vidu sve lokalne zajednice u Srbiji u kojima se dogodila poplava ili postoji visok rizik da se ona dogodi, metodom slučajnog uzorka odabrano je devetnaest od ukupno 150 opština, 23 grada i grada Beograda. U anketnom ispitivanju u kojem je učestvovalo 2.500 građana bila je primenjena strategija ispitivanja u domaćinstvima uz primenu višestapnog slučajnog uzorka. Imajući u vidu predmet istraživanja, za njegovu realizaciju su odabrane lokalne zajednice sa visokim i niskim rizikom nastanka poplava. Shodno uslovima pod kojima se rezultati naučnog istraživanja mogu generalizovati na celokupnu populaciju građana Srbije, istraživanje je sprovedeno na teritoriji većeg broja lokalnih zajednica različitih po svojim de-

mografsko-socijalnim karakteristikama. Obuhvaćene su gradske i seoske lokalne zajednice u različitim delovima Srbije: Obrenovac, Šabac, Kruševac, Kragujevac, Sremska Mitrovica, Priboj, Batočina, Svilajnac, Lapovo, Paraćin, Smed. Palanka, Jaša Tomić, Loznica, Bajina Bašta, Smederevo, Novi Sad, Kraljevo, Rekovac i Užice. Rezultati istraživanja ukazuju da su zaposleni građani u većem procentu (meri) u odnosu na građane koji nisu zaposleni: preduzeli određene preventivne mere u cilju smanjenja materijalnih posledica poplave; uplatili bi novčana sredstva na neki od računa za pomoć žrtvama poplava; angažovali bi se u pružanju pomoći žrtvama poplava na terenu; dugotrajne kiše i podizanje nivoa vode podstiču ih na razmišljanje o spremnosti za reagovanje; vršili su pripreme najmanje šest meseci; ne rade ništa da bi nivo spremnosti podigli na viši nivo; ocenjuju spremnost države za reagovanje na poplave; samopouzđani su u pogledu sopstvenih sposobnosti i sigurnosti da se izbore sa posledicama poplava; pridaju značaj preventivnim merama preduzetim u cilju smanjenja materijalnih posledica poplava; očekuju pomoć od komšija u prva 72 sata od nastanka poplave itd. U cilju podizanja nivoa spremnosti građana za reagovanje, zaposlene građane treba podstaći: da se angažuju u nekom od prihvatnih centara za žrtve poplave; da preduzmu mere spremnosti organizovanjem obilaska poplavljenih područja. Nasuprot njima, građane koji su nezaposleni treba podstaći da preduzmu preventivne mere, da uplate novčana sredstva za pomoć žrtvama poplava i da se angažuju u pružanju pomoći žrtvama poplava. Treba ih podstaći na razmišljanje o spremnosti za reagovanje (npr. prikazivanjem fotografija i video-snimaka o dugotrajnim kišama); edukovati ih o poplavama i bezbednosnim procedurama reagovanja (između ostalog, informisati ih o tome gde se nalaze ventili za vodu i gas i prekidači električne energije); informisati ih o mestima prebivališta starijih, hendikepiranih i odojčadi. Posebnu pažnju treba posvetiti podizanju nivoa svesti o neophodnosti evakuacije i načinu postupanja nakon zvaničnog upozorenja o nailasku poplavnog talasa.

Orginalnost istraživanja ogleda se u činjenici da u Srbiji nikada nije sprovedeno istraživanje kojim bi se ispitalo stanje spremnosti građana za reagovanje. Rezultati istraživanja se mogu iskoristiti prilikom kreiranja strategija za unapređenje nivoa spremnosti građana za reagovanje s obzirom na njihovu zaposlenost. Istraživanje ukazuje na koji način treba uticati na građane s obzirom na status zaposlenosti kako bi se spremnost podigla na viši nivo.





# INFLUENCE OF EMPLOYMENT STATUS ON CITIZEN PREPAREDNESS FOR RESPONSE TO NATURAL DISASTERS

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**Summary:** Consequences of floods that affected the territory of Serbia in 2014 indicated a very low level of preparedness of population to respond to natural disasters. Therefore, the aim of quantitative research is to examine the impact of fear on the willingness of citizens to respond to a natural disaster caused by the flood in the Republic of Serbia. Bearing in mind all local communities in Serbia where floods occurred or where there is a high risk of flooding, the sample was randomly selected consisting of 19 of 150 municipalities and 23 towns and the city of Belgrade. The survey used the strategy of testing in households with the use of a multi-stage random sample. The research results show that the citizens who are employed, in a higher percentage/to a greater extent compared to citizens who are not have taken certain preventive measures aimed at reducing the tangible consequences of floods, would pay funds to an account to help flood victims, would engage in providing help to flood victims in the field, heavy rains make them think of preparedness for response and water level rise, they engaged in preparations for at least 6 months, do not do anything that would raise the level of preparedness to the next level, etc. The originality of the research lies in the fact that in Serbia the research has never been conducted to examine the state of preparedness of citizens to respond. Bearing in mind that

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the research is based on the territory of Serbia, the conclusions can be generalized to the entire population. The research results can be used when creating a strategy for improving the level of preparedness of citizens to respond.

**Keywords:** natural disasters, floods, citizens, employment, preparedness.

## Introduction

There is no doubt that the consequences of floods represent one of the most serious dangers for human community.<sup>2</sup> Although at one moment the occurrences of compromising safety by phenomena of natural origin were ignored, now they are certainly gaining in importance.<sup>3</sup> Primordial human community has always been confronted with a variety of natural disasters. Frequent and serious consequences that destroyed entire communities, because they lack rational explanation, have long been seen as a way of God's wrath that is punishment to people for bad behaviour.<sup>4</sup> More specifically, they were considered special messages that were sent directly from God to punish sinners.<sup>5</sup> Although this understanding of disasters played an important regulatory social function, it wrongly suggested that people cannot be adequately protected from natural disasters,<sup>6</sup> and that the only way to protect themselves was properly and humbly acting in accordance with religious principles for God's mercy. This, among other things, disburdened people of sharing, or taking

2 V. Cvetković, Strah i poplave u Srbiji: spremnost građana za reagovanje na prirodne katastrofe, *Zbornik Matice srpske za društvena istraživanja*, vol 155, number 2/2016.

3 V. Cvetković, Spatial and temporal distribution of floods like natural emergency situations, In: *International scientific conference Archibald Reiss days*, Belgrade, 371-389, 2013; V. Cvetković, Geoprostorna i vremenska distribucija vulkanskih erupcija, *NBP – Journal of Criminalistics and Law*, vol. XIX, 2/2014, 153-171; V. Cvetković; S. Dragicević, Spatial and temporal distribution of natural disasters, *Journal of the Geographical Institute Jovan Cvijic*, vol 64, number 3/2014, 293-309.

4 D. Paton; D. Johnston, Disasters and communities: vulnerability, resilience and preparedness, *Disaster Prevention and Management*, vol 10, number 4/2001, 270-277.

5 D. Mileti, *Disasters by Design: A Reassessment of Natural Hazards in the United States*, New York, Joseph Henry Press, 1999, 101; M. K. Lindell; K. J. Tierney; R. W. Perry, *Facing the Unexpected: Disaster Preparedness and Response in the United States*, New York, 2001.

6 V. Cvetković, *Policija i prirodne katastrofe*, Beograd, 2016; M. Šikman; G. Amidžić; Nadležnosti i uloga policije u vanrednim situacijama u RS, *Bezbednost*, vol 56, 3/2014, Beograd, 129-148; N. Bojičić, Development of the protection and rescue system in the Serbian Ministry of Interior, *Bezbednost*, vol 55, number 1/2013, Beograd, 160-183; J. Gačić; V. Jakovljević, Specifičnosti savremenog sistema upravljanja u vanrednim situacijama, *Bezbednost*, vol 56, number 3/2014, Beograd, 64-78; V. Cvetković; B. Milojković, Uticaj demografskih faktora na nivo informisanosti građana o nadležnostima policije u prirodnim katastrofama, *Bezbednost*, 2016.

responsibility for any resulting consequences, because natural disasters were attributed, as mentioned before, to acting of higher forces.<sup>7</sup> When it comes to floods, slowly but steadily for centuries applied principle of “the fight against floods” has turned into the new one that bears the name “living with floods”.<sup>8</sup> For people to be able to live with floods, it requires an integrated management of natural disasters that includes mitigation, preparedness, response and recovery from the effects of flooding.<sup>9</sup> Preparedness as a concept in the theory of disasters includes the activities undertaken before natural disasters in order to improve the response and recovery of the resulting consequences.<sup>10</sup> Thereby, preparedness implies knowledge and skills related to response (awareness of local flood risks, warning systems, and methods of response), as well as possession of inventories and plans.<sup>11</sup>

Research into influence of employment on citizen preparedness for response to consequences of floods cannot give a complete answer to all current issues, but it certainly can contribute to creating a more complete picture of it. Although great efforts have been made to clarify the most concerns by comprehensive approach, it can be said that a large number of questions remain for further research. The research results can contribute to improving citizen preparedness for response to such events.

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7 V. Cvetković, Geoprostorna i vremenska distribucija vulkanskih erupcija, *NBP – Journal of Criminalistics and Law*, vol. XIX, 2/2014, 153-171, 2014.

8 B. Milojković, Geotopografsko obezbeđenje upotrebe jedinica policije u akcijama zaštite i spasavanja od poplava u maju 2014. godine, *Bezbednost*, vol 56, number 3/2014, 6-31.

9 V. Cvetković, Faktori uticaja na znanje i percepciju učenika srednjih škola u Beogradu o prirodnim katastrofama izazvanim klizištima, *Bezbednost*, vol 57, number 1/2015, 32-50.

10 D. F. Gillespie; L. C. Streeter, Conceptualizing and measuring disaster preparedness, *International Journal of Mass Emergencies and Disasters*, 5(2), 1987 155-176; Y. Matsuda; N. Okada, N. Community diagnosis for sustainable disaster preparedness, *Journal of Natural Disaster Science*, vol 28, number 1/2006, 25-33.

11 V. Cvetković; S. Dragičević; M. Petrović; S. Mijaković; V. Jakovljević; J. Gačić, Knowledge and perception of secondary school students in Belgrade about earthquakes as natural disasters, *Polish journal of environmental studies*, vol 24, number 4/2015, 1553-1561; V. Cvetković, Spremnost za reagovanje na prirodnu katastrofu – pregled literature, *Bezbednost, policija i građani*, vol XI, number 1-2/2015, 165-183.

## 1. Methodology of research

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. (Figure 1). 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 the 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, the way to obtain the information about floods. And the third dimension, supplies related to having oral/written plans, having supplies of food and water, a transistor radio, flashlight, hoe, shovel, hoe and spade, first aid kit, insurance.

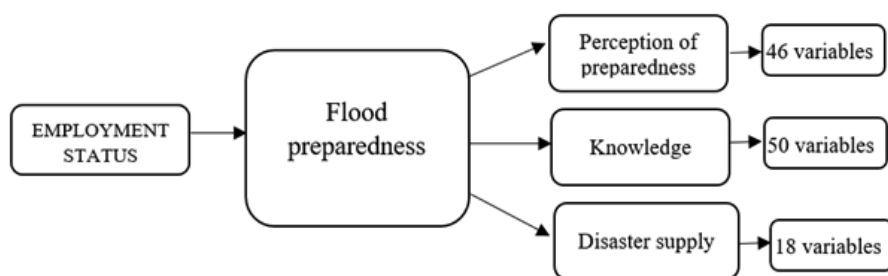


Figure 1. Study design

For the purposes of the survey, the statistical method and the method of empirical generalization were used to stratify the local communities with high and low risk of flooding in the Republic of Serbia. Thus the stratum was obtained, i.e. the population that consisted of adult residents of local communities where flooding took place or where a risk of flooding existed. The research included the following communities: Obrenovac, Sabac, Krusevac, Kragujevac, Sremska Mitrovica, Priboj, Batocina, Svilajnac, Lapovo, Paracin, Smederevska Palanka, Jasa Tomic, Loznica, Bajina Basta, Smederevo, Novi Sad, Kraljevo, Rekovac and Uzice (Picture 1).



**Picture 1.** *Map overview of geospatial disposition of surveyed correspondents by local communities in the Republic of Serbia*

### **1.1. Sample**

The population consists of all adult residents of local communities in which there is a risk of 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 the 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 a 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, the 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 the selection of respondents within households previously defined. The respondents were selected following the procedure of the next birthday for adult members of the household. The process of interviewing for each local authority was held three days a week (including weekends) at different times of days. The study included 2.500 persons.<sup>12</sup>

**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

12 V. Cvetković, Influence of Income Level on Citizen Preparedness for Response to Natural Disasters, *Vojno delo*, 2016/4, Beograd; V. Cvetković, Uticaj motivisanosti na spremnost građana Republike Srbije da reaguju na prirodnu katastrofu izazvanu poplavom, *Vojno delo*, 3/2016, Beograd.

According to the Statistical Office of Serbia, women have a share of 51.3% and men 48.7% in overall population.<sup>13</sup> Observed in absolute numbers, of total 7,498,001 inhabitants, in Serbia there 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 can also be noted that the majority of population (41.3%) has secondary/four-year education. 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, the married people account for 54.6%, widow/widower 3%, the unmarried (single) 18.8%, the engaged 2.7% and in relationship 16.9%. Table 2 gives a detailed overview of the 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
Secondary/3 years		520	20.8
Secondary/4 years		1032	41.3
Higher		245	9.8
High		439	17.6
Master		73	2.9
Doctorate		11	0.4
Marital status	Single	470	18.8
	In relationship	423	16.9
	Engaged	67	2.7
	Married	1366	54.6
	Divorced	99	4.0
	Widow / widower	75	3.0

<sup>13</sup> Republički zavod za statistiku, dostupno na: [http://popis2011.stat.rs/?page\\_id=2134](http://popis2011.stat.rs/?page_id=2134), 2011.

Distance between household and river (km)	Up to 2 km	1479	59.2
	From 2 to 5	744	29.8
	From 5 to 10	231	9.2
	Over 10	46	1.8
Number of household members	Up to 2	63	2.5
	From 2 to 4	1223	48.9
	From 4 to 6	639	25.6
	Over 6	575	23.0
Employment status	Yes	1519	60.8
	No	883	35.3
Size of apartment / house (m <sup>2</sup> )	Up to 35	128	3.9
	35-60	237	7.2
	60-80	279	8.5
	80-100	126	3.9
	Over 100	45	1.4
Income level - monthly	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 90.0000 RSD	191	7.6

\* 1 US Dollar = 111 RSD

## 1.2. 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 a specific natural disaster. A research conducted during 2007 on the territory of the United States was conducted using a questionnaire containing 55 questions which covered the following topics: severity/efficacy, awareness and perception on risk, stages of changes, personal responses to disasters, prevention, supplies, house plans, plans of local communities, training and exercises, volunteerism, inability, demography. In the second step we determined dimensions of preparedness of citizens to respond to the flood as an actual 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 there was adapted or specially designed question in instrument. The fifth and final step was to carry out preliminary (pilot) study in Batočina with the aim of checking the constructed instrument (its internal compliance with



the scale, i.e. the degree of relatedness of items of which it is composed, and whether instructions, questions and values on the scale are clear).

### 1.3. Data analysis

Statistical analysis of the collected data was performed by IBM's software package SPSS. Chi-square test of independence ( $\chi^2$ ) was used for testing the connection between gender and categorical variables on perception, knowledge and having supplies and plans for a natural disaster caused by flood. On that occasion the additional assumptions were completed about minimum expected frequency in each cell, which amounted to five or more. The 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.<sup>14</sup> For tables larger than 2 by 2, to assess the impact level Cramer's v coefficient was used which takes into account the number of degrees of freedom. Accordingly, for R-1 or K-1 equal to 1, we used the following criteria of impact size: small = 0.01, medium = 0.30 and large = 0.50.<sup>15</sup> To test the connection between gender 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. Before proceeding to the implementation of the test, we examined general and specific assumptions for its implementation.

## 2. Research results

Chi-square test of independence ( $\chi^2$ ) examined the correlation between employment and categorical variables on the perception of preparedness for response to a natural disaster caused by flood. The results of Chi-square test of independence ( $\chi^2$ ) (with continuity correction by Yeats, referring to tables 2 x 2) have shown that there is a statistically significant relationship between parenthood and the following variables: preventive measures ( $p = 0,004 < 0,05$ ,  $v = 0,070$  – small impact); financial resources ( $p = 0.000 < 0,05$ ,  $\phi = 0.144$  – small impact); engaged in the field ( $p = 0.034 < 0,05$ ,  $\phi = 0.046$  – small impact); engaged in shelters ( $p = 0.000 < 0,05$ ,  $\phi = -0.07$  – small impact); visiting flood-hit areas ( $p = 0.001 < 0,05$ ,  $\phi = -0.07$  – small impact); river level rise ( $p = 0,001 < 0,05$ ,  $\phi = 0,068$  – small impact); media reports ( $p = 0,004 < 0,05$ ,  $\phi = -0,062$  – small impact); heavy rains ( $p = 0,030 < 0,05$ ,  $\phi = 0,046$

14 J. W. Cohen, *Statistical power analysis for the behavioral sciences*, Hillsdale, 1988.

15 F. J. Gravetter, L. B. Wallnau, *Statistics for the behavioral sciences*, Belmont, 2004.

– small impact); level of preparedness ( $p = 0,004 < 0,05$ ,  $\phi = 0,088$  – small impact). On the other hand, there was no statistically significant relationship with the variable of heavy rains: ( $p = 0.034 > 0.05$ ) (Table 3).

Based on the results, it is noticed that the employed citizens compared to the unemployed citizens:

– in a higher percentage - have undertaken certain preventive measures aimed at reducing the tangible consequences caused by floods (employed citizens - 16.2%, unemployed - 13.2%); would deposit funds to an account to help flood victims (employed people - 36.4%, unemployed - 22.5%); would engage in the field in providing help to flood victims (employed people - 18.1% unemployed - 14.6%); heavy rains make them think about preparedness for responding (employed people - 41.3%, unemployed - 36.7%), water level rise (employed people - 40.8%, unemployed - 34%); have performed preparations for at least 6 months (employed people - 4.4%, unemployed - 2.1%); do not do anything to raise the level of preparedness to the next level (employed people - 61.3% unemployed - 58.4%);

– in a lower percentage - would engage in one of reception centres for the victims of the flooded areas (employed people - 3.7% unemployed - 7.2%); visiting flooded areas makes them think about preparedness for responding to a flood (employed people - 7.9%; unemployed - 12.3%), media reports (employed people - 26.2% unemployed - 31.9%); are not yet prepared but intend to get prepared in the next 6 months (employed people - 11.5% unemployed - 14.8%).

**Table 3.** Results of chi-square test of independence ( $\chi^2$ ) of employment and variables on perception of preparedness to respond

	Value	df	Asymp. Sig. (2-sided)	Phi coefficient
Preventive measures	10,809	2	,004*	,070**
Financial resources	46,630	1	,000*	,144
Engaged in the field	4,474	1	,034*	,046
Engaged in shelters	12,896	1	,000*	-,077
Visiting flooded areas	11,295	1	,001*	-,073
Heavy rains	4,708	1	,030*	,046
River level rise	10,114	1	,001*	,068
Media reports	8,301	1	,004*	-,062
Level of preparedness	17,171	5	,004*	,088**

\* Statistically significant correlation -  $p \leq 0.05$

\*\* Cramer's V coefficient for tables larger than  $2 \times 2$

The correlation between the employment status of citizens and the continuous dependent variable on the perception was tested by independent samples

t test. It tested statistically significant difference between the mean values of all continuous variables on the perception of employed and unemployed citizens.<sup>16</sup> Statistically significant differences of the results in the employed and unemployed citizens are present in the following continuous variable: state preparedness (employed citizens:  $M = 2.99$ ,  $SD = 1.03$ , unemployed:  $M = 2.91$ ,  $SD = 1.18$ ;  $t(1779.3) = 2.13$ ,  $p = 0.035$ ,  $ek = 0.0025$  - small influence); personal capacities (employed citizens:  $M = 3.05$ ,  $SD = 1.00$ ; unemployed:  $M = 2.90$ ,  $SD = 1.07$ ;  $t(1751.4) = 3.26$ ,  $p = 0.001$ ,  $ek = 0.006$  - small influence); importance of preventive measures (employed citizens:  $M = 3.30$ ,  $SD = 1.13$ ; unemployed:  $M = 3.14$ ,  $SD = 1.15$ ;  $t(2378) = 3.34$ ,  $p = 0.001$ ,  $ek = 0.004$  - small influence); it is very expensive (employed citizens:  $M = 2.67$ ,  $SD = 1.29$ ; unemployed:  $M = 2.89$ ,  $SD = 1.37$ ;  $t(2339) = -3.34$ ,  $p = 0.001$ ,  $ek = 0.004$  - small influence); I have no support (employed citizens:  $M = 2.67$ ,  $SD = 1.28$ ; unemployed:  $M = 2.87$ ,  $SD = 1.37$ ;  $t(1706.9) = -3.47$ ,  $p = 0.001$ ,  $ek = 0.007$  - small influence); household members (employed citizens:  $M = 4.18$ ,  $SD = 1.30$ ; unemployed:  $M = 4.37$ ,  $SD = 1.11$ ;  $t(2029) = -3.79$ ,  $p = 0.000$ ,  $ek = 0.007$  - small influence); neighbours (employed citizens:  $M = 3.56$ ,  $SD = 1.28$ ; unemployed:  $M = 3.37$ ,  $SD = 1.21$ ;  $t(1894.4) = -2.19$ ,  $p = 0.028$ ,  $ek = 0.002$  - small influence); NHO (employed citizens:  $M = 2.42$ ,  $SD = 1.17$ ; unemployed:  $M = 2.53$ ,  $SD = 1.17$ ;  $t(1795.9) = -2.154$ ,  $p = 0.031$ ,  $ek = 0.002$  - small influence); religious community (employees citizens:  $M = 2.32$ ,  $SD = 1.20$ ; unemployed:  $M = 2.50$ ,  $SD = 1.26$ ;  $t(2342) = -3.42$ ,  $p = 0.001$ ,  $ek = 0.004$  - small influence); awareness (employees citizens:  $M = 2.85$ ,  $SD = 1.25$ ; unemployed:  $M = 2.73$ ,  $SD = 1.24$ ;  $t(2391) = 2.62$ ,  $p = 0.024$ ,  $ek = 0.0028$  - small influence); job of state authorities (employed citizens:  $M = 2.89$ ,  $SD = 1.23$ ; unemployed:  $M = 3.04$ ,  $SD = 1.27$ ;  $t(2243) = -2.74$ ,  $p = 0.006$ ,  $ek = 0.0033$  - little influence); it is too costly (employed citizens:  $M = 2.28$ ,  $SD = 1.11$ ; unemployed:  $M = 2.50$ ,  $SD = 1.34$ ;  $t(1410.1) = -3.99$ ,  $p = 0.000$ ,  $ek = 0.011$  - small influence); efficiency of the first responders (employed citizens:  $M = 3.58$ ,  $SD = 1.24$ ; unemployed:  $M = 3.39$ ,  $SD = 1.34$ ;  $t(1663.6) = 3.35$ ,  $p = 0.001$ ,  $ek = 0.0067$  - little influence); efficiency of emergency services (employed citizens:  $M = 3.58$ ,  $SD = 1.16$ ; unemployed:  $M = 3.36$ ,  $SD = 1.31$ ;  $t(1598.5) = 4.11$ ,  $p = 0.000$ ,  $ek = 0.010$  - small influence); efficiency of the army (employed citizens:  $M = 3.79$ ,  $SD = 1.28$ ; unemployed:  $M = 3.63$ ,  $SD = 1.41$ ;  $t(1632.5) = 2.75$ ,  $p = 0.006$ ,  $ek = 0.0046$  - small influence); efficiency of staff for emergency situations (employed citizens:  $M = 3.43$ ,  $SD = 1.32$ ; unemployed:  $M = 3.24$ ,  $SD = 1.42$ ;  $t(1666) = 3.34$ ,  $p = 0.001$ ,  $ek = 0.0066$  - small influence) (Table 4).

In employed citizens, there was a higher level: assessments of state preparedness for response to floods; confidence in personal skills and security to cope with consequences of floods; giving importance to preventive measures taken

<sup>16</sup> Before the test was conducted, both general and special assumptions for its conduct were examined.

to reduce the tangible consequences of floods; expectations of help from neighbours in the first 72 hours after occurrence of floods; level of awareness of flood risks in their local authorities; assessments of responding efficiency of the army and staff for emergency situations in natural disasters caused by floods;

- There was a lower level of: agreement with reason „it is very expensive”, „I have no support from the local community”, for not taking preventive measures at the personal level; expectations of help from non-governmental humanitarian organizations, religious organizations in the first 72 hours after occurrence of floods; agreement with reason „it is the job of state authority” and „it is too costly” for not engaging in providing help to affected people by floods; assessments of responding efficiency of first responders and emergency medical assistance in natural disasters caused by floods.

**Table 4.** Results of independent T - test of comparison of mean value of various variables on the perception of preparedness in relation to citizen employment status

Dependent variables	Levene's test for equality of variances		T-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Individual preparedness	11,709	,001	1,459	1780,281	,145	,066	,045	-,023	,154
Household preparedness	12,508	,000	-1,422	1776,648	,155	-,060	,042	-,143	,023
State preparedness	9,332	,002	2,115	1779,332	,035*	,100	,047	,007	,193
Preparedness of local community	7,277	,007	1,246	1767,605	,213	,062	,050	-,035	,159
Personal skills	11,413	,001	3,262	1751,423	,001*	,146	,045	,058	,234
Importance of preventive measures	,203	,653	3,340	2378	,001*	,162	,048	,067	,257
ISS	14,173	,000	-,104	1697,415	,917	-,006	,058	-,120	,108
I am not threatened	,078	,780	,229	2368	,819	,014	,062	-,108	,136
I have no time for that	5,488	,019	-1,394	1703,923	,163	-,082	,059	-,197	,033
It is very expensive	1,965	,161	-3,349	2339	,001*	-,190	,057	-,301	-,079
It will not influence on safety	,561	,454	-1,000	2342	,317	-,056	,056	-,167	,054
I am not capable	23,921	,000	-1,289	1641,626	,198	-,076	,059	-,191	,040

INFLUENCE OF EMPLOYMENT STATUS ON CITIZEN PREPAREDNESS...

I have no support	4,241	,040	-3,477	1706,949	,001*	-,199	,057	-,312	-,087
I cannot prevent it	10,152	,001	,295	1738,900	,768	,017	,059	-,099	,134
Household members	44,119	,000	-3,796	2029,491	,000*	-,193	,051	-,292	-,093
Neighbours	7,502	,006	-2,194	1894,462	,028*	-,116	,053	-,220	-,012
NHO	,016	,901	-2,153	2345	,031*	-,108	,050	-,207	-,010
MHO	1,331	,249	-1,286	2344	,198	-,064	,049	-,160	,033
Religious community	2,148	,143	-3,424	2342	,001*	-,180	,053	-,283	-,077
Police	,197	,657	-,103	2354	,918	-,006	,057	-,117	,105
First responders	2,061	,151	1,658	2359	,097	,087	,053	-,016	,190
Emergency medical service	3,966	,047	1,108	1723,401	,268	,060	,054	-,046	,166
Army	,000	,998	-1,209	2358	,227	-,069	,057	-,182	,043
Self-organized individuals	2,240	,135	-,508	2358	,611	-,029	,058	-,142	,084
Awareness	,620	,431	2,262	2391	,024*	,120	,053	,016	,224
Help would not mean much	17,075	,000	-,991	1517,027	,322	-,056	,057	-,167	,055
Others would help	13,677	,000	-,159	1543,632	,873	-,009	,055	-,117	,100
Job of state authorities	,909	,340	-2,740	2243	,006*	-,151	,055	-,259	-,043
Citizens from flooded areas	19,787	,000	,153	1506,684	,878	,009	,056	-,101	,118
Lack of time	5,233	,022	,960	1600,537	,337	,056	,058	-,058	,170
It is too expensive	45,819	,000	-3,990	1410,187	,000*	-,223	,056	-,333	-,113
Police efficiency	11,627	,001	,775	1631,301	,439	,044	,056	-,067	,154
Efficiency of first responders	8,628	,003	3,352	1663,683	,001*	,188	,056	,078	,299
Efficiency of emergency service	24,430	,000	4,110	1598,512	,000*	,222	,054	,116	,329
Efficiency of army	21,515	,000	2,750	1632,508	,006*	,161	,059	,046	,276
Efficiency of stuff for emergency situations	6,756	,009	3,344	1666,040	,001*	,200	,060	,083	,317

\* Statistically significant difference of test results -  $p \leq 0.05$

The results of Chi-square test of independence ( $\chi^2$ ) showed a statistically significant correlation between the employment status of citizens and the following variables of knowledge on natural disasters caused by floods: knowledge on floods ( $p = 0.001 < 0.05$ ,  $v = 0.077$  - small influence); familiarity with safety procedures ( $p = 0.002 < 0.05$ ,  $v = 0,075$  - small influence); evacuation ( $p = 0.000 < 0.05$ ,  $v = 0.112$  - small influence); education at school ( $p = 0.000 < 0.05$ ,  $v = 0.122$  - small influence); education within family ( $p = 0.009 < 0.05$ ,  $v = 0.065$  - small influence); education at work ( $p = 0.000 < 0.05$ ,  $v = 0.228$  - small influence); elders, disabled ( $p = 0.000 < 0.05$ ,  $v = 0.109$  - small influence); consent to evacuation ( $p = 0.001 < 0.05$ ,  $v = 0,068$  - small influence);

help - elders, disabled ( $p = 0.000 < 0.05$ ,  $v = 0.109$  - small influence); neighbours - individually ( $p = 0.000 < 0.05$ ,  $v = 0.098$  - small influence); potential infection ( $p = 0.000 < 0.05$ ,  $v = 0.130$  - small influence); water valve ( $p = 0.000 < 0.05$ ,  $\phi = 0.141$  - small influence); gas valve ( $p = 0.000 < 0.05$ ,  $\phi = 0.152$  - small influence); electricity switch ( $p = 0.011 < 0.05$ ,  $\phi = 0.063$  - small influence); handling water valve ( $p = 0.000 < 0.05$ ,  $\phi = 0.141$  - small influence); handling gas valve ( $p = 0.000 < 0.05$ ,  $\phi = 0.147$  - small influence); handling electricity switch ( $p = 0.000 < 0.05$ ,  $\phi = 0.094$  - small influence); information from household members ( $p = 0.001 < 0.05$ ,  $\phi = -0.072$  - small influence); neighbours ( $p = 0.038 < 0.05$ ,  $\phi = -0.045$  - small influence), friend ( $p = 0.000 < 0.05$ ,  $\phi = -0.113$  - small influence); relatives ( $p = 0.030 < 0.05$ ,  $\phi = -0.047$  - little influence); informal system ( $p = 0.006 < 0.05$ ,  $\phi = 0.060$  - small influence); at work ( $p = 0.000 < 0.05$ ,  $\phi = 0.204$  - small influence); television ( $p = 0.003 < 0.05$ ,  $\phi = -0.063$  - small influence); Internet ( $p = 0.032 < 0.05$ ,  $\phi = 0.046$  - a small effect); lectures ( $p = 0.028 < 0.05$ ,  $\phi = 0.047$  - small influence); television ( $p = 0.000 < 0.05$ ,  $\phi = -0.081$  - little influence); lectures ( $p = 0.011 < 0.05$ ,  $\phi = 0.054$  - a small effect). On the other hand, there was no statistically significant correlation with the variables: flood risk map ( $p = 0.562 > 0.05$ ); official warning ( $p = 0.027 > 0.05$ ); information at school ( $p = 0.142 > 0.05$ ); information on the faculty ( $p = 0.768 > 0.05$ ); information in a religious community ( $p = 0.313 > 0.05$ ); information on the radio ( $p = 0.495 < 0.05$ ); information in the press ( $p = 0.148 > 0.05$ ); desire for training ( $p = 0.455 > 0.05$ ); radio ( $p = 0.306 < 0.05$ ); video games ( $p = 0.503 > 0.05$ ); Internet ( $p = 0.116 < 0.05$ ); informal system ( $p = 0.726 > 0.05$ ) (Table 5).

Based on the results, it is noticed that employed citizens compared to unemployed citizens:

– In a higher percentage: know what flood is (employed people - 83.6%, unemployed - 77.6%); are familiar with safety procedures for response (employed people - 26.2%, unemployed - 20.3%); would evacuate to the upper floors of the house (employed people - 39.7%, unemployed - 32.6%), to friend's place (employed people - 36.9%, unemployed - 34.1%); point out that someone at primary/secondary school (employed people - 26.2%, unemployed - 27.7%) and at work (employed people - 40.5%, unemployed - 19.1%) educated them on floods; they know where elders, disabled and infants live in the local community (employed people - 44.9%, unemployed - 38.8%); would agree to be evacuated (employed people - 92.6%, unemployed - 88.6%); they know what assistance is required by elders, disabled and infants (employed people - 57.2%, unemployed - 45.9%); think that their neighbours can independently save themselves in case of flooding (citizens employed - 40%, unemployed - 36.4%); not sure what to do after official warning about the approach of the flood wave (employed people - 38.5%, unemployed - 33.6%); are familiar with

viruses and infections that accompany period after the floods (employed people - 50.7%, unemployed - 37.8%); they know where water valve is located (employed people - 82.2%, unemployed - 74.2%), gas valve (employed people - 55%, unemployed - 50.9%), electricity switch (employed citizens - 79 , 5%, unemployed - 77.6%); know how to handle the water valve (employed people - 79.3%, unemployed - 67%), gas valve (employed people - 55.9%, unemployed - 43.4%), electricity switch (employed people - 75, 6%, unemployed - 67.1%); acquired information about floods at work (employed people - 20.3%, the unemployed - 5.2%) over the Internet (employed people - 30.3%, unemployed - 26%); they would like to be educated through lectures (employed people - 32.6%, unemployed - 27.4%);

– in a lower percentage: would evacuate to neighbour’s place (employed people - 9%, unemployed - 11.6%) and to shelters (employed people - 11.4%, unemployed - 17.7%); got information about floods from household members (employed people - 28.5%, unemployed - 35.4%), neighbours (employed people - 14.4%, unemployed - 17.8%), friends (employed people - 8.6% , the unemployed - 15.9%), relatives (employed people - 10.7%, unemployed - 13.9%), informal education system (employed people - 7.3%, unemployed - 10.8%), television (employed people - 56.6%, unemployed - 63%); trained to act in emergency situations (employed people - 6.6%, unemployed - 4.3%); would like to be educated through television (employed people - 59.4%, unemployed - 67.6%); point out that no one within family did not talk about floods (employed people - 40.2%, unemployed - 44.3%).

**Table 5.** Review of results of Chi-square test of independence ( $\chi^2$ ) of employment status of citizens and knowledge as an element of preparedness for response.

	Value	df	Asymp. Sig. (2-sided)	Phi
Knowledge on floods	13,618	2	,001	,077**
Familiarity with safety procedures	12,635	2	,002	,075**
Evacuation	27,205	4	,000	,112**
Education at school	33,716	2	,000	,122**
Education within family	9,524	2	,009	,065**
Education at work	115,133	2	,000	,228**
Elders, disabled	27,917	2	,000	,109**
Consent to evacuation	10,249	1	,001	,068
Help - elders, disabled	27,917	2	,000	,109**
Neighbours - individually	22,267	2	,000	,098**
Flood risk map	1,152	2	,562	,022**
Official warning	7,189	2	,027	,057**
Potential infections	38,618	2	,000	,130**

Water valve	46,227	2	,000	,141
Gas valve	42,947	2	,000	,152
Electricity switch	8,983	2	,011	,063
Handling water valve	46,811	2	,000	,141**
Handling gas valve	40,970	2	,000	,147**
Handling electricity switch	19,706	2	,000	,094**
Information from family members	11,489	1	,001	-,072
Information from neighbours	4,308	1	,038	-,045
Information from friends	28,127	1	,000	-,113
Information from relatives	4,694	1	,030	-,047
Information at school	2,156	1	,142	-,032
Information at faculty	,087	1	,768	-,008
Information through an informal system	7,479	1	,006	-,060
Information at work	93,291	1	,000	,204
Information within religious community	1,016	1	,313	-,024
Information on television	8,811	1	,003	-,063
Information on the radio	,465	1	,495	-,016
Information in the press	2,094	1	,148	,031
Information via the Internet	4,576	1	,032	,046
Trained	4,812	1	,028	,047
Desire for training	1,574	2	,455	,026**
Education via television	14,829	1	,000	-,081
Education on the radio	1,048	1	,306	-,023
Education through video - game	,448	1	,503	,018
Education via the Internet	2,472	1	,116	,034
Education through lectures	6,400	1	,011	,054
Informal system	,123	1	,726	,009

\* Statistically significant correlation -  $p \leq 0.05$

\*\* Cramer's coefficient for tables bigger than  $2 \times 2$

Correlation between employment status and continuous dependent variable of knowledge was tested using independent samples t test. Statistically significant differences of results in men and women were in the following continuous variable of knowledge (Table 6): warning systems (employed citizens:  $M = 2.34$ ,  $SD = 1.20$ ; unemployed:  $M = 2.10$ ,  $SD = 1.14$ ;  $t(1859.6) = 4.80$ ,  $p = 0.000$ ,  $ek = 0.012$  - small influence); police (employed citizens:  $M = 2.68$ ,  $SD = 1.26$ ; unemployed:  $M = 2.51$ ,  $SD = 1.24$ ;  $t(2353) = 3.21$ ,  $p = 0.001$ ,  $ek = 0.0043$  - small influence); the first responders (employed citizens:  $M = 2.86$ ,  $SD = 1.31$ ; unemployed:  $M = 2.63$ ,  $SD = 1.25$ ;  $t(2349) = 4.26$ ,  $p = 0.000$ ,  $ek = 0.002$  - big influence); stuff for emergency situations (employed citizens:  $M = 2.70$ ,  $SD = 1.28$ ; unemployed:  $M = 2.52$ ,  $SD = 1.25$ ;  $t(2347) = 3.25$ ,  $p = 0.001$ ,  $ek = 0.0076$  - small influence).



Citizens who are employed to a greater extent: are familiar with warning systems, responsibilities of the police, first responders and staffs in natural disasters caused by floods.

**Table 6.** Results of independent-samples t – test of comparison of the mean value of various variables of knowledge in relation to employment status of citizens.

Dependent variables	Levene's Test for Equality of variances		T-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Level of knowledge	5,854	,017	-,547	11,893	,594	-,183	,335	-,914	,547
Flooding risk. – year	3,673	,055	-1,610	2379	,107	-,092	,057	-,204	,020
Flooding risk. – 5 years	,000	,989	-1,610	2328	,108	-,095	,059	-,210	,021
Warning systems	10,317	,001	4,803	1859,696	,000	,239	,050	,141	,336
Police	,013	,910	3,211	2353	,001	,173	,054	,067	,278
First responders	,001	,977	4,268	2349	,000	,236	,055	,127	,344
Stuff for emergency situations	,109	,742	3,254	2347	,001	,178	,055	,071	,285
Fire routes	1,572	,210	1,832	2344	,067	,101	,055	-,007	,208
Nearby shelters	,681	,409	-,399	2349	,690	-,021	,053	-,124	,082
Vulnerability assessment and plans	3,636	,057	-2,453	2341	,014	-,126	,052	-,227	-,025

\* Statistically significant difference of test results -  $p \leq 0.05$

The results of Chi-square test of independence ( $\chi^2$ ) showed a statistically significant relationship between the employment status of citizens and the following variable on inventories and plans: supplies at home ( $p = 0.015 < 0.05$ ,  $v = 0.06$  - small influence); food supply ( $p = 0.04 < 0.05$ ,  $v = 0.09$  - small influence); water supply ( $p = < 0.05$ ,  $\phi = 0.07$  - small influence); hack ( $p = 0.11 < 0.05$ ,  $\phi = 0.075$  - small influence); apparatus for firefighting ( $p = 0.000 <$

0.05,  $\phi = 0.141$  – small influence); supplies in vehicle ( $p = 0.000 < 0.05$ ,  $v = 0.122$  - small influence); first aid kit in the home ( $p = 0.009 < 0.05$ ,  $v = 0.130$  - a small effect); first aid kit in the vehicle ( $p = 0.000 < 0.05$ ,  $v = 0.130$  - a small effect); first aid kit - easily accessible ( $p = 0.001 < 0.05$ ,  $v = 0.086$  - a small effect); plan for response ( $p = 0.001 < 0.05$ ,  $v = 0.085$  - small influence); discussion on the plan ( $p = 0.004 < 0.05$ ,  $v = 0.072$  - small influence); copies of documents ( $p = 0.000 < 0.05$ ,  $v = 0.154$  - small influence); insurance ( $p = 0.000 < 0.05$ ,  $v = 0.130$  - small influence). On the other hand, there was no statistically significant correlation with the variables: radio-transistor ( $p = 0.163 > 0.05$ ), flashlight ( $p = 0.716 > 0.05$ ), shovel ( $p = 0.076 > 0.05$ ), and hoe and spade ( $p = 0.696 > 0.05$ ), restocking ( $p = 0.289 > 0.05$ ) (Table 7).

Based on the results, it is noticed that employed citizens compared to unemployed citizens:

– in a higher percentage have: supplies (25.7% employed and unemployed, 23.5%); food supplies for 1 day (20.6% employed, unemployed 19.2%) for 4 days (63.8% employed and unemployed, 57.6%); water supplies for 1 day (24.8% of employed and unemployed, 21.6%) and 4 days (50.2% of employed, unemployed, 36.5%); shovel (41.3% employed, 36% unemployed), hack (employees 27%, unemployed 20,3%), hoe (32.3% of employed and unemployed, 68.9%), apparatus for firefighting (employed 16.9%, unemployment 7.1%), supplies in the car (6.4% of employed and unemployed, 5.7%), first aid kit in the home (52% of employees, unemployed 51%), a first aid kit in an easily accessible place (employed 68%, unemployed 61%), a written plan for response (12.4% of employed, unemployed, 10.6%), discuss the plan with household members (16% employed, unemployed 13.3%); insured house against consequences of floods (employed 8.6%, unemployed 8.2%);

– in a lower percentage have: food supplies for 2 days (15.6% of employed, unemployed, 23.1%); water supplies for 2 days (employed 25%, unemployed 41.9%); radio transistor (employed 16%, unemployed 19,3%), flashlight (employed 37.9%, 39.1% unemployed); have a written plan for response (employed 1%, unemployment 2.1%); copies of important financial and personal documents (employed 26.8%, unemployed 28.4%).

**Table 7.** Review of results of Chi-square test of independence ( $\chi^2$ ) of employment status and having supplies and response plans.

	Value	df	Asymp. Sig. (2-sided)	Cramers, v
Supplies at home	8,337	2	,015	,060
Food supplies	6,247	2	,044	,093
Water supplies	21,332	2	,000	,178
Radio-transistor	1,942	1	,163	-,042**
Flashlight	,132	1	,716	-,012**
Shovel	3,158	1	,076	,052**
Hack	6,492	1	,011	,075**
Hoe and spade	,153	1	,696	,013**
Apparatus for fire fighting	21,831	1	,000	,141**
Restocking	2,480	2	,289	,045
Supplies in the car	32,795	3	,000	,122
First aid kit in the home	9,467	2	,009	,066
First aid kit in the vehicle	30,055	2	,000	,130
First aid kit – easily accessible	14,451	2	,001	,086
Response plan	16,637	3	,001	,085
Discussion of the plan	11,164	2	,004	,072
Copies of documents	50,720	2	,000	,154
Insurance	38,890	2	,000	,130

\* Statistically significant correlation -  $p \leq 0.05$

\*\* Phi coefficient for  $s \times 2$  tables

## Conclusion

The research results show that citizens who are employed, in a higher percentage/to a greater extent compared to citizens who are not, have taken certain preventive measures aimed at reducing the tangible consequences of floods, would pay funds to an account to help flood victims, would engage in providing help to flood victims in the field, heavy rains make them think on preparedness for response and water level rise, they engaged in preparations for at least 6 months, do not do anything that would raise the level of preparedness to the next level, assess the preparedness of the state for response to floods, they are confident in their own abilities and securities to cope with the consequences of floods, give importance to preventive measures taken to reduce tangible consequences of floods, expect help from neighbours in the first 72 hours after the occurrence of floods, they are informed of the flood risks in their local communities, evaluate the efficiency of response of the army and

the stuff for emergency situations, they know what the flood is, they are familiar with safety procedures for responding, they would evacuate to the upper floors of the house, to friend's place, say that someone at primary/secondary school and at work educated them on floods, they know where elders, disabled and infants live in local community, would agree to be evacuated, they know what help is required by elders, disabled and infants, think that their neighbours can rescue themselves in the event of floods, not sure what to do after the official warning about the approach of the flood, are familiar with viruses and infections that accompany period after the flood, they know where water valve, gas valve, and electricity switch are located, know how to handle water valve, gas valve, and electricity switch, they got information about floods at work, via the Internet, they would like to be educated through lectures, familiar with warning systems, responsibilities of the police, the first responders and staff in natural disasters caused by floods, they have supplies, food supplies for one day, for 4 days, water supplies for one day, for 4 days, shovel, hack, hoe, apparatus for firefighting, supplies in the car, have a first aid kit in the house, a first aid kit in an easily accessible place, a written plan for response, discuss the plan with household members, and insured their house against the consequences of floods.

On the other hand, the citizens who are unemployed in greater percentage/ to a greater extent would engage in one of shelters for victims of flooded areas, visiting the flooded areas makes them think about preparedness for responding to flood and media reports, they are not yet prepared, or intend to get prepared in the next 6 months, as reasons for not taking measures on the personal level they indicate the following: „it is very expensive”, „I have no support from the local community”, they expect help from non-governmental humanitarian organizations, religious organizations in the first 72 hours after the occurrence of floods, agree giving the reason for not engaging in providing help to vulnerable people because of floods that “it is the job of state authorities” and that “it is too costly”, they assess the efficiency of response of the first responders and emergency medical services, would evacuate to neighbour's place, to shelters, got information about floods from household members, neighbours, friends, relatives, informal education system, television, trained to act in emergency situations, they would like to be educated though television, they point out that no one in the family talked about floods, they have food supplies for 2 days, water supplies for 2 days, radio-transistor, flashlight, a written plan for responding, copies of important financial and personal documents.

Bearing in mind the presented conclusions, it the following recommendations can be made to improve preparedness for response given the employment status of citizens: employed citizens should be influenced to engage in one of shelters for flood victims; to take preparedness measures by organizing

a visit to the flooded areas. In contrast, unemployed citizens should be influenced to take preventive measures; to deposit funds to help flood victims; to engage in providing help to flood victims; they should be encouraged to think on preparedness for response by displaying photos and videos related to heavy rains; they should be educated on floods; safety procedures for response should be introduced; they should get information about where elders, disabled and infants live; they would agree to be evacuated; they should get information about what is required to do after official warnings about the approach of the flood; they should be informed on locations of water valve, gas valve and electricity switch.

### **Resume**

The consequences of the floods that occurred in the territory of Serbia in the course of 2014 suggested rather a low degree of preparedness of the population to respond in such natural disasters. The aim of the quantitative research was to examine the influence of employment status on the preparedness of citizens to respond to natural disaster cause by the flood in the Republic of Serbia. Taking into account all local communities in Serbia where the flood occurred or where there is a high risk of flood to occur, 19 were selected by random sampling out of 150 municipalities and 23 towns and the city of Belgrade. In the survey in which 2.500 citizens participated the household research strategy was used together with multi-stage random sample. Taking into account the research subject, local communities were selected with both high and low level of flood risk. Pursuant to the conditions according to which the scientific research results can be generalized for the entire population of Serbia, the research was carried out at the territory of the larger number of local communities various according to their demographic and social characteristics. Both town and village local communities in the various parts of Serbia were included in the survey: Obrenovac, Šabac, Kruševac, Kragujevac, Sremska Mitrovica, Priboj, Batočina, Svilajnac, Lapovo, Paraćin, Smed. Palanka, Jaša Tomić, Loznica, Bajina Bašta, Smederevo, Novi Sad, Kraljevo, Rekovac and Užice.

The research results suggest that the employed citizens, comparing with the unemployed citizens, to a larger extent/in a higher percentage: have undertaken certain preventive measures in order to alleviate material consequences of the floods, would pay

money to some of the relief accounts, would take part in helping the flood victims in the field, heavy rains make them think about readiness to respond and water level rising, have performed the preparations for at least 6 months, do not do anything to raise the level of preparedness to the next level, evaluate preparedness of the state to respond to floods, are confident in their own capabilities and securities to overcome the flood consequences, consider the preventive measures significant which are undertaken in order to alleviate material consequences of the floods, expect help from their neighbours in the first 72 hours from the moment the flood occurs, etc. In order to raise the level of preparedness of the citizens to respond, the employed citizens should be influenced to participate in some of the collecting centres for flood victims; to undertake measures of preparedness by organizing visits to flooded areas. Contrary to them, the unemployed citizens should be influenced to undertake preventive measures; to pay money for help to flood victims; to participate in helping flood victims; to make them think about readiness to respond by showing them photographs and video footage related to heavy rains; educate them on floods; get them acquainted with security response procedures; inform them on where the elderly, disabled or infants live; to agree to evacuate; to inform them on what is required to do after the official warning on arrival of the flood wave has been issued; inform them on the locations of the water valve, gas valve or electricity switch.

The originality of research reflects in the fact that the research to examine the level of preparedness of citizens to respond has never been conducted in Serbia so far. The research results can be used when creating strategy to improve the level of preparedness of citizens to respond considering the employment status of citizens. The research suggests in which way the citizens should be influenced, taking into account the employment status in order to raise the preparedness to the next level.