

## 1. Risk perception

Risk perception is a fundamental element in the definition and the adoption of preventive counter-measures. In order to develop effective information and risk communication strategies, the perception of risks and the influencing factors should be known.

Due to the complexity of risk perception, in order to build a seismic risk perception questionnaire we needed an agile and flexible method, able to investigate complex variables and to return measurable values. We opted for the semantic differential method (Osgood et al. 1957), which is conceptually similar to the semantic images indicated as a very promising approach for risk perception studies by Wachinger & Renn (2010). Furthermore this method has already been used in similar research on risk perception, (e.g. Werner & Plapp, 2006).

Our method can be framed as psychometric and cultural theory of risk approach, with in addition some components to obtain a better overview on possible influences on risk perception: causes attributed to disasters, images of and associations on nature and environment (Szalay & Deese, 1978), several personal and demographic characteristics, and experience from past events.

## 2. The questionnaire

The questionnaire was constructed on the factors that determine the seismic risk: hazard, exposure, and vulnerability. Other factors related to Institutions and People and to Earthquake perception in general were also considered.

The whole test consists of an informative part and seven sections respectively dedicated to:

1. Hazard
2. Vulnerability (home and workplace)
3. Exposure
4. Perception of institutions and people
5. Earthquake phenomenon
6. Risk information and their sources
7. Comparison between earthquake and other natural hazard.

Assigned to each factor is a set of scales to which it is possible to assign a score from 1 to 7, Likert scale (Likert, 1932). The questionnaire makes it possible to obtain a perception score for each factor: Hazard, Exposure, Vulnerability, Institutions and People, Earthquake phenomenon.



René Magritte—Call of the peaks (1942)

The complete questionnaire is accessible at: <http://www.terremototest.it>

## 3. The survey

The seismic risk perception survey began on 22 January 2013 and it is still underway. Compilation availability and accessibility has been spread through the social network, the web pages of regional, provincial, and municipal websites and on local online newspapers. The diffusion of the test was deliberately conducted through general interest locations, avoiding the specialized or official sites of the sector (Department of Civil Protection, INGV, OGS, universities, etc.) in order to limit the bias of educated/ oriented samples.

The survey includes all the Italian regions; on 31 July 2014, 8,572 questionnaires had been compiled, subdivided in Administrative units (Region) and seismic zones (hereinafter described) as shown in the table.

Veneto Region represents over 1/4 of the sample, as a local newspaper in the Verona area advertised the initiative.



Regione	Zona 1	Zona 2	Zona 3	Zona 4	Totale
Abruzzo	98	103	77		278
Basilicata	46	61	6		113
Calabria	106	62			168
Campania	72	549	32		653
Emilia-Romagna		230	642	10	882
Friuli-Venezia Giulia	298	251	676		1225
Lazio	20	342	44		406
Liguria			251	7	258
Lombardia		12	106	286	404
Marche	3	146	8		157
Molise	21	27	2		50
Piemonte			89	116	205
Puglia		72	63	43	178
Sardegna				29	29
Sicilia	38	199	2	5	244
Toscana		178	505	11	694
Trentino Alto-Adige			20	38	58
Umbria	4	76	3		83
Valle D'Aosta				6	6
Veneto		229	2002	250	2481
<b>Totale</b>	<b>706</b>	<b>2537</b>	<b>4528</b>	<b>801</b>	<b>8572</b>

Descrizione del campione		
GENERE	N	%
Maschile	5197	60,63
Femminile	3375	39,37
<b>Totale</b>	<b>8572</b>	
ETA'	N	%
10-100	40,85	
Range		
Giovani (fino a 30 anni)	2117	24,70
Adulti 30-44	2800	32,66
Adulti 45-59	2826	32,97
Adulti >60	829	9,67
<b>Totale</b>	<b>8572</b>	
ISTRUZIONE	N	%
Livello Istruzione Laurea	3461	40,38
Livello Istruzione Scuola Superiore	3682	42,96
Livello Istruzione Scuola Media	1364	15,80
Livello Istruzione Scuola Elementare	75	0,87
<b>Totale</b>	<b>8572</b>	
NAZIONALITA'	N	%
Nazionalità italiana	8448	98,55
Altra nazionalità	124	1,45
<b>Totale</b>	<b>8572</b>	
STATO CIVILE	N	%
Stato civile - convivente	732	8,54
Stato civile - coniugato/a	4427	51,64
Stato civile - celibe/nubile	2905	33,90
Stato civile separato/a	387	4,51
Stato civile vedovo/a	120	1,40
<b>Totale</b>	<b>8572</b>	
FIGLI	N	%
Figli maggiori di 6 anni	3112	36,30
Figli minori di 6 anni	1324	15,45
Figli no	4129	48,17
Figli non risponde	7	0,08
<b>Totale</b>	<b>8572</b>	
LAVORO	N	%
1) Professione intellettuale, scientifica e di elevata specialità	1591	18,56
2) Professione tecnica	2081	24,28
3) Legista/operatore, alta dirigenza	222	2,59
4) Forze armate	115	1,34
5) Professione qualificata nella attività commerciale e nei servizi	645	7,52
6) Professione esecutiva nel lavoro d'ufficio	1139	13,29
7) Conduttore di impianti, operato di macchinari fissi e mobili	66	0,77
8) Artigiano, operaio specializzato, agricoltore	376	4,39
9) Professione non qualificata	283	3,30
Altro	2045	23,96
Attività lavorativa - non risponde	9	0,10
<b>Totale</b>	<b>8572</b>	

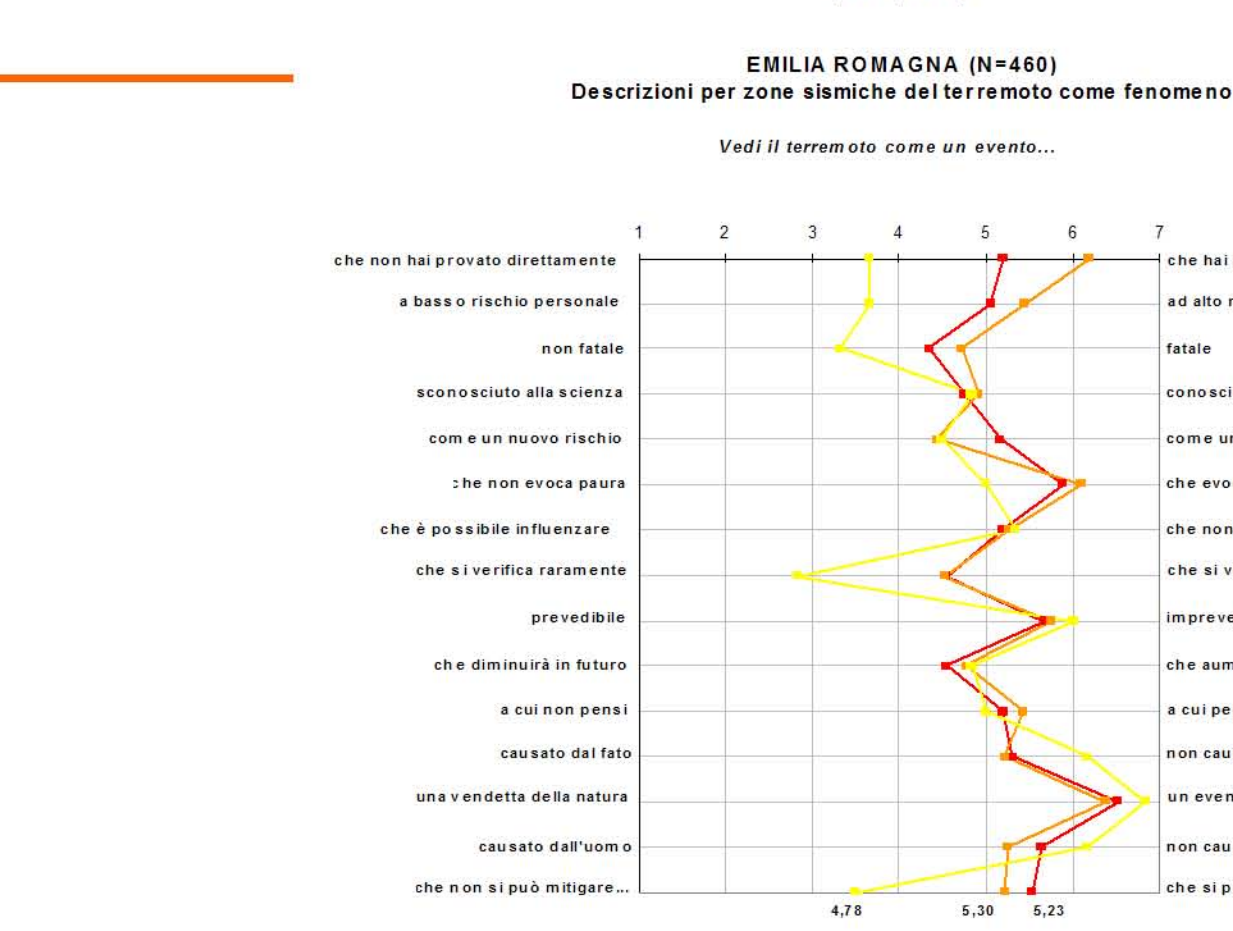
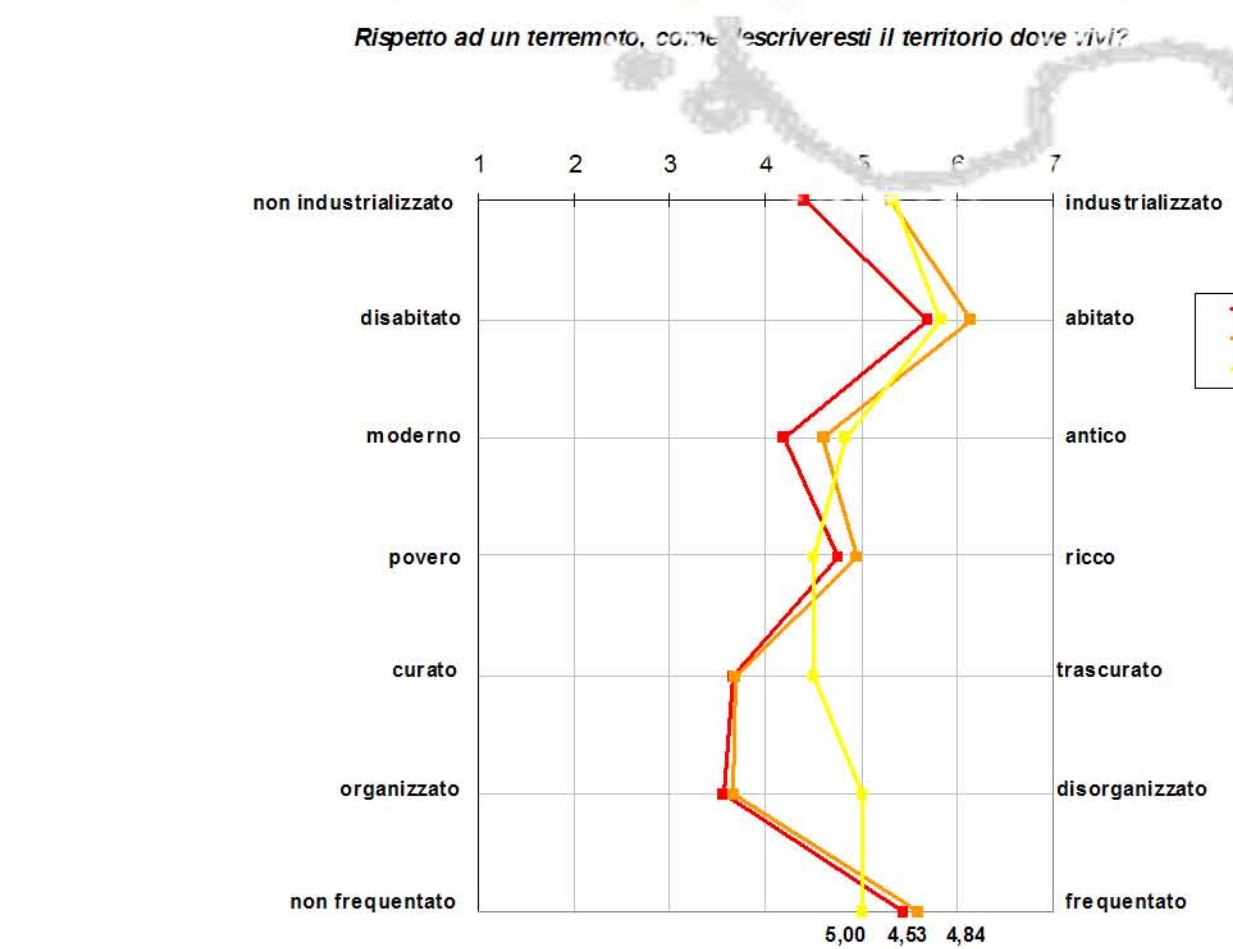
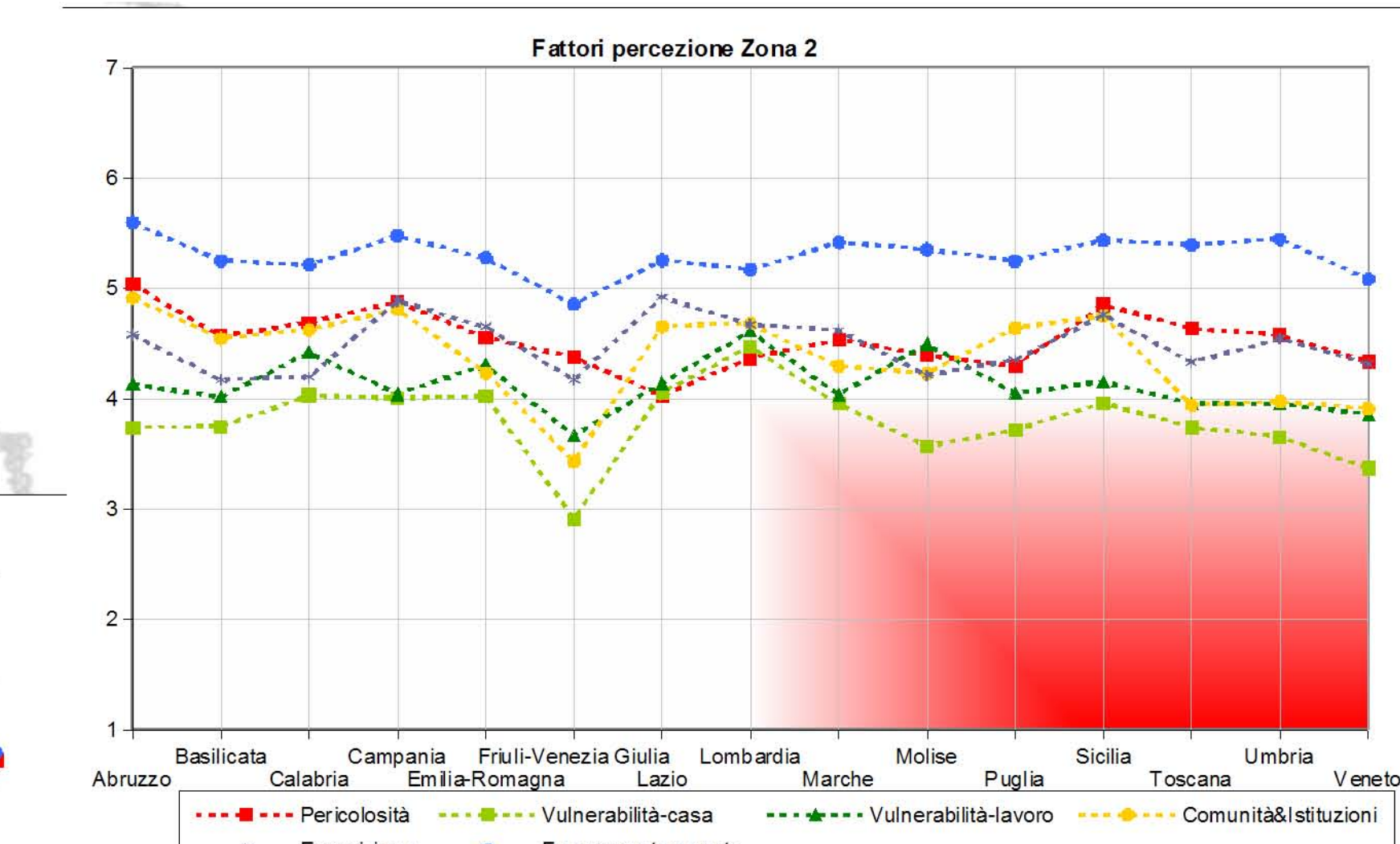
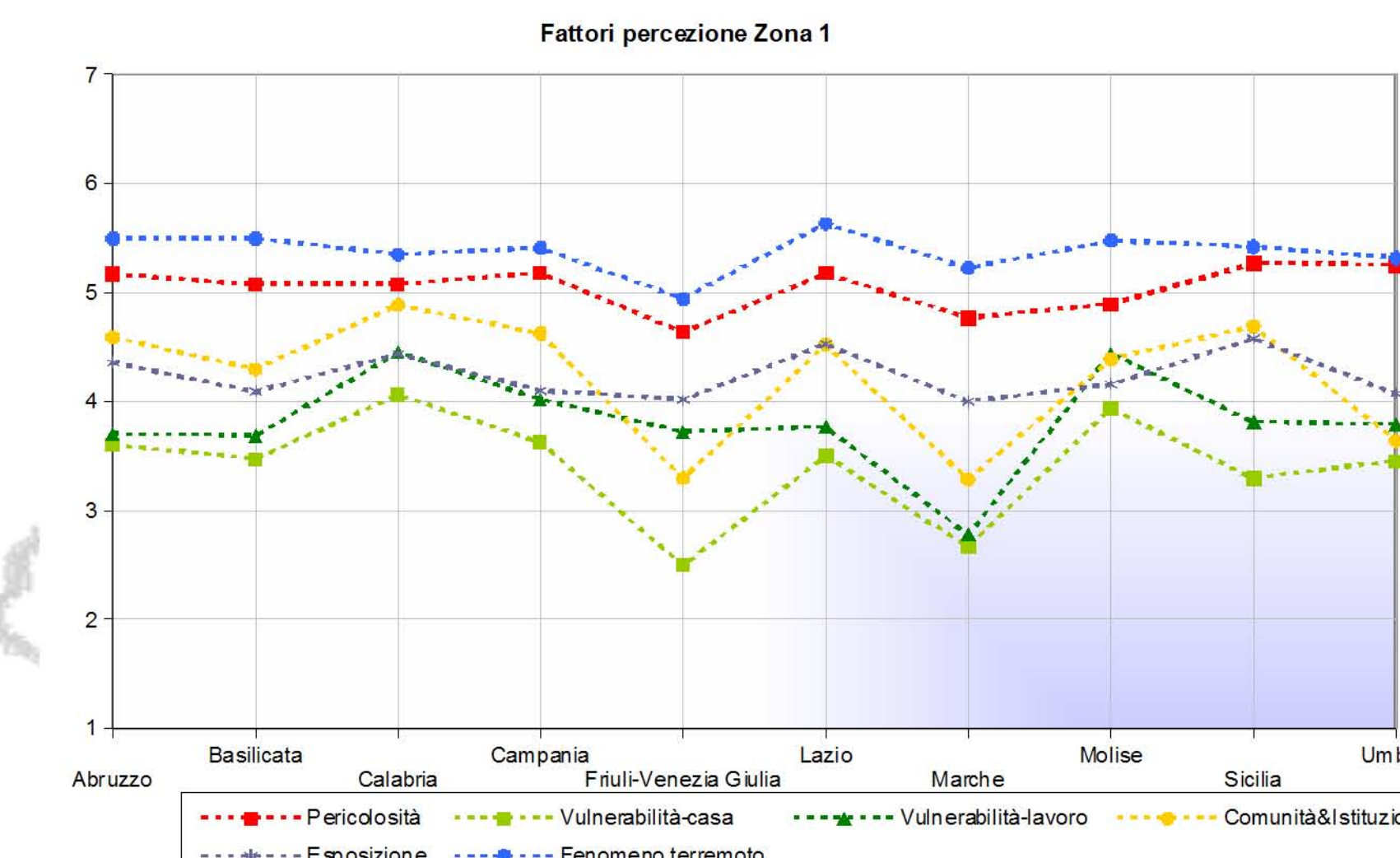
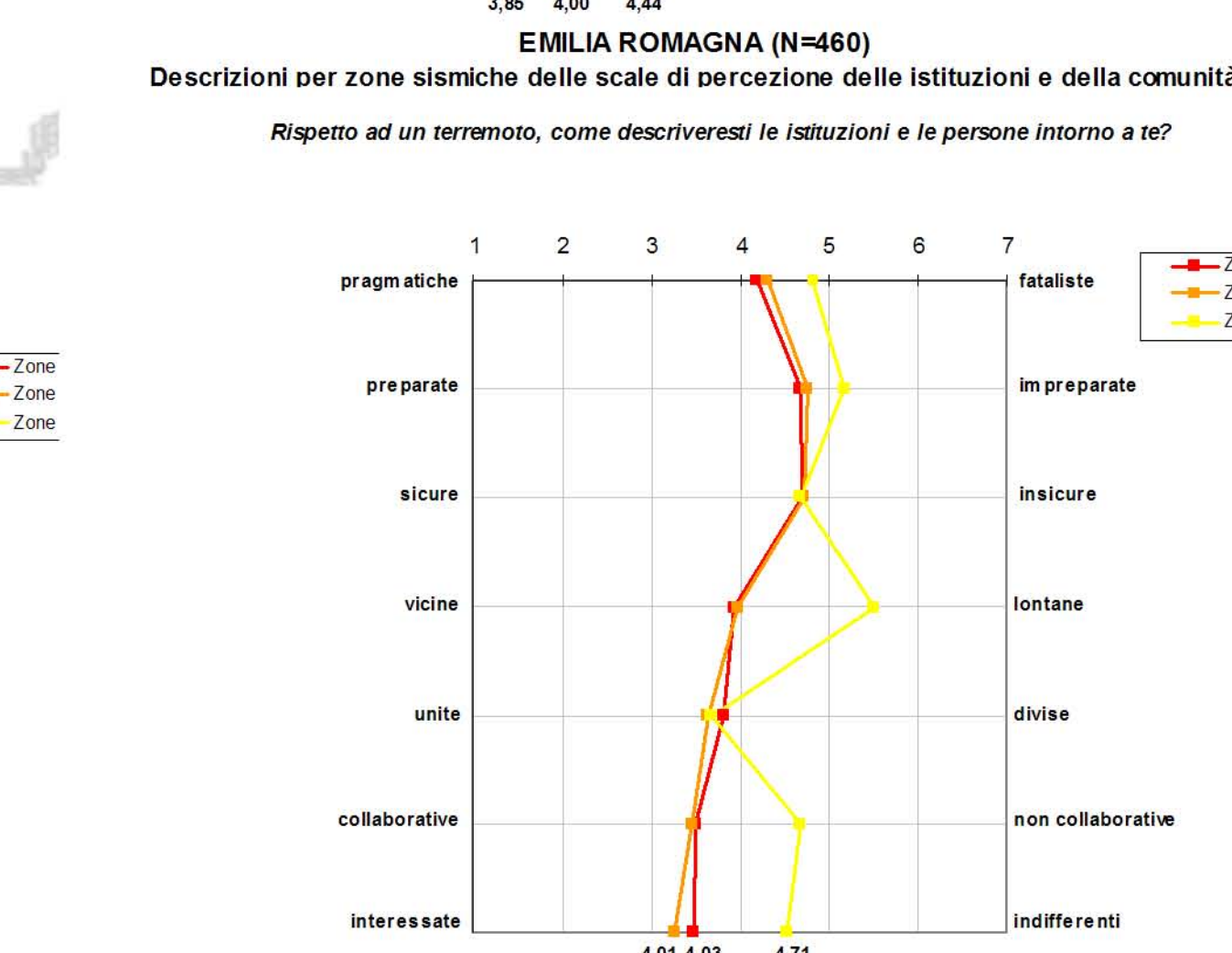
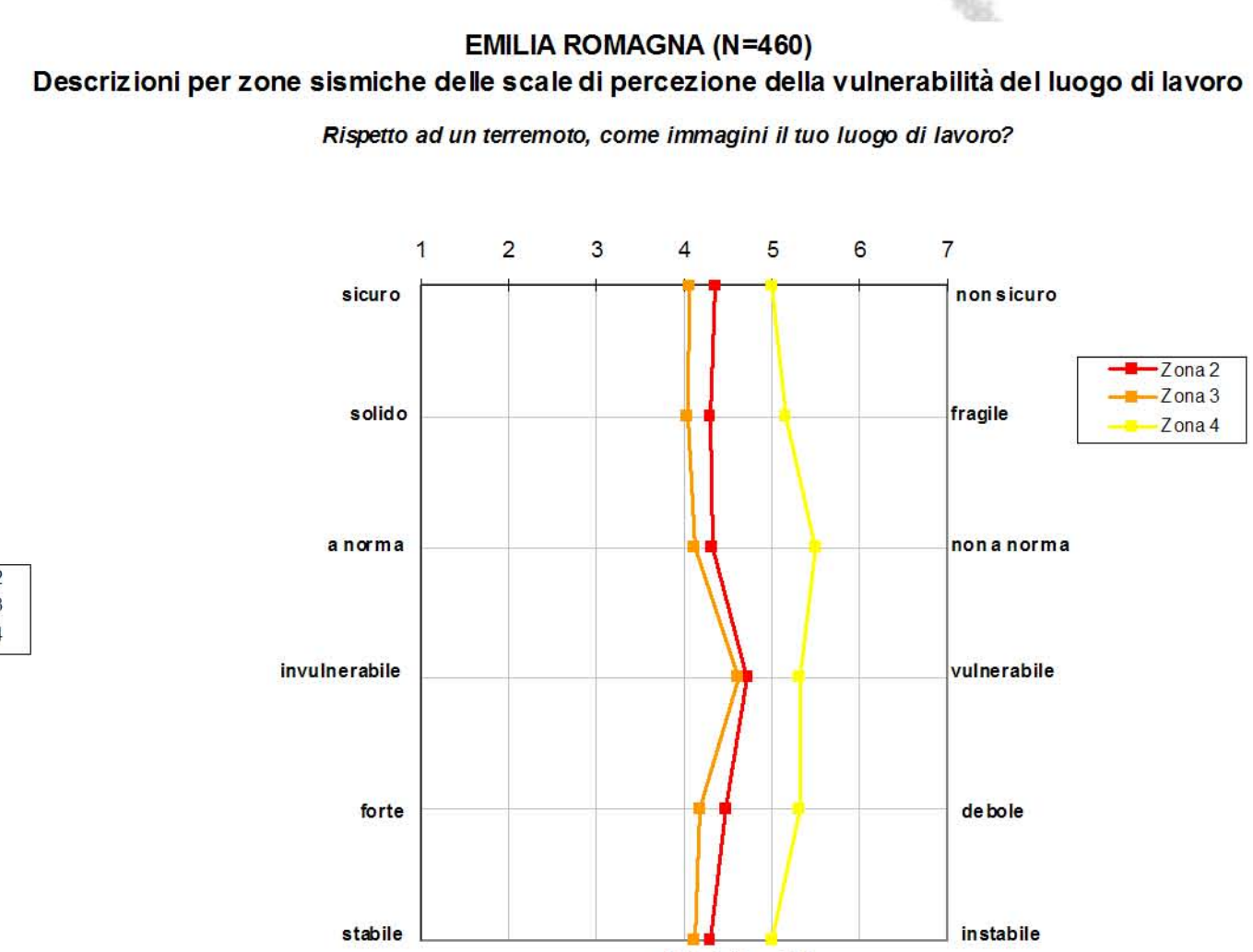
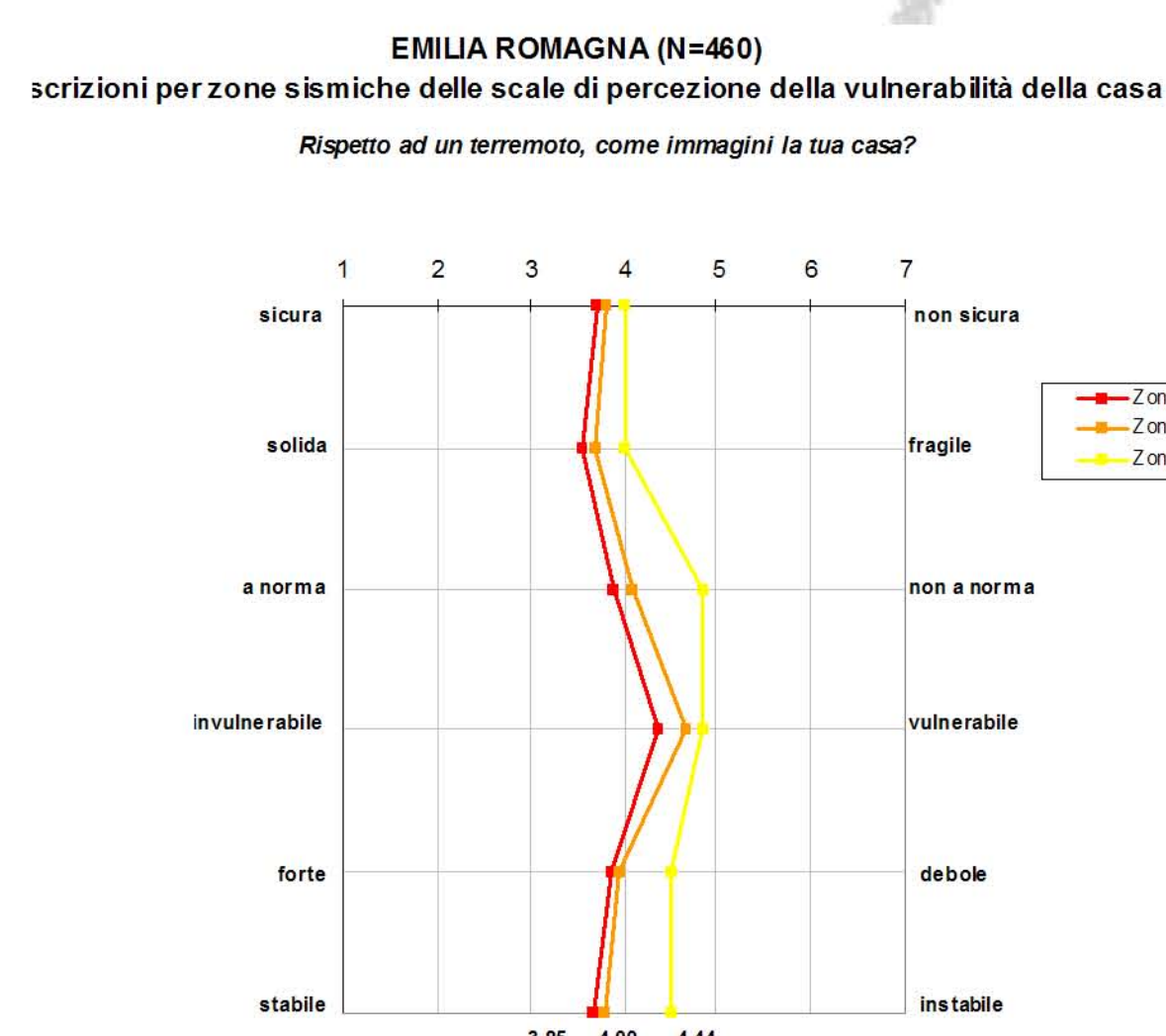
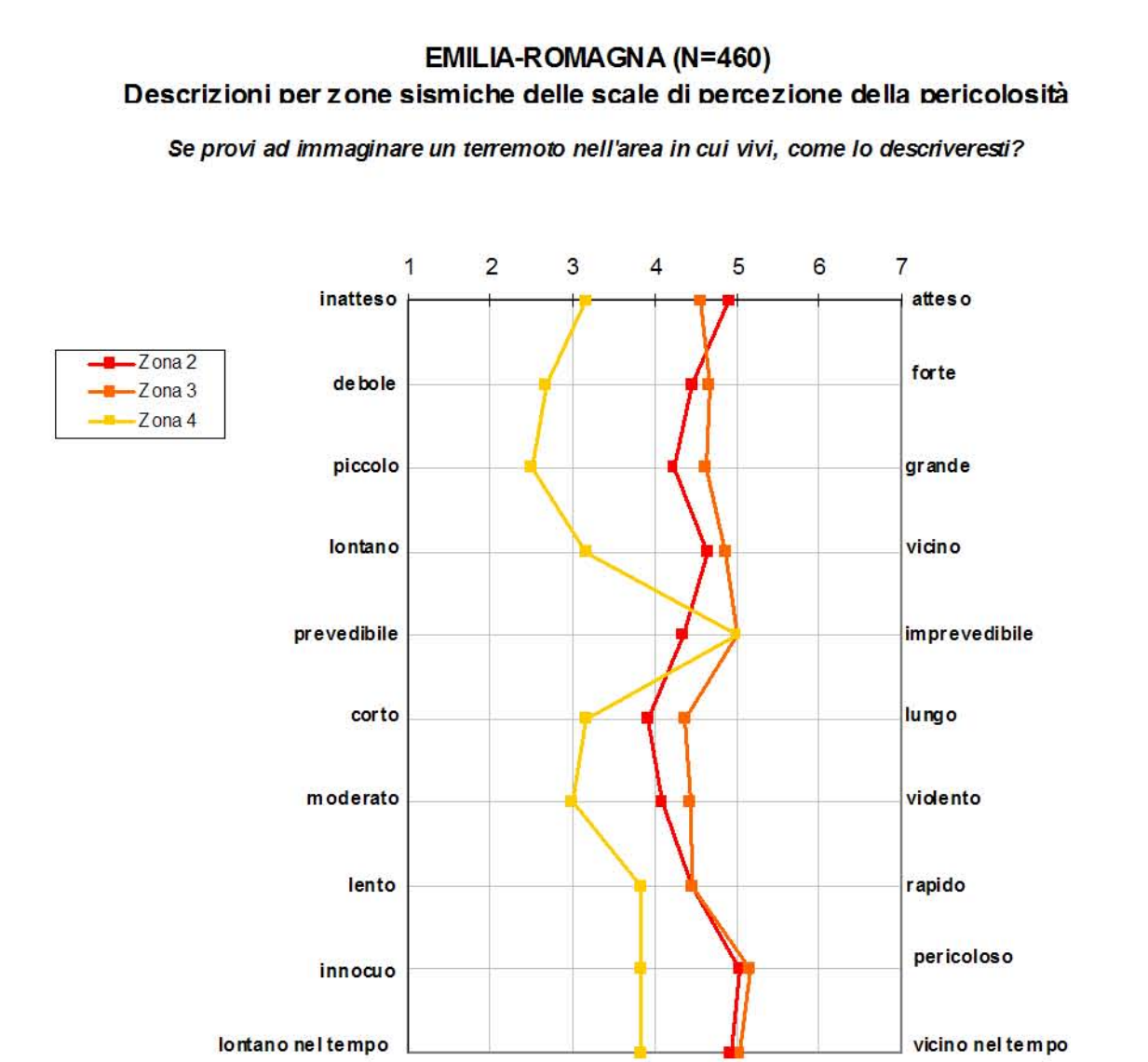
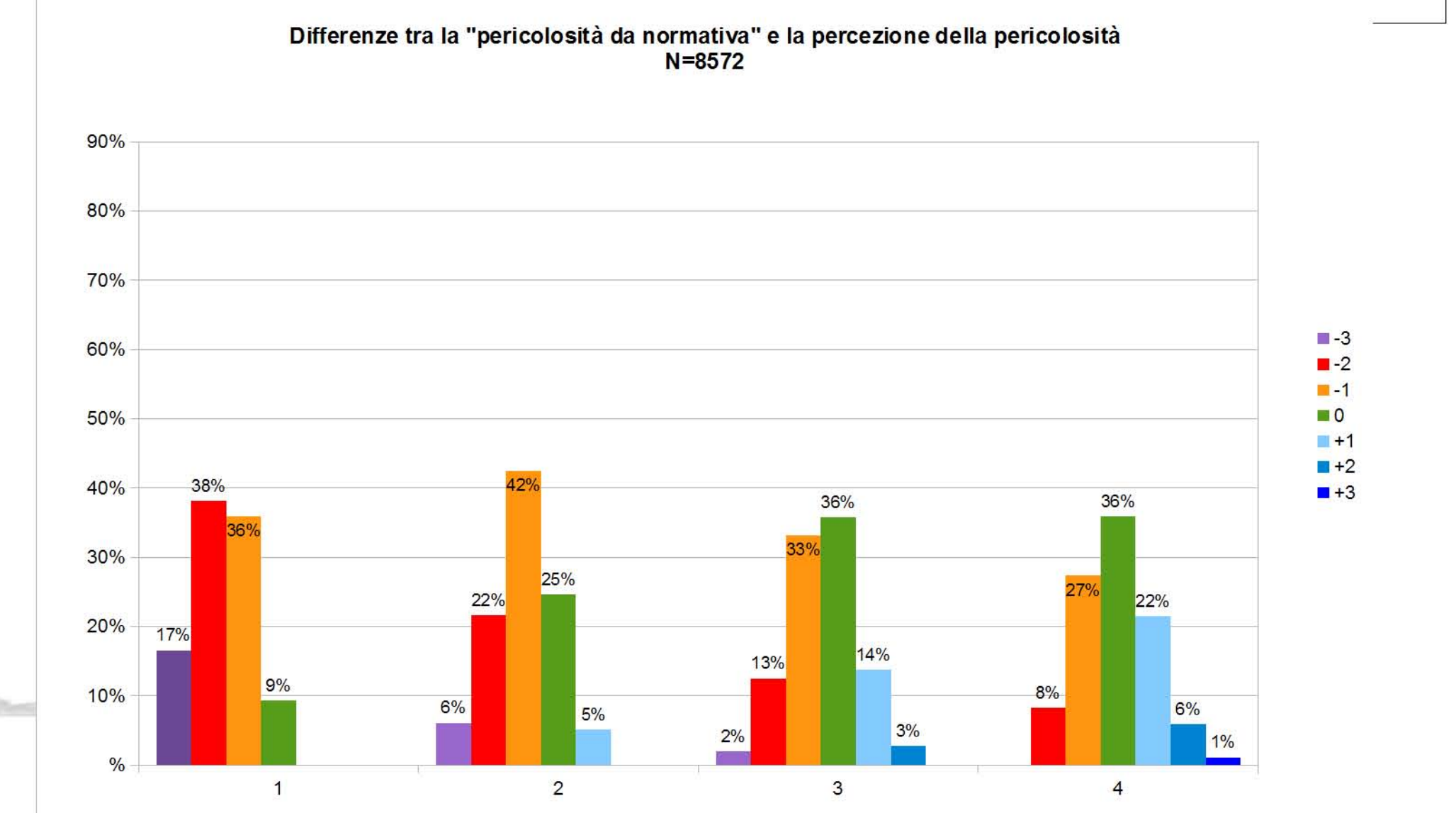
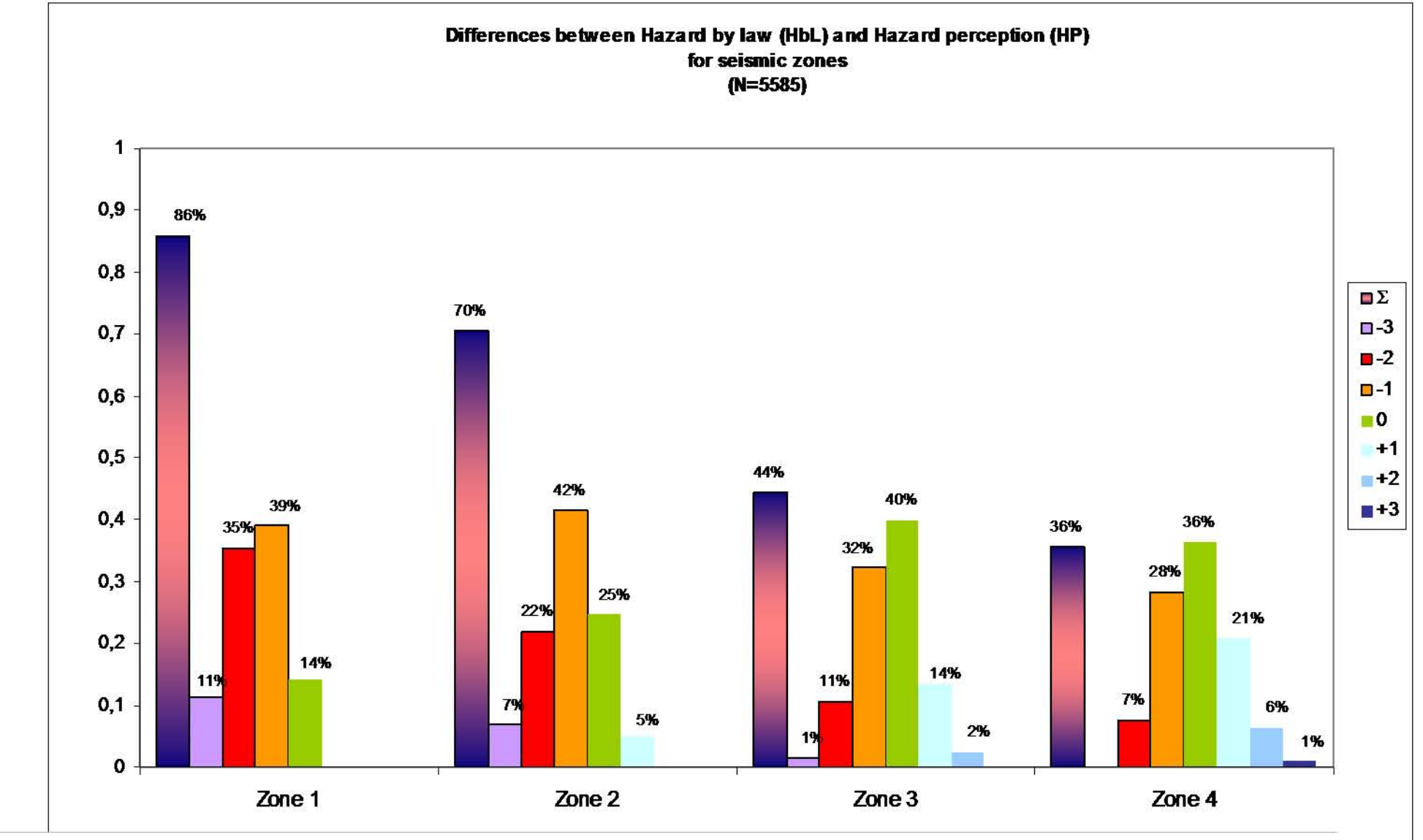
QUANTO TI SENTI INFORMATO SUL TERREMOTO		
	N	%
molto	1279	14,92
abbastanza	3902	45,52
poco	2732	31,87
per niente	659	7,69
<b>Totale</b>	<b>8572</b>	

FONTI DI INFORMAZIONE		
	N	%
Giornali	2779	13,63
Televisione	4129	20,25
Internet	5505	27,00
Libri	1126	5,52
Amici e familiari	863	4,23
Protezione Civile	1837	9,01
Regione	401	1,97
Provincia	94	0,46
Comune	452	2,22
Scuola	1189	5,83
Enti di ricerca e università	1686	8,27
Altro	329	1,61
<b>Totale risposte</b>	<b>20390</b>	

CONFRONTO CON ALTRI RISCHI NATURALI			
Rischio	>p	=	<p
Frane	39,56	19,26	41,18
Alluvioni	38,61	22,99	38,39
Eruzioni vulcaniche	4,58	4,81	90,61
Maremoti	3,81	10,11	86,07
Uragani e trombe d'ar	21,97	34,36	43,68

## 4. Data processing

Seismic Zone	Interpretation of Hazard Perception scores (HP) respect to Hazard by Law (HbL)					
	1-2	2-3	3-4	4-5	5-6	6-7
Zone 1	-3 underestimated of 3 points and over	-2 underestimated of 2 points	-1 underestimated of 1 point	0 good fitting	+1 overestimated of 1 point	+2 overestimated of 2 points
Zone 2	-3 underestimated of 3 points and over	-2 underestimated of 2 points	-1 underestimated of 1 point	0 good fitting	+1 overestimated of 1 point	+2 overestimated of 2 points
Zone 3	-3 underestimated of 3 points	-2 underestimated of 2 points	-1 underestimated of 1 point	0 good fitting	+1 overestimated of 1 point	+2 overestimated of 2 points
Zone 4	-2 underestimated of 2 points	-1 underestimated of 1 point	0 good fitting	+1 overestimated of 1 point	+2 overestimated of 2 points	+3 overestimated of 3 points



## 5 Future developments

The research was funded by Italian Civil Protection Department (DPC) for the second year (2014-2015).

By 2014, a national survey on a statistical sample for regions and earthquake areas will be conducted. The interviews will be conducted by CATI (Computer Assisted Telephone Interviewing) and an adaptation of the questionnaire may be necessary.

We want to compare the data of perception with the "real" data of the Exposure and Vulnerability of buildings.

We also plan to implement new interpretations of the data on the perception closer to the classical approaches of risk perception research and the factors of semantic differential method and psychometric paradigm.