PRIPRAVLJENOST PROSTOVOLJCEV ZA SPOROČANJE SPREMEMB NA TOPOGRAFSKIH KARTAH

THE WILLINGNESS OF VOLUNTEERS TO REPORT CHANGES ON TOPOGRAPHIC MAPS

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IZVLEČEK

Številne možnosti za zbiranje prostovoljnih geografskih informacij tudi v geodeziji omogočajo angažiranje prostovoljcev za različne namene. V članku predstavljamo rezultate raziskave, izvedene v obliki spletne ankete, v kateri smo spraševali, kako bi bili prostovoljci pripravljeni sporočiti svoje védenje o spremembah v prostoru ali napakah na kartah ustanovi, ki skrbi za ažuriranje kart. Na vprašalnik je odgovorilo 653 anketirancev, ki v prostem času ali službeno uporabljajo spletne ali klasične topografske karte. Glavna ugotovitev raziskave je, da bi jih bilo 56 % pripravljenih uporabljati spletno aplikacijo za sporočanje sprememb na kartah, presenetljivo pa bi 38 % anketirancev raje sporočalo spremembe prek e-pošte, le 4 % vprašanih pa prek telefona. Analizirali smo še potencialno uporabo različnih funkcionalnosti spletne aplikacije za zbiranje sprememb, pri čemer smo ugotovili, da so za prostovoljce najpomembnejše funkcionalnosti, ki omogočajo čim bolj poglobljeno povratno komunikacijo (da je bil prispevek oddan, da se preverja, da je bil upoštevan, da je bil brisan). Pripravljenost potencialnih prostovoljcev za pogosto uporabo različnih predlaganih funkcionalnosti je odvisna še od njihove dosedanje aktivnosti na spletnih družabnih omrežjih ali v prostovoljskih društvih ter od starostne skupine, v katero se uvrščajo.

KLJUČNE BESEDE

prostovoljne geografske informacije, moč množic, sodelovalno kartiranje, topografske karte, anketa, zbiranje sprememb na kartah

ABSTRACT

Various possibilities for collecting volunteer-provided geographical information in geodesy make it possible to engage volunteers for different purposes. In this paper, a study of the willingness of volunteers to report changes on topographic maps based on an online survey is presented. The survey was answered by 653 Slovenian respondents who use various online or classic topographic maps in their free time or at work and are willing to report their knowledge of changes in space or errors in maps to the map-updating institution. The survey's main finding is that 56% of respondents would use any online application to report changes on maps, 38% of respondents would prefer to report changes via e-mail, and only 4% of respondents would prefer to report changes by phone. We also analysed the potential use of different functionalities of a web application for collecting changes and found that the most important functionalities for volunteers are those that give the most in-depth feedback (i.e., that a contribution has been submitted, that it is being verified, that it has been considered, that it has been deleted). The willingness of potential volunteers to use the various proposed functionalities also frequently depends on their current involvement with social networking sites or in volunteer associations and on their age group.

KEY WORDS

volunteered geographic information, crowdsourcing, participatory mapping, topographic maps, survey, reporting changes on maps

1 INTRODUCTION

Volunteered geographic information (VGI) is an inexhaustible source of data for a variety of purposes, including cartography. Several European countries are already experimenting with applying these data in the updating process for topographic databases (hereafter referred to as topographic maps), using them mainly as an additional source for finding the changes in space or correcting the errors on maps (Triglav Čekada and Lisec, 2019). The collecting of VGI for updating topographic maps needs to be planned very carefully prior to collection. This is especially so when applying VGI for collecting changes on topographic maps, as in this case a much smaller response from volunteers can be expected, compared to collecting information about the consequences of a natural disaster, for example. This is because a natural disaster directly affects many people, who are much more willing to participate or help by sharing information about the impact of the disaster, especially shortly after the event (Triglav Čekada and Radovan, 2019). The willingness to cooperate begins to decline rapidly as time elapses from the moment when a disaster occurred (Triglav Čekada and Radovan, 2013; Ahmouda et al., 2018). However, if we want to obtain as much useful information as possible, or to inspire as wide an audience of volunteers as possible to report changes on topographic maps, we need to make the instructions for participation as short and simple as possible. Instructions that are too long will discourage participants from collaborating (Mooney et al., 2016; Fritz et al., 2017; Minghini et al., 2017). An overly complex user experience or a poor selection of features in an application for collecting volunteer data can also quickly deter many potential volunteers. Unfortunately, uniform feedback of adequate quality cannot be expected from short and simple instructions. It is therefore sensible to pay more attention to the quality of the information later on when processing and using it (Mooney et al., 2016; Olteanu-Raimond et al., 2017). Most European surveying and mapping agencies that are already testing or even using VGI to obtain additional information during the process of updating topographic maps are using purpose-developed online interactive maps or applications where volunteers enter data, the campaign organiser verifies it and later uses it as a complementary source to upgrade the topographic map (Triglav Čekada and Lisec, 2019). Online interactive maps designed for gathering volunteer information can offer different functionalities and levels of user experience (Poplin, 2015; Baruch et al., 2016, Gottwald et al., 2016; Rzeszewski and Kotus, 2019).

This paper presents the results of the research we carried out using an online survey. In this questionnaire we asked potential volunteers from Slovenia if they would be willing to provide information about changes or errors on topographic maps, and how they think a system for collecting such changes should work. In particular, we wanted to find out what kind of user interface (application) they would prefer to use to report changes in order to use it as extensively as possible. This research aims to better design the volunteers' user experience in the future, based on analyses of the online survey's responses. Maintaining and promoting activity in volunteer initiatives is still an unsolved problem for collecting VGI, which ultimately decides whether a campaign for VGI gathering will be successful or not.

2 METHODOLOGY

This research is based on an online questionnaire that was created using the 1KA online survey tool (https://www.1ka.si/). The link to the survey was published on the project website and the Facebook page of the Geodetic Institute of Slovenia. The survey was distributed by emails to individuals, various

voluntary organisations and public institutions working in the field of space and the environment. Based on such notifications, the website of the Slovenian Mountaineering Association and the web portal "Gore in ljudje" also published separate invitations to promote the survey. Three extensive email and Facebook campaigns were carried out over a few weeks. The days involving such activities can be easily identified from the graph of individual clicks on the survey and the number of completed surveys per day (Figure 1). The survey was active for almost 2 months from 21 October 2020 to 18 December 2020. The majority of responses were received in the first month, which is also in line with the period of peak promoting activity of the research team. Three peaks can be identified: on 21 October 2020, when we activated the survey and started the first intensive communication through different channels; on 27 October 2020, when we repeated the email notifications about the survey and at the same time the survey was published on the websites of the Slovenian Mountaineering Association and the portal "Gore in ljudje"; and on 10 November 2020, when we repeated the intensive communication through Facebook.

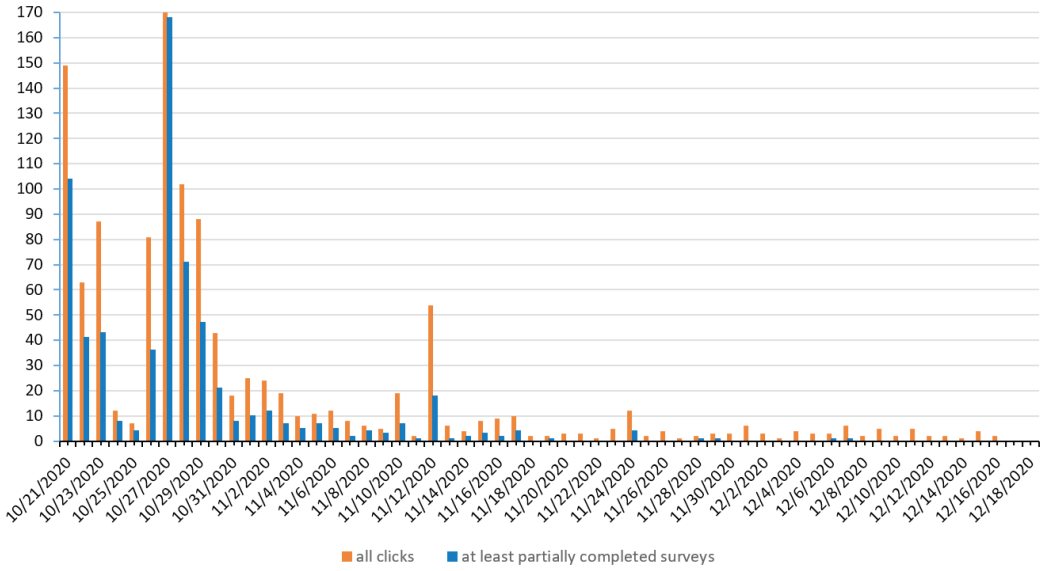


Figure 1: Daily number of all clicks on the survey and number of at least partially completed surveys per day. In this figure the maximum number of clicks on 27 October 2020 is cut off, being 338.

The survey consisted of 29 questions, which are divided into the following thematic groups:

- the respondent's previous activity in the field of national and international online volunteer initiatives, that can be considered as VGI,
- which type of maps (online or classic printed) they use and for which purpose,
- the preferred way in which the web application for reporting changes and errors on the maps should be designed,
- how active are the respondents in their free time or how deeply involved are they in amateur activities,
- general statistical questions on gender, age, education, occupation and hobbies.

The described survey's question groups were asked in the order given above, with the general statistical questions at the end. This was to keep the attention of the respondents, as many people are not willing

to give out personal information, despite their anonymity. In this paper, the order of the presentation of the results has been reversed for ease of understanding.

A total of 1312 potential respondents clicked on at least a survey address or the start of the survey, and around half (653) completed the survey at least partially. The full survey was completed by 521 respondents. The key question "would you be willing to report a change or error on the map" was answered by 599 respondents. As respondents might have skipped a question or completed the survey before the end, the percentages shown hereafter refer to the valid number of responses to each question and not to the total number of all respondents. More than two-thirds of the respondents completed the survey on a computer (77%), the rest on a smartphone (23%). The same proportions were also observed for all the clicks on the survey.

3 SURVEY ANALYSIS RESULTS

3.1 General statistical overview of respondents

As the general statistical questions ask respondents about their personal data, some did not want to answer them and therefore they finished the survey early. As a result, the questions about age group and the highest level of achieved education have the smallest number of valid responses (521), i.e., 7% smaller than the largest number of all valid responses in the survey (653). For all questions in this set, the respondents could only choose one answer.

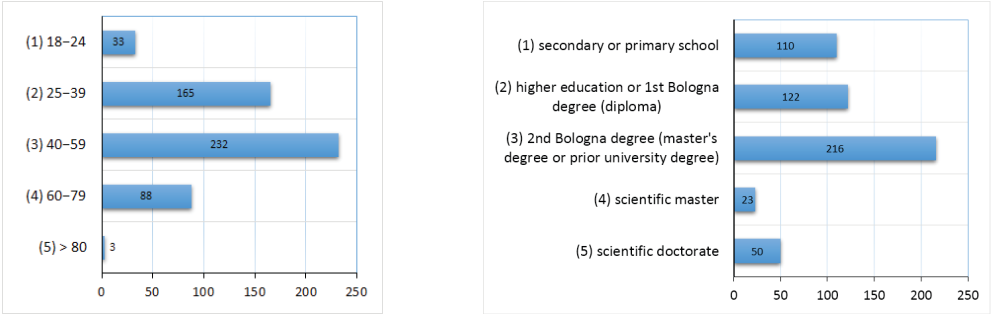
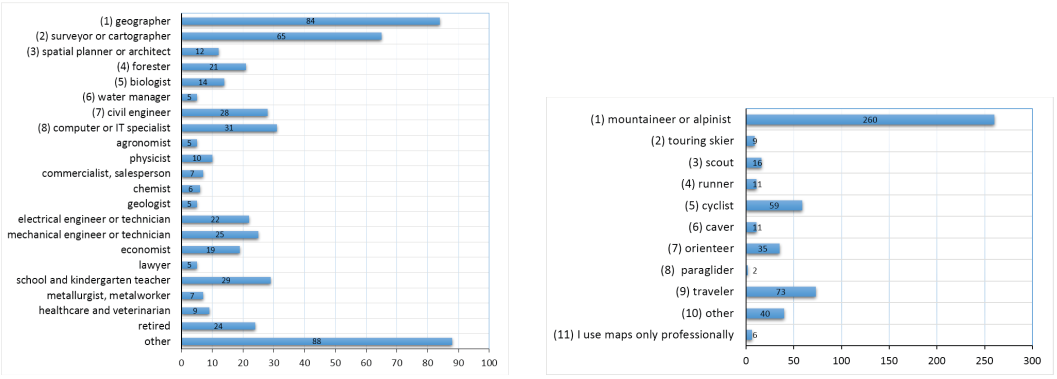


Figure 2: Age group of respondents (a) and the highest level of education (b). Both questions had 521 valid responses.

The question on gender was answered by 522 respondents, 69% of whom were male and 31% female. In terms of age, the 40–59 age category is the largest, with 45%, followed by the 25–39 age category, with 32% (Figure 2a). The majority of respondents have a master's degree or university degree, i.e., 41% (Figure 2b).



a b

Figure 3: Answers to (a) what is your profession? (524 valid answers), and (b) what is your hobby? (522 valid answers).

When asking respondents about their professional occupation, the survey offered too few options, i.e., only options (1) to (8) shown in Figure 3a. As a result, more than half of the answers (55%) were: *I am interested in the space as an amateur, but by profession I am*. These were subsequently grouped into the most common additional occupational groups, which are shown in Figure 3a without a sequential number. Geographers were the most-represented group (16%), followed by surveyors or cartographers (12%), then construction workers, computer or IT specialists, school and kindergarten teachers, mechanical engineers and retired people, all with a similar proportion (around 5% each). Occupations that were chosen fewer than five times are not presented separately, but are included in the group *Other*.

In terms of amateur self-identification, half of them identified themselves as *mountaineers or alpinists* (50%), which is due to the fact that the survey was well promoted on mountaineering web portals (Figure 3b). The second largest group were *travellers,* with 14%, followed by *cyclists,* with 11%. Among the 40 responses choosing the answer *other*, 13 (2%) highlighted that they are engaged in more than one leisure activity in their spare time. In the group *other* we also found three firefighters, two way markers and others.

3.2 Leisure-time activity of respondents

The current involvement of the respondents in voluntary activities was measured by analysing their activity on online social networks and their engagement in amateur associations.

When asked "what type of social-networking-site user are you?", 48% of respondents chose to be (1) *active users who post, edit and share content themselves*, 36% (2) *passive users who only browse through already existing content* and 16% (3) *do not use social networking sites* (Figure 4a). Those who chose (1) and (2) could also answer the following questions "which social networking sites do you use" and "how often do you use social networking sites". Of the original 527 respondents who replied to the question on how they use social networking sites, 436 answered the question "which social networking sites" and 442 answered the question "how often do you use them". For the question "which", they could choose more than one answer. The most often used is Facebook, by 88% or 383 respondents, 42 % or 181 use Instagram, 69 use Twitter, 41 use Snapchat, 8 use Flickr and 8 use TikTok. As many as 18% have chosen *Other*, e.g., 15 use Linkedin (www.linkedin.com/), 8 use Strava (https://www.strava.com/), 5 use Viber (https://www.viber.com/en/),

3 use Pinterest (www.pinterest.com/), 3 use Whatsapp (https://www.whatsapp.com/), and two or fewer use *others*. Figure 4b shows the number of responses to the question "how often do you use social networking sites". Most of the respondents use social networks very often or often: 40% very often (several times a day) and 34% often (once a day or every few days). A minority, 15%, use them once a week and 5% use them once a month or only once every few months.

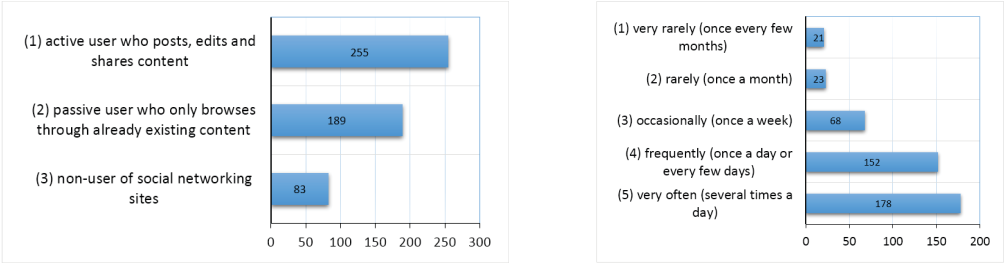


Figure 4: Answers to the questions: (a) "how do you use social networking sites?" (527 valid responses) and (b) "how often do you use social networking sites?" (442 valid responses). In both questions only one answer could be selected.

The following two questions were aimed only at those who chose (1) *I am an active user* when asked about their social media activity (Figure 4a). They could select multiple answers for the questions "how often do you use them?" and "in which format is the information you most often post?" (Figure 5). They use social networking sites most frequently to (1) *post my own content* at 74%, followed by (4) *communicate with others* at 72% and (6) *like already-existing content* at 66%. Less than half use them to (2) *repost others' posts*, (3) *correct content* and (5) *comment*. The information they post is most often in the form of (2) *a photograph*, at 90%, followed by (1) *text,* at 46% and (3) *a link,* at 44%. When choosing the possibility *Other,* the use of GNSS tracks was also mentioned a few times.

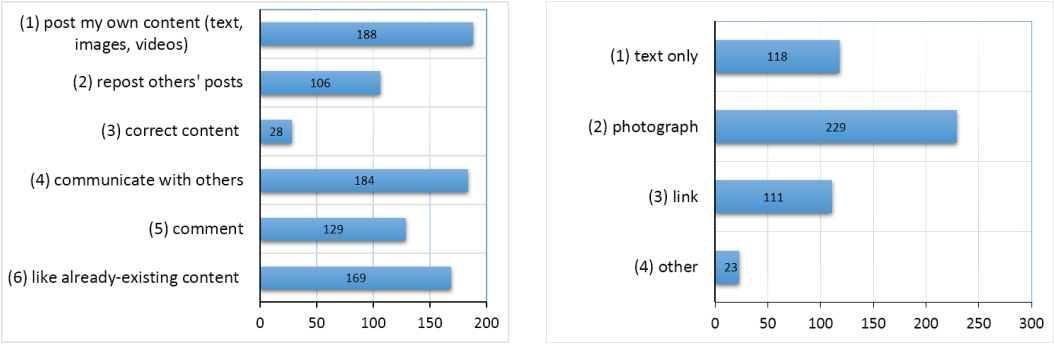
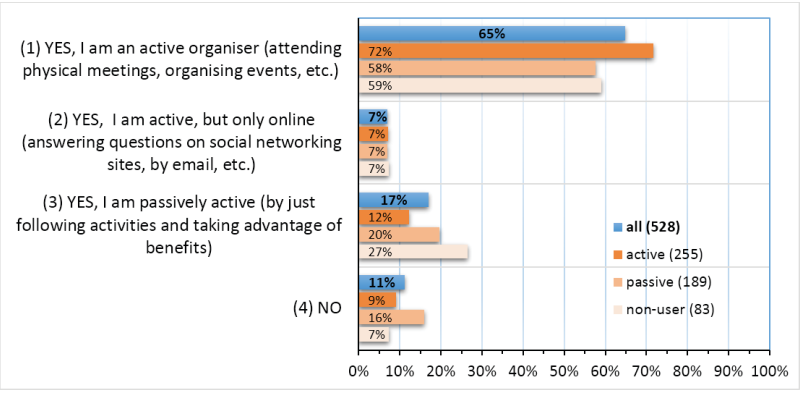


Figure 5: Answers to the questions: (a) "for what do you most often use social media networks?" and (b) "in which format is the information you most often post?". In both questions multiple answers could be chosen. Both questions received 255 valid responses.

The question about the respondent's engagement in amateur associations is crossed by the answers to the question "what type of social-networking-site user are you?" (active, passive, non-user) (Figure 6a) and in which age group the respondent belongs to (Figure 6b). In Figure 6 the averages of all the respondents are drawn with blue bars, and the averages obtained by crossing the answers with the second question are drawn

in brown shades. Figure 6a shows that those who are more active on social networking sites are also more active in amateur associations. Thus, we can equate those more active in amateur associations with those more active on social networks. Therefore, in the remainder of this paper we will present crossover answers with only the first questions. Those who do not use social networks are the most frequent in class (3) *I am passively active in amateur activities by just following activities and taking advantage of benefits*. Figure 6b also shows that an above-average proportion of active organisers in amateur associations belongs to the age groups 60–79 and 40–59. However, the 20–39 age group has a higher average (3) *of those passively active in amateur associations*. This is also logical, as most people in this period of their life are intensively engaged in building their careers, which leaves them with little time for voluntary amateur activities.



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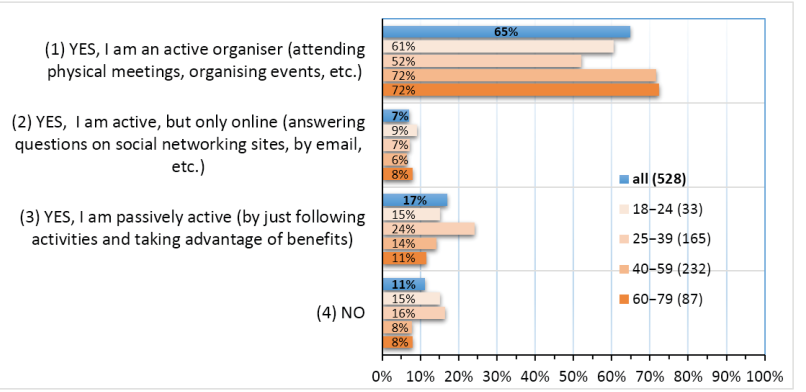

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Figure 6: Answers to the questions "are you a member of an amateur association?", divided into: (a) "what type of social-networking-site user are you?": (1) I am an active user, (2) I am a passive user, (3) non-user (Figure 4a) and (b) "age group": 18–24, 25–39, 40–59 and 60–79 (Figure 2a). The valid number of responses to the basic question (528) and the subordinate questions (the number of respondents who answered both questions at the same time) are indicated in brackets.

3.3 Activity of respondent in volunteered geographic information initiatives

At the beginning of this online survey two questions were asked to analyse the past activity of respondents in international and domestic volunteer initiatives that could be regarded as VGI. Multiple answers could be chosen for both questions.

The first question, i.e., "in which international voluntary initiatives for updating online maps have you already participated?", had 653 valid answers. In international voluntary initiatives, 17% of respondents (108) had already participated. Most (80) had participated in the OpenStreetMap initiative (www.openstreetmap.org), 9 in the Google Maps (www.google.com/maps), 8 in the Wikimapia (wikimapia.org), 3 in the TomTom (www.tomtom.com), 2 in the Here Maps (https://wego.here.com) and one each in the Bikemap (www.bikemap.net), the Camptocamp (www.camptocamp.org), the Esri (www.esri.com), the Garmin (www.garmin.com), the Kompass (www.kompass.de), the Wikiloc (www.wikiloc.com), and the Zooniverse (www.zooniverse.org). Some (11) described various domestic initiatives, which correctly belong to the next question.

The proportion of respondents who had already participated in domestic volunteering initiatives is larger than that for international ones, with 36% of respondents (638 valid responses). The highest number, i.e., 115, reported earthquake effects to the Slovenian Environment Agency (http://potresi.arso.gov.si/), 111 participated in reporting corrections about mountain trails to the Slovenian Mountaineering Association (www.planinske-poti.si), 6 reported information about other trails (https://www.jakobova-pot.si/, http://www.pespoti.si/), 28 added content to the history layer on Geopedia (www. geopedija.si), 18 added data about floods to the layer of the Slovenian Geographers' Association on Geopedia (www.geopedija.si), 9 participated in various natural-history initiatives (presence of different animal or plant species, e.g., birds, invasive species), and 2 reported data on caves. In addition, some individuals also reported about participation in various municipal or other non-profit initiatives.

3.4 How online and printed maps are used by respondents

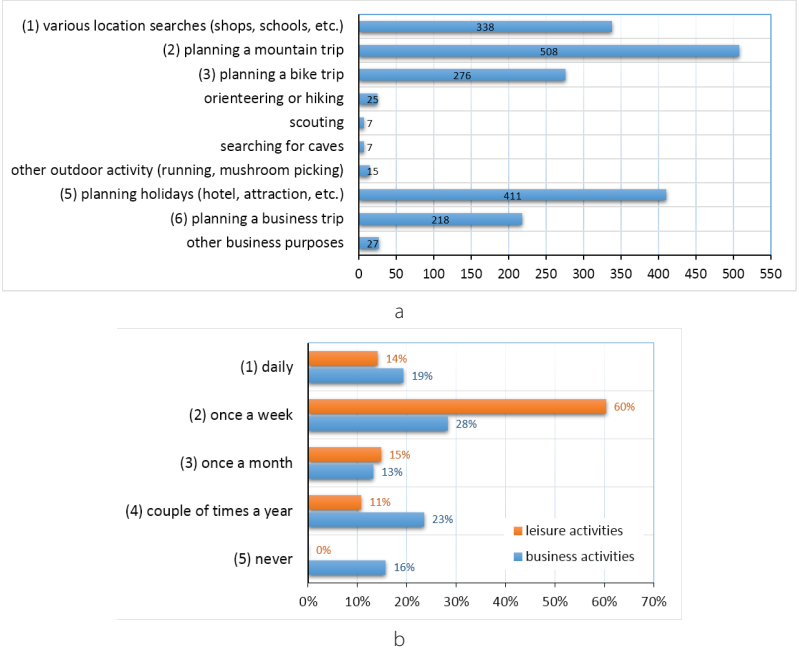

Figure 7: Answers to the questions: a) "for which activity do you most often use printed or online maps?" (611 valid responses) and b) in blue "how often do you use maps for your business activities?" (605 valid responses) and in brown "how often do you use maps for your leisure activities?" (602 valid responses).

Respondents could select multiple answers to the question "in which activity do you most often use printed or online maps?". As many as 90 respondents chose the option *Other*. These were subsequently divided into additional classes, which are shown in Figure 7a without a number in front of the activity description. The majority of respondents (83%) use maps for (2) *planning a mountain trip*, followed by (5) *planning a holiday* with 67% and 55% for (1) *various location searches (shops, schools)*. The other classes received less than 50%. Only 40% of the respondents use maps for their *business purposes*, which was obtained by summing the classes (6) *planning a business trip* and *other business purposes*.

For the next four questions the respondents could choose only one answer from the options provided.

Respondents most often use maps once a week for both, as well as business and leisure activities; this confirms that with this survey we have covered a very cartographically literate population (Figure 7b). Once a week, 171 respondents use maps for their business-related activities and 363 for leisure activities. All the respondents use maps at least a few times per year in the scope of their leisure activities, while 95 respondents (16%) never use maps for business-related activities.

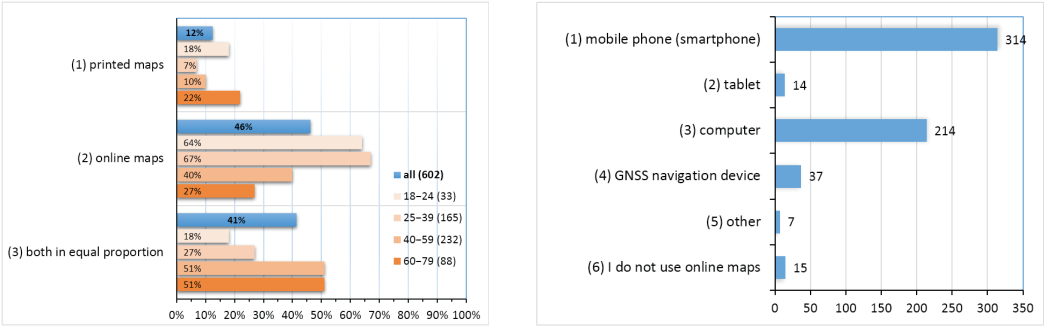

Figure 8: Answers to the questions: (a) "what type of maps do you most often use?" (602 valid answers) and (b) "if you use online maps, where do you most often display them?" (601 valid answers).

The majority most often use online maps or online and printed maps in equal shares, with only 12% using only printed maps (Figure 8a). Of the 75 that mostly use only printed maps, only 15 never use online maps. This can be resolved by the next question, which inquired about the type of device on which respondents most often view online maps (Figure 8b). Looking further at the breakdown by age group, we see that the highest use of printed maps is in the 60–79 age group, where the proportion of those using only printed maps is 22%. The highest use of online maps is in the age groups 18–24 and 25–39, with 64% and 64%, respectively. The age groups of 40–59 and 60–79 most often use both types of maps in equal shares, as well printed as online maps, with 51%. Half (52%) mainly display online maps on a mobile phone, followed by a computer with 36%, with much smaller shares for tablets and GNSS navigation devices (Figure 8b). However, responses in the class *Other* could be evenly divided between computer and mobile phone, with most respondents highlighting that they use several devices at the same time to view online maps.

3.5 Willingness to cooperate and the favourite way to report changes

The key survey question "would you be willing to report a change or error on a map to those responsible for updating it?" was answered by 599 respondents: 90% *yes*, 5% *no* and 5% *yes, conditionally*. The last

group included the majority of those who indicated that they would participate if it was easy enough and if they were reminded repeatedly that the action was being carried out. In summary, we can see that a total of 95% of respondents would participate in such voluntary activities.

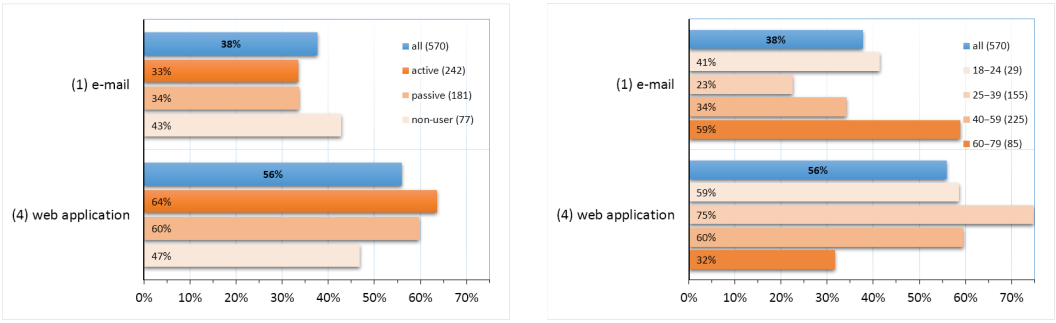

Figure 9: Answers to the questions "how would you prefer to report a change/error on the map?" divided by questions: (a) "what type of social-networking-site user are you?": (1) I am an active user, (2) I am a passive user, (3) non-user, and (b) age group: 18–24, 25–39, 40–59 and 60–79. The valid number of respondents for the basic question (570) and the subordinate questions (number of respondents who answered both questions) are given in brackets.

The question "how would you prefer to report a change/error on the map?" was answered by 570 respondents. Most (319 or 56%) would use (4) *a web application or software to report changes*, 215 (38%) would use (1) *e-mail*, 23 (4%) would use (3) *the telephone*, two would use (2) *traditional mail* and 11 (2%) would use *other*. In the class *Other*, the answers highlighted the simultaneous use of several of the already listed options, with two of them mentioning that they would take a photograph of the error and send it as an MMS by smartphone. If we divide the responses into the largest groups of those who would rather use e-mail or the web application according to their self-assessment of how active they are on social networking sites (Figure 9a), respondents who are already more active online, i.e., the choices (1) *I am an active user* and (2) *I am a passive user*, are more likely to use the web application than the average respondent (Figure 9a). The group (3) *I do not use social networking sites*, however, is more inclined to use e-mail to report changes, where it slightly exceeds the average of all respondents. Looking at further division by age (Figure 9b), the groups 18–29 and 60–79 are more likely than the average respondent to prefer to send errors or changes by e-mail. We have not shown the over-80s class as it contains only two responses that chose telephone and e-mail respectively. As expected, the age groups 25–39 and 40–59 are more likely to use an online application.

3.6 The preferred way in which the application to collect changes on maps should work

Three questions were subsequently asked on how the application for reporting or collecting changes on maps should work so that respondents would most likely use it. First "how would you prefer to report a change?" (Figure 10), then "a most important feature of the application" (Figure 12), and finally "what kind of response do you expect from the editor of the application?" (Figure 11). The order of the last two has been changed in the evaluation so that we can simultaneously address them with the same cross-sectional questions: "how active are you on social networking sites?" and "how would you prefer to report a change on the map".

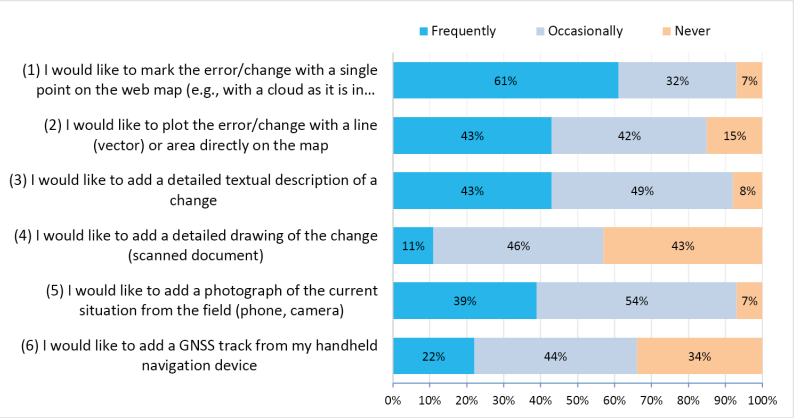

Figure 10: Answers to the questions: "If you were to use an application to report changes that also include a web map, how would you prefer to describe the change/error on the web map?" Valid answers are given in the following order: (1) 528, (2) 523, (3) 531, (4) 519, (5) 532, (6) 521.

Table 1: Answers to the questions "if you would use an application to report changes that includes also a web map, how would you prefer to describe the change/error on the web map?" divided by the responses to the question "what type of social-networking-site user are you?": (1) ***I am an active user***, (2) ***I am a passive user***, (3) ***I do not use social networking sites***. The classes with the largest number of responses are coloured blue.

Functionality	Frequently	Occasionally	Never	Who (valid answers)
(1) I would like to mark the error/change with a single point on the web map (e.g., with a cloud, similar as it is displayed in Google Maps)	**61%**	**32%**	**7%**	**all (528)**
	67%	27%	6%	(1) active (231)
	58%	34%	8%	(2) passive (177)
	59%	29%	12%	(3) non-user (73)
(2) I would like to plot the error/change with a line (vector) or area directly on the map	**43%**	**42%**	**15%**	**all (523)**
	53%	36%	11%	(1) active (232)
	37%	48%	15%	(2) passive (176)
	40%	43%	17%	(3) non-user (72)
(3) I would like to add a detailed textual description of a change	**43%**	**49%**	**8%**	**all (531)**
	47%	46%	7%	(1) active (234)
	36%	55%	9%	(2) passive (176)
	43%	47%	11%	(3) non-user (75)
(4) I would like to add a detailed drawing of the change (scanned document)	**11%**	**46%**	**43%**	**all (519)**
	13%	50%	37%	(1) active (230)
	10%	40%	50%	(2) passive (173)
	5%	47%	48%	(3) non-user (73)
(5) I would like to add a photograph of the current situation from the field (photograph taken with a phone or camera)	**39%**	**54%**	**7%**	**all (532)**
	45%	50%	5%	(1) active (235)
	35%	58%	7%	(2) passive (177)
	27%	60%	13%	(3) non-user (75)
(6) I would like to add a GNSS track from my handheld navigation device	**22%**	**44%**	**34%**	**all (521)**
	29%	45%	26%	(1) active (232)
	18%	45%	37%	(2) passive (172)
	18%	37%	45%	(3) non-user (73)

For the question "if you were to use an application to report changes that also included a web map, how would you prefer to describe the change/error on the web map?", the application's functionalities which would be most often used are seen in the classes *Frequently* or *Occasionally* (Figure 10). Those are: (1) *I would like to mark the error/change with a single point on the web map (e.g., with a cloud, similar as it is displayed in Google Maps)*, (2) *I would like to plot the error/change with a line (vector) or area directly on the map,* (3) *I would like to add a detailed textual description of a change* and (5) *I would like to add a photograph of the current situation from the field (photograph taken with a phone or camera)*. The proportion of respondents who would not use these options, those who chose the class *Never*, is below 15%. Only two functionalities have a majority of responses in the classes *Sometimes* and *Never*, while the class *Frequently* does not exceed 22%: (4) *I would like to add a detailed drawing of the change (scanned document)* and (6) *I would like to add a GNSS track from my handheld navigation device*.

In Table 2 the answers to the same question are divided according to what respondents chose as their preferred method for submitting changes: (1) *e-mail* or (4) *web application*. We have not shown the other three possible answers, i.e., *regular mail*, *telephone* and *other*, as a far smaller number of respondents chose them. For the first two functionalities, where the majority chose *Often*, respondents in the class (4) *I would use a web application* have 10% higher values in the *Often* class than the overall average. The difference between classes (1) *e-mail* and (4) *web application* is as much as 20%. For functionalities (4), (5) and (6), where most respondents chose the option *Occasionally*, their values in this class are also similar to the average for all the respondents.

Table 2: Answers to the questions "if you would use an application to report changes that includes also a web map, how would you prefer to describe the change/error on the web map?" divided by the responses to the question "how would you prefer to report a change/error on the map?": (1) by e-mail and (4) by a web application. The classes with the largest number of responses are coloured blue.

Functionality	Frequently	Occasionally	Never	Who (valid answers)
(1) I would like to mark the error/change with a single point on the web map (e.g., with a cloud, similar as it is displayed in Google Maps)	**61%**	**32%**	**7%**	**all (528)**
	49%	38%	13%	(1) e-mail (189)
	70%	27%	3%	(4) web application (308)
(2) I would like to plot the error/change with a line (vector) or area directly on the map	**43%**	**42%**	**15%**	**all (523)**
	32%	44%	24%	(1) e-mail (184)
	52%	39%	9%	(4) web application (310)
(3) I would like to add a detailed textual description of a change	**43%**	**49%**	**8%**	**all (531)**
	44%	48%	8%	(1) e-mail (188)
	43%	48%	9%	(4) web application (312)
(4) I would like to add a detailed drawing of the change (scanned document)	**11%**	**46%**	**43%**	**all (519)**
	21%	45%	34%	(1) e-mail (183)
	5%	47%	48%	(4) web application (308)
(5) I would like to add a photo of the current situation from the field (photograph taken with a phone or camera)	**39%**	**54%**	**7%**	**all (532)**
	42%	52%	6%	(1) e-mail (190)
	37%	55%	8%	(4) web application (311)
(6) I would like to add a GNSS track from my handheld navigation device	**22%**	**44%**	**34%**	**all (521)**
	19%	42%	39%	(1) e-mail (183)
	25%	45%	30%	(4) web application (310)

In Table 3, the responses to the same question are divided into three age groups for which the largest numbers of respondents were found: (2) 25–39, (3) 40–59 and (4) 60–79. In age group (4) 60–79, the proportions of respondents who would *Never* use the described functionality are higher than that of the average respondents. The only exception is functionality (4) *I would like to add a detailed drawing of the change*, where the proportion of those who would *Never* use it in this age group is 12% smaller than the average value.

A cross-section with the question "what is your hobby?" (Figure 3b), comparing only the most frequently selected answer (1) *mountaineers or alpinists* and all other answers summed in one class named *Other*, does not reveal significant differences and will therefore not be shown. The deviations from the average values are of the order of a few percent. Each group included a maximum of 242 simultaneous answers to both questions (how often would you use it, what is your hobby).

Table 3: Answers to the questions "if you would use an application to report changes that includes also a web map, how would you prefer to describe the change/error on the web map?" divided by age groups with the majority of respondents: (2) 25–39, (3) 40–59 in (4) 60–79. The classes with the largest number of responses are coloured blue.

Functionality	Frequently	Occasionally	Never	Who (valid answers)
(1) I would like to mark the error/change with a single point on the web map (e.g., with a cloud, similar as it is displayed in Google Maps)	**61%**	**32%**	**7%**	**all (528)**
	72%	27%	1%	(2) 25–39 (154)
	60%	31%	9%	(3) 40–59 (216)
	46%	37%	17%	(4) 60–79 (76)
(2) I would like to plot the error/change with a line (vector) or area directly on the map	**43%**	**42%**	**15%**	**all (523)**
	51%	40%	9%	(2) 25–39 (154)
	46%	40%	14%	(3) 40–59 (218)
	32%	50%	18%	(4) 60–79 (74)
(3) I would like to add a detailed textual description of a change	**43%**	**49%**	**8%**	**all (531)**
	45%	48%	7%	(2) 25–39 (154)
	42%	52%	6%	(3) 40–59 (219)
	40%	47%	13%	(4) 60–79 (77)
(4) I would like to add a detailed drawing of the change (scanned document)	**11%**	**46%**	**43%**	**all (519)**
	6%	44%	50%	(2) 25–39 (154)
	11%	50%	39%	(3) 40–59 (214)
	23%	46%	31%	(4) 60–79 (74)
(5) I would like to add a photo of the current situation from the field (photograph taken with a phone or camera)	**39%**	**54%**	**7%**	**all (532)**
	34%	61%	5%	(2) 25–39 (153)
	41%	52%	7%	(3) 40–59 (220)
	35%	56%	9%	(4) 60–79 (79)
(6) I would like to add a GNSS track from my handheld navigation device	**22%**	**44%**	**34%**	**all (521)**
	20%	50%	30%	(2) 25–39 (155)
	27%	38%	35%	(3) 40–59 (214)
	23%	39%	38%	(4) 60–79 (74)

Regarding the question asking about detailed procedural instructions for the behaviour of the editor of the application, the most frequently desired responses, with the highest total number of responses in the classes *Frequently* or *Occasionally* were: (1) *automated e-mail informs me that my contribution has been submitted to the system*, (3) *the editor informs me when a new version of the map will be issued for the area for which I have submitted a contribution*, and (5) *editor informs me when my contribution has been deleted, including the reason for the deletion* (Figure 11). The two medium-preferred functionalities are (2) *the editor sends me a personal e-mail informing me that my contribution has been accepted and when it will be considered*, and (4) *on the updated map it is written that volunteer data were used in its production*. For the latter two, most of the answers were in the class *Occasionally*, the numbers in classes *Frequent* and *Never* were similar.

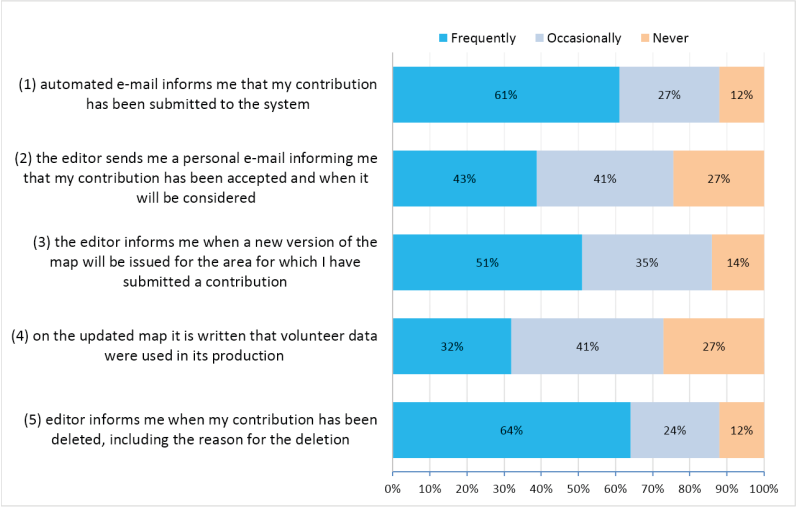

Figure 11: Answers to the questions "if the editor of the application for reporting changes on maps is going to answer to volunteers who submit contributions, how important is it to you that…?". Valid answers are given in the following order: (1) 499, (2) 499, (3) 501, (4) 498 and (5) 499.

Looking at the answers to these questions divided according to the respondents' activity on social networking sites (Table 4), we see the same detailed distribution of the most frequently selected answers as for the questions discussed in Table 1. The respondents who identified themselves as *active* chose the option *Frequently* more often than the average respondents for questions (1), (3) and (5), where already most of all answers were in the class *Frequently*. For questions (2) and (4), where most responses chose the class *Occasionally*, the proportion of active respondents in this class is also higher. Respondents who do not use social networking sites, however, chose for all functionalities the option *Never* more often than the average respondent.

Table 5 further divides the responses according to whether the respondents chose (1) *by e-mail* or (4) *by a web application* as being their preferred method for submitting changes. For the first question (1) *automated e-mail informs me that my contribution has been submitted to the system*, where the majority of respondents answered *Often*, those preferring to send changes *by e-mail* have 10% higher values in the class *Often* than the average. For question (4) *on the updated map it is written that volunteer data were*

used in its production, where the majority again answered with *Often*, the proportion of those preferring to use e-mail is 7% higher than the average. For the other questions, however, the difference is no more than a few percent.

Table 4: Answers to the questions "if the editor of the application for reporting changes on maps is going to answer to volunteers who submit contributions, how important is it to you that …?" divided by the responses to the question "what type of social-networking-site user are you?": (1) ***I am an active user***, (2) ***I am a passive user***, (3) ***I do not use social networking sites***. The classes with the highest number of responses are coloured blue.

Functionality	Frequently	Occasionally	Never	Who (valid answers)
(1) automated e-mail informs me that my contribution has been submitted to the system	**61%**	**27%**	**12%**	**all (499)**
	66%	24%	10%	(1) active (238)
	60%	28%	12%	(2) passive (179)
	49%	35%	16%	(3) non-user (77)
(2) the editor sends me a personal e-mail informing me that my contribution has been accepted and when it will be considered	**32%**	**41%**	**27%**	**all (499)**
	33%	44%	23%	(1) active (238)
	31%	41%	28%	(2) passive (180)
	25%	34%	41%	(3) non-user (76)
(3) the editor informs me when a new version of the map will be issued for the area for which I have submitted a contribution	**51%**	**35%**	**14%**	**all (501)**
	55%	32%	13%	(1) active (238)
	48%	37%	15%	(2) passive (180)
	48%	36%	16%	(3) non-user (77)
(4) on the updated map it is written that volunteer data were used in its production	**32 %**	**41%**	**27%**	**all (498)**
	30 %	48%	22%	(1) active (238)
	34 %	34%	32%	(2) passive (179)
	32 %	37%	31%	(3) non-user (76)
(5) editor informs me when my contribution has been deleted, including the reason for the deletion	**64 %**	**24%**	**12%**	**all (499)**
	66 %	22%	12%	(1) active (238)
	63 %	27%	10%	(2) passive (180)
	61 %	23%	16%	(3) non-user (75)

Table 6 divides the responses further by age group: (2) 25–39, (3) 40–59 and (4) 60–79. For the 60–79 age group, the values in the class *Never* to all questions are lower than those of the overall averages. This means that older people highly value all the feedback they can receive from the organiser. For question (1) *automated e-mail informs that my contribution has been submitted to the system*, where the majority answered *Frequently*, the proportion of those in the 60–79 age group is 17% higher than the overall average and in the 25–39 age group, 6% lower than the average. Another very interesting finding is the distribution of the responses to question (4) *on the updated map it is written that volunteered data were used in its production*, where the majority chose the option *Occasionally*. The highest proportion of those who chose *Frequently* was in the 25–39 age group.

Table 5: Answers to the questions "if the editor of the application for reporting changes on maps is going to answer to volunteers who submit contributions, how important is it to you that …?" divided by the responses to the question "how would you prefer to report a change/error on the map": (1) ***by e-mail*** and (4) ***by a web application***. The classes with the highest number of responses are coloured blue.

Functionality	Frequently	Occasionally	Never	Who (valid answers)
(1) automated e-mail informs me that my contribution has been submitted to the system	**61%**	**27%**	**12%**	**all (499)**
	71%	22%	7%	(1) e-mail (173)
	57%	30%	13%	(4) web application (299)
(2) the editor sends me a personal e-mail informing me that my contribution has been accepted and when it will be considered	**32%**	**41%**	**27%**	**all (499)**
	39%	41%	20%	(1) e-mail (174)
	32%	41%	27%	(4) web application (298)
(3) the editor informs me when a new version of the map will be issued for the area for which I have submitted a contribution	**51%**	**35%**	**14%**	**all (501)**
	50%	38%	12%	(1) e-mail (175)
	51%	34%	15%	(4) web application (299)
(4) on the updated map it is written that volunteer data were used in its production	**32%**	**41%**	**27%**	**all (498)**
	29%	48%	23%	(1) e-mail (173)
	35%	37%	28%	(4) web application (298)
(5) editor informs me when my contribution has been deleted, including the reason for the deletion	**64%**	**24%**	**12%**	**all (499)**
	62%	27%	11%	(1) e-mail (175)
	65%	23%	12%	(4) web application (298)

Since we can already draw a conclusion based on the behaviour of these two questions (Tables 1, 2, 3, 4, 5, 6), we will only show the averages of all the respondents for the next question "how important is it to you that the web application for reporting changes on maps allows you to do the following …?" (Figure 12). The conclusion can be drawn as: for those questions where the highest proportion of responses is in the class *Often*, the proportion of responses in the class *Often* increases if we ask only those who identified themselves as active on social networking sites or who are also more active in amateur associations at the same time. The proportions in the class *I would never use this functionality* increases for all answers if we ask only those who identified themselves as inactive.

The question with the most available choices (four) was "how important is it to you that the web application for reporting changes on maps allows you to do the following …?". It again asked about the importance of the different functionalities of the application for reporting the changes on maps (Figure 12). The functionality with the largest number of responses in the class *Very important* and also a high proportion of responses in the class *Medium important*, 87% in total, is (1) *in the application I can see in addition to the map also an orthophoto or satellite image of the country (which helps me to identify the location of the change)*. Also more important are the functionalities (4) *to get a response from the editor when I submit, that he has received my comment* and (8) *to see the status of the contributions (e.g., the contribution has been forwarded, the contribution has been taken into account when updating the map)*. These two functionalities had a combined score of 73% and 75%, respectively, in the classes

Very important and *Medium important*. The least important functionalities, i.e., the ones with the most responses in the classes *Unimportant* and *Less important*, were: (5) *to count how many contributions I have submitted*, (6) *to count how many people have seen my contribution*, and (9) *to display somewhere visible the cumulative number of the most active volunteers (e.g., the number of contributions submitted by the top three volunteers)*. The latter has less than 20% of the responses in the classes *Very* and *Medium import*. As the functionality with by far the highest number of responses in the *Medium importance* class, 47%, we can highlight the functionality (7) *to add a comment to other volunteers' contributions (e.g., add an additional photograph of the change)*. The two questions that were asking about contrasting options for the design of a basic system for submitting changes: (2) *I can only submit a contribution (change or bug) if I first log in to the system* and (3) *I can submit anonymously (it is not visible who submitted the change)*, received a more or less even distribution of responses across all four classes. Both are dominated by responses in the classes *Medium* and *Less important*, with a total of 63% for the first question and 60% for the latter.

Table 6: Answers to the questions "if the editor of the application for reporting changes on maps is going to answer to volunteers who submit contributions, how important is it to you that …?" divided by age groups with the majority of respondents: (2) 25–39, (3) 40–59 and (4) 60–79. The classes with the largest number of responses are coloured blue.

Functionality	Frequently	Occasionally	Never	Who (valid answers)
(1) automated e-mail informs me that my contribution has been submitted to the system	**61%**	**27%**	**12%**	**all (499)**
	55%	35%	10%	(2) 25–39 (155)
	61%	24%	15%	(3) 40–59 (222)
	78%	13%	9%	(4) 60–79 (81)
(2) the editor sends me a personal e-mail informing me that my contribution has been accepted and when it will be considered	**32%**	**41%**	**27%**	**all (499)**
	34%	41%	25%	(2) 25–39 (155)
	26%	41%	33%	(3) 40–59 (222)
	38%	43%	19%	(4) 60–79 (81)
(3) the editor informs me when a new version of the map will be issued for the area for which I have submitted a contribution	**51%**	**35%**	**14%**	**all (501)**
	53%	33%	14%	(2) 25–39 (155)
	49%	36%	15%	(3) 40–59 (222)
	50%	35%	15%	(4) 60–79 (82)
(4) on the updated map it is written that volunteer data were used in its production	**32%**	**41%**	**27%**	**all (498)**
	40%	37%	23%	(2) 25–39 (155)
	29%	40%	31%	(3) 40–59 (221)
	23%	51%	26%	(4) 60–79 (81)
(5) editor informs me when my contribution has been deleted, including the reason for the deletion	**64%**	**24%**	**12%**	**all (499)**
	68%	24%	8%	(2) 25–39 (155)
	61%	22%	17%	(3) 40–59 (222)
	60%	29%	11%	(4) 60–79 (81)

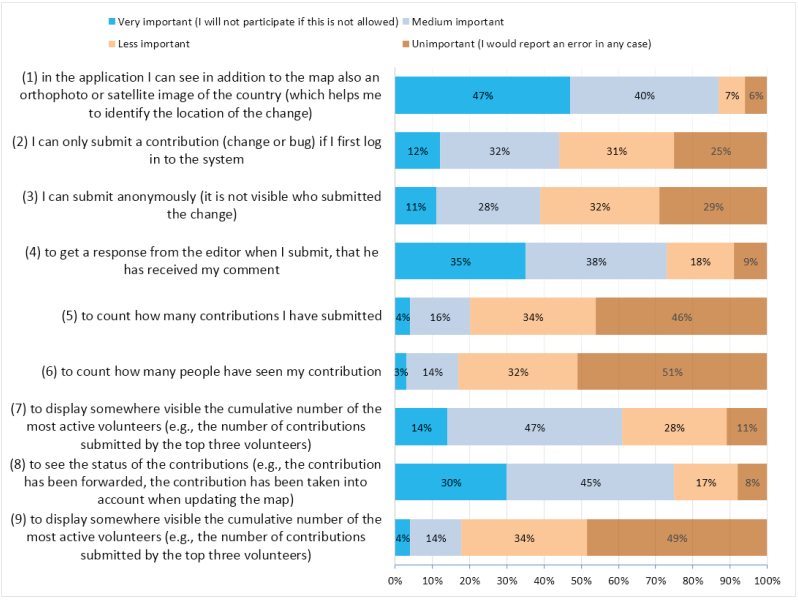

Figure 12: Answers to the questions "how important is it to you that the web application for reporting changes on maps allows the following …?". Valid answers are given in the following order: (1) 503, (2) 503, (3) 505, (4) 506, (5) 505, (6) 505, (7) 503, (8) 506 and (9) 506.

At the end of the survey, respondents were given the opportunity to write additional comments, which were made by 96 respondents. They made several suggestions, some of which reflected the options already discussed in the previous questions. Most of them underlined the importance of feedback. They also stressed the importance of an easy-to-use interface of the application for reporting changes on maps, and some added examples of other change-reporting initiatives already in operation on various international and domestic volunteer portals. They also pointed out that the current initiatives for reporting changes on maps are too fragmented, meaning that each initiative has a different procedure for sending a correction.

4 DISCUSSION

In the research described above, based on an online survey of 653 potential Slovenian volunteers who would be willing to report changes on topographic maps, we quickly noticed similarities with the results of foreign surveys. Already in the additional comments, the respondents point out that there are separate initiatives for collecting corrections for different maps (e.g., PlanGIS, Open Street Map, Google Maps), which are not linked to each other. Therefore, a volunteer would have to enter the same change or error that he noticed into several systems if he wanted the error to be corrected on several different maps simultaneously. This discourages the volunteer from further participation, as there is no way he/she can remove the error from all the maps at the same time (national maps, maps from different publishers, international volunteer mapping portals). This is similar to the case of the different volunteer initiatives working simultaneously to communicate the consequences and needs after the devastating earthquake in the Mexico in 2018. There, Tapia-McClung (2018) discovered that due to

the large number of parallel initiatives, there was no way you could find all the information you needed in one place. This exacerbated the problem of digital exclusion, not only for those who did not know how to use the web, but also for those who did not know which initiatives already existed and were intended for a specific purpose.

The difference in the age group of our respondents is first observed when analysing the question of what type of maps they tend to use: printed, online or both in equal proportions. Here, we see that on average 12% of respondents most often use only printed maps. In the 60–79 age group, the proportion of printed map users rises to 22%. Younger respondents are more likely to use online maps, with an overall average of 46%, while in the age groups of 18–24 and 25–39 these proportions jump to 64% and 67% respectively. Middle-aged and older respondents, aged 40–59 and 60–79, prefer to combine printed and online maps, exceeding by 10% the overall average of 41%. The higher proportions of simultaneous use of online and printed maps, and the higher proportion of the use of only printed map in the oldest age groups may offer several conclusions. Firstly, that older people use printed maps as a medium that they are used to and that helps them understand the online maps. Secondly, they may be confused by different versions of the online maps or distracted by the lack of small letters or characters. A third possible conclusion is that they are reluctant to use computer novelties or are less digitally literate. All these reasons can be classified as cognitive, motor and sensory inhibitors of older people's participation in voluntary online initiatives (Gottwald et al., 2016). Therefore, among the ways to report changes, we should definitely ensure that printed maps are used, as in this way we will be able to ensure greater involvement of older people. Rzeszewski and Kotus (2019) have made a similar conclusion. They were using a relatively small sample of 30 participants for testing an application for collaborative spatial planning, who they asked how they would rather report changes in the future and 27% of those would rather use a printed map to report changes in the future, omitting the use of a web application.

Digital literacy is not the only issue when using online mapping portals, but it plays a major role in how respondents would prefer to report detected changes or errors on the map, as well as which functionalities of the application for collecting changes on the maps they would use more often. In our case, we can consider as less digitally literate those who identified themselves as non-users of social networking sites. Interestingly, however, these cannot be simply equated with the age group of 60–79, as the highest proportion of respondents in this age group, 72%, identified themselves as active organisers in amateur associations, being 7% higher than the average for all respondents.

Having a sufficient number of respondents in our survey in the age groups 25–39, 40–59 and 60–79, we can confirm that age is an important factor in how volunteers would prefer to submit changes on maps and how often they would use certain features of the application for reporting changes. In the population as a whole, the preferred way to submit changes is 38% for using e-mail and 56% for the web application, with a minority that would prefer telephone or traditional mail. Respondents in the 60–79 age group would prefer to submit changes by e-mail than the average respondent, with having as highs as 59% preferring to use e-mail and only 32% a web application. In the 25–39 age group, the ratio is the opposite: only 23% would rather use e-mail and 75% a web application.

When analysing the frequency of potential use of a specific functionality of the web application for reporting changes on maps, we found higher average responses in the class *I would never use this* for all

the suggested functionalities in the age group of 60–79. This could be explained by the fear of using new computer tools in this age group, which is already well known in research addressing guidelines on how to adapt online mapping tools or applications for VGI gathering to older potential users or participants (Vrenko and Petrovič, 2015; Gottwald et al., 2016; Haklay et al., 2018; Rzeszewski and Kotus, 2019). However, the lower averages in the class *I would never use this* in the 60–79 age group compared to all the participants for questions that addressed different possible responses from the editor of an online application to the volunteer, suggest that receiving feedback is of utmost importance to older users. Baruck et al. (2016) similarly found while studying the Tomond volunteered initiative, organised under the DigitalGlobe, which was dedicated for volunteers to identify different objects in satellite imagery (e.g., fires, searching for the remains of missing aircraft), that giving feedback to older volunteers is very important when trying to ensure that they will continue to participate as long as possible.

5 CONCLUSION

Combining the analysis of our respondents' previous activity on social networking sites and in amateur associations, we see that we have captured an above-average number of individuals who are very active in their spare time (65% very active in amateur associations, 48% very active on social networking sites), who offer great potential for participation in online VGI initiatives to report changes or errors on maps. However, to maximise their participation in number and the time for which they remain active, which may gradually become limited as they get older, we will need to take into consideration the following:

- to allow changes to be reported by e-mail as well as through the web-based application for reporting changes;
- the initiative's administrator should ensure regular, as in-depth as possible, correspondence with the volunteers;
- to a majority of people the meters that count and show statistics on participation in the online initiative (e.g., how many contributions I have made, how many people have seen my contribution, who is the most active volunteer) are not the most important;
- volunteers would rather report a change just to one place, which afterwards should be automatically included in different mapping portals that present maps covering the same geographical area.

The last point in particular calls for a preliminary exploration of how both public and private cartographic institutions could participate in such an initiative to report changes at one spot, and how existing voluntary cartographic initiatives could be joined, before a new initiative for reporting changes on maps could be implemented.

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PRIPRAVLJENOST PROSTOVOLJCEV ZA SPOROČANJE SPREMEMB NA TOPOGRAFSKIH KARTAH

OSNOVNE INFORMACIJE O ČLANKU:

GLEJ STRAN 400

1 UVOD

Prostovoljne geografske informacije (angl. *volunteered geographic information*) so neizčrpen vir podatkov za različne namene, tudi za kartografijo. Več evropskih držav jih že preizkuša pri posodabljanju svojih topografskih baz (v nadaljevanju jih bomo imenovali topografske karte), kjer jih uporabljajo predvsem kot dodaten vir za iskanje sprememb v naravi in odpravljanje napak na kartah (Triglav Čekada in Lisec, 2019). Akcije zbiranja prostovoljnih geografskih informacij za posodabljanje topografskih kart morajo biti pred izvedbo zelo skrbno načrtovane, saj lahko pri iskanju sprememb na topografskih kartah pričakujemo veliko manjši odziv prostovoljcev kot na primer ob zbiranju informacij o naravni nesreči. Naravna nesreča namreč neposredno vpliva na veliko število ljudi, ki so v trenutku nesreče veliko bolj pripravljeni sodelovati in pomagati tudi tako, da delijo informacije o posledicah nesreče (Triglav Čekada in Radovan, 2019). Pri tem pripravljenost za sodelovanje s časovno oddaljenostjo od nesreče začne hitro upadati (Triglav Čekada in Radovan, 2013; Ahmouda et al., 2018).

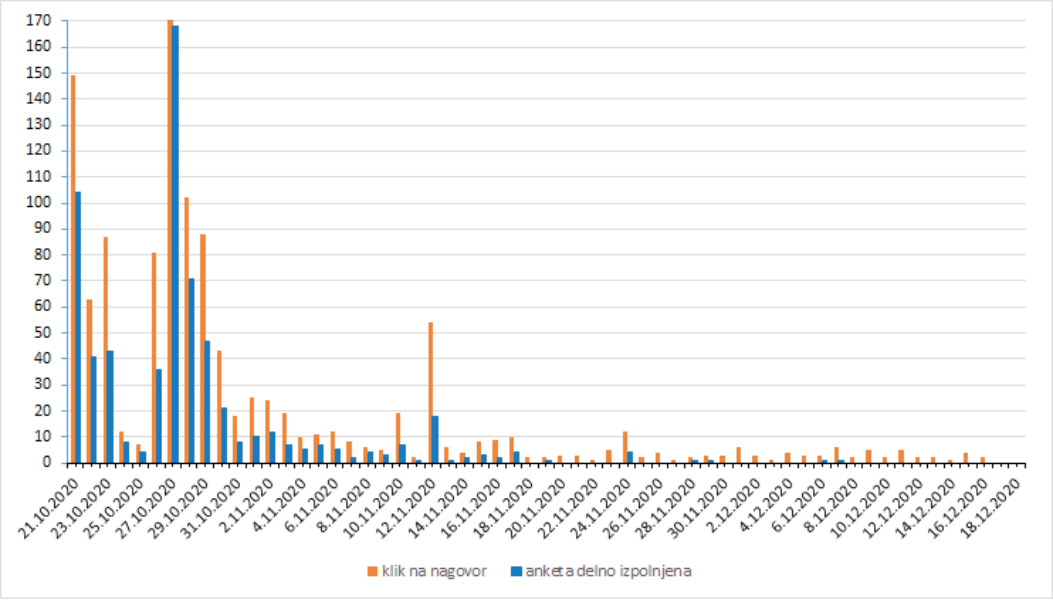
Če pa želimo pridobiti čim več uporabnih informacij oziroma navdušiti čim večjo skupino prostovoljcev tudi za sporočanje sprememb na topografskih kartah, moramo podati čim krajša in čim enostavnejša navodila za sodelovanje. Predolga navodila namreč udeležence odvrnejo od sodelovanja (Mooney et al., 2016; Fritz et al., 2017; Minghini et al., 2017). Tudi prezahtevna uporabniška izkušnja ali slab izbor funkcionalnosti lahko hitro odvrneta veliko potencialnih prostovoljcev. Po drugi strani pa tudi ne moremo pričakovati enotnih povratnih informacij primerne kakovosti zgolj na podlagi kratkih in enostavnih navodil. Zato je smiselno kasneje, pri obdelavi in uporabi tako pridobljenih informacij, več pozornosti posvetiti njihovi kakovosti (Mooney et al., 2016; Olteanu-Raimond et al., 2017). Večina evropskih geodetskih uprav, ki že preizkuša ali celo uporablja prostovoljne geografske informacije za pridobivanje dodatnih informacij o ustreznih spremembah topografskih kart, te pridobiva prek posebej za ta namen razvitih spletnih interaktivnih kart ali aplikacij, kamor prostovoljci vnašajo informacije, organizator akcije jih preveri in kasneje uporabi kot dopolnilni vir za nadgradnjo topografske karte (Triglav Čekada in Lisec, 2019). Spletne interaktivne karte, namenjene dodajanju prostovoljnih informacij, uporabniku ponujajo različne funkcionalnosti in stopnje uporabniške izkušnje (Poplin, 2015; Baruch et al., 2016; Gottwald et al., 2016; Rzeszewski in Kotus, 2019).

V članku so predstavljeni rezultati raziskave, ki smo jo izvedli v obliki spletne ankete. V njej smo potencialne slovenske prostovoljce, ki bi bili pripravljeni posredovati informacije o spremembah oziroma napakah na topografskih kartah, spraševali, kako naj bi po njihovem mnenju deloval sistem za zbiranje sprememb. Predvsem nas je zanimalo, kakšen uporabniški vmesnik (aplikacijo) bi najraje uporabljali. Cilj raziskave je, da bi lahko na podlagi rezultatov analize odgovorov v prihodnosti bolje načrtovali uporabniško

izkušnjo prostovoljcev. Vzdrževanje in spodbujanje aktivnosti prostovoljcev v prostovoljskih pobudah je namreč še vedno nerešeno vprašanje na področju zbiranja prostovoljnih geografskih informacij, čeprav je ravno od tega odvisno, ali bo akcija zbiranja uspešna.

2 METODOLOGIJA

Raziskava je bila izvedena s spletno anketo, ki smo jo izdelali v spletnem orodju *1KA* (https://www.1ka.si/). Povezavo na anketo smo objavili na spletni strani projekta in Facebookovem profilu Geodetskega inštituta Slovenije. Obvestilo o anketi smo po e-pošti razposlali posameznikom, različnim prostovoljskim organizacijam in javnim ustanovam, ki se ukvarjajo s prostorom. Na podlagi teh obvestil sta bila ločena poziva k izpolnjevanju ankete objavljena še na spletni strani *Planinske zveze Slovenije* in spletnem portalu *Gore in ljudje*. V nekaj tednih smo izvedli tri obširnejše akcije obveščanja o anketi po e-pošti oziroma prek Facebooka. Dneve takšnih aktivnosti hitro prepoznamo na grafu posameznih klikov na anketo in številu izpolnjenih anket na dan (slika 1). Anketa je bila aktivna skoraj dva meseca, od 21. 10. 2020 do 18. 12. 2020. Večino odgovorov smo prejeli v prvem mesecu po objavi ankete, kar je tudi skladno z obdobjem največje aktivnosti raziskovalne ekipe. Prepoznamo lahko tri vrhunce: 21. 10. 2020, ko smo anketo aktivirali in pričeli intenzivno obveščanje prek različnih kanalov, 27. 10. 2020, ko smo e-obveščanje o anketi ponovili in so anketo hkrati objavili na spletnih straneh *Planinske zveze Slovenije* ter portalu *Gore in ljudje*, in 10. 11. 2020, ko smo spet intenzivneje obveščali prek Facebooka.



Slika 1: Dnevno število klikov na anketo in vsaj delno izpolnjenih anket. Maksimum klikov na uvodni nagovor z dne 27. 10. 2020 je znašal 338, a je na sliki odrezan.

V anketi je bilo 29 vprašanj, ki smo jih smiselno razdelili na naslednje vsebinske sklope:

– anketirančeva dosedanja aktivnost na področju domačih in tujih spletnih prostovoljnih pobud, ki jih lahko štejemo med prostovoljne geografske informacije,

– vrsta in namen uporabe spletnih in tiskanih kart,
– preferenčni način oblikovanja spletne aplikacije za sporočanje sprememb in napak na kartah,
– anketirančeva dosedanja aktivnost v prostem času,
– splošna statistična vprašanja o spolu, starostni skupini, izobrazbi in poklicnem ter prostočasnem udejstvovanju.

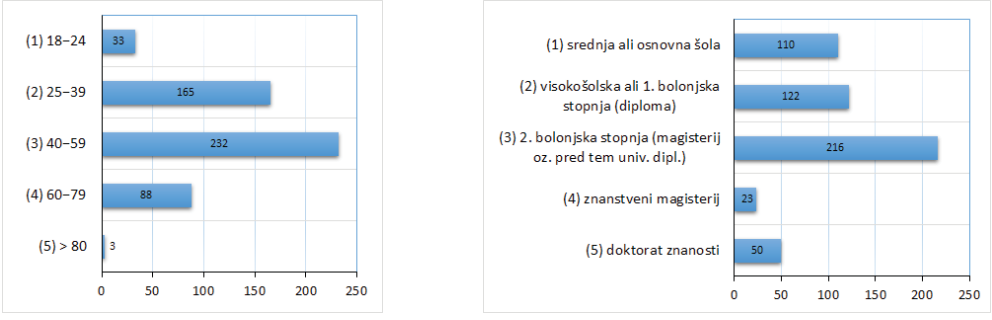
Anketna vprašanja so bila postavljena v zgornjem vrstnem redu, kjer so splošna vprašanja na koncu, da je bila ohranjena pozornost anketirancev, saj kljub anonimnosti veliko ljudi nerado podaja osebne podatke. Zaradi lažjega razumevanja so rezultati v nadaljevanju predstavljeni po obrnjenem vrstnem redu.

Na nagovor ali začetek ankete je kliknilo 1312 potencialnih anketirancev, približno polovica (653) jo je izpolnila vsaj delno. Anketo je v celoti izpolnilo 521 anketirancev, na ključno vprašanje »ali bi bili pripravljeni sporočiti spremembo oziroma napako na karti« je odgovorilo 599 anketirancev. Ker so anketiranci lahko posamezno vprašanje preskočili ali anketo končali predčasno, se prikazani deleži nanašajo na veljavno število odgovorov na posamezno vprašanje in ne na skupno število vseh anketirancev. Več kot dve tretjini anketirancev sta anketo izpolnili na računalniku (77 %), drugi na pametnem telefonu (23 %). Enaki deleži so bili zaznani tudi pri vseh klikih na anketo.

3 REZULTATI ANALIZE ANKETNIH ODGOVOROV

3.1 Osnovna statistika anketirancev

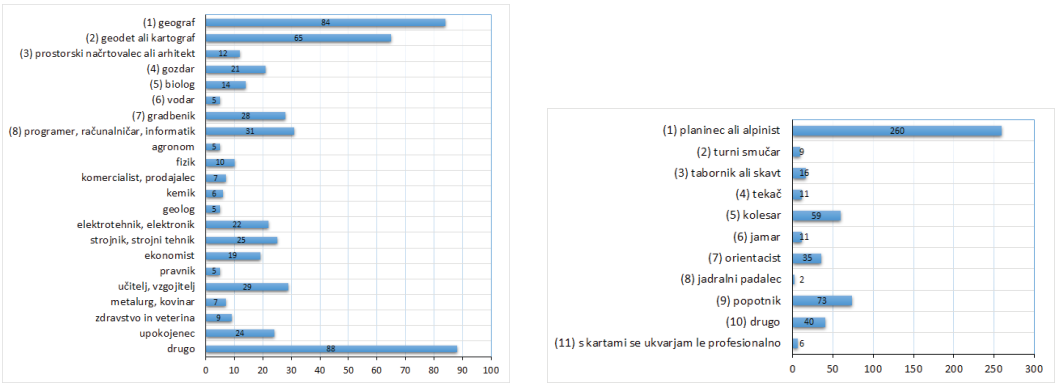
Splošna vprašanja se nanašajo na osebne podatke, zato nekateri niso želeli odgovarjati nanje, torej imamo pri vprašanjih o starostni skupini in najvišji stopnji izobrazbe najmanjše število veljavnih odgovorov (521), kar je 7 % manj, kot je bilo največje število veljavnih odgovorov v anketi (653). Pri vseh vprašanjih v tem sklopu so anketiranci lahko izbrali le en odgovor.



a b

Slika 2: Starostna skupina anketiranih (a) in najvišja stopnja dosežene izobrazbe (b). Pri obeh vprašanjih je bilo veljavnih odgovorov 521.

Na vprašanje o spolu je odgovorilo 522 anketirancev, med njimi je bilo 69 % moških in 31 % žensk. Po starostni strukturi jih največ najdemo v razredu 40–59 let s 45 %, sledi razred 25–39 let z 32 % (slika 2a). Največ jih ima univerzitetno diplomo oziroma 2. bolonjsko stopnjo, tj. 41 % (slika 2b).



Slika 3: Odgovori na vprašanji: (a) kaj ste po poklicu (524 veljavnih odgovorov) in (b) kaj ste ljubiteljsko (522 veljavnih odgovorov).

Pri poizvedbi o poklicu anketirancev smo v anketi ponudili premajhen nabor, tj. samo možnosti od (1) do (8), prikazane na sliki 3a. Zato je bilo več kot polovico odgovorov (55 %) *prostor me zanima ljubiteljsko, po poklicu pa sem …* Le-te smo naknadno razvrstili v najpogostejše dodatne poklicne skupine, ki so na sliki 3a zapisane brez zaporedne številke. Z anketo smo zajeli največ geografov (16 %), sledijo geodeti ali kartografi (12 %), potem so s precej podobnimi deleži zastopani (okoli 5 %): gradbeniki, računalničarji ali informatiki, učitelji ali vzgojitelji, strojniki in upokojenci. Poklici, ki so bili navedeni manj kot petkrat, niso ločeno predstavljeni, ampak so zajeti v skupini *drugo*.

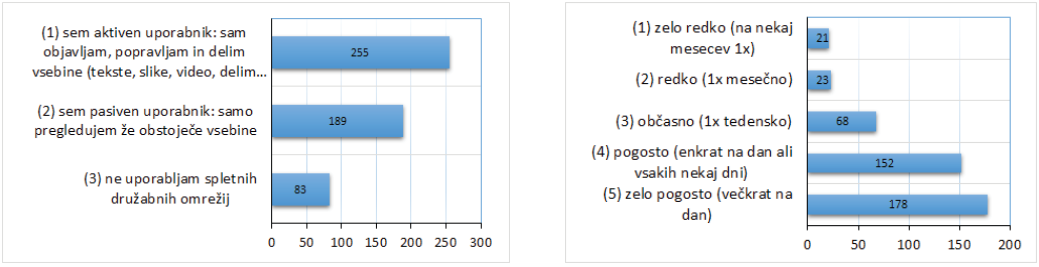
Ljubiteljsko se jih je polovica opredelila kot *planincev ali alpinistov* (50 %), kar je posledica tega, da je bila anketa odlično promovirana v okviru planinskih spletnih portalov (slika 3b). Druga najštevilčnejša skupina so bili *popotniki* s 14 %, tretja *kolesarji* z 11 %. Med 40 odgovori *drugo* je kar 13 takšnih (2 %), ki poudarjajo, da se v prostem času ukvarjajo z več dejavnostmi. Preostali odgovori *drugo* zajemajo še tri gasilce, dva markacista in druge.

3.2 Dosedanja aktivnost anketirancev v prostem času

Dosedanjo aktivnost anketirancev v prostovoljnih udejstvovanjih smo merili z analizo njihove aktivnosti na spletnih družabnih omrežjih in v društvih.

Na vprašanje »kako uporabljate spletna družabna omrežja« je 48 % sodelujočih odgovorilo, da so (1) *aktivni uporabniki, ki sami objavljajo, popravljajo in delijo vsebine*, 36 %, da so (2) *pasivni uporabniki, ki samo pregledujejo že obstoječe vsebine,* in 16 %, da (3) *ne uporabljajo spletnih družabnih omrežij* (slika 4a). Tisti, ki so izbrali (1) in (2), so lahko odgovarjali še na vprašanji »katera spletna družabna omrežja uporabljate« in »kako pogosto uporabljate spletna družabna omrežja«. Od prvotnih 527 anketirancev, ki so odgovarjali na vprašanje, kako uporabljajo spletna družabna omrežja, jih je na vprašanje »katera« odgovorilo 436, na vprašanje »kako pogosto« pa 442. Pri vprašanju »katera« so lahko izbrali več odgovorov hkrati. Največ, 88 % ali 383 vprašanih, uporablja Facebook, 42 % ali 181 Instagram, 69 Twitter, 41 Snapchat ter po 8 Flickr in TikTok. Kar 18 % jih uporablja še druga družabna omrežja, na primer 15 Linkedin (www.linkedin.com), 8 Stravo (www.strava.com), 5 Viber (www.viber.com/en), 3 Pinterest (www.pinterest.com), 3 Whatsapp (www.whatsapp.com), ter po dva ali manj ostala. Na sliki 4b je prika-

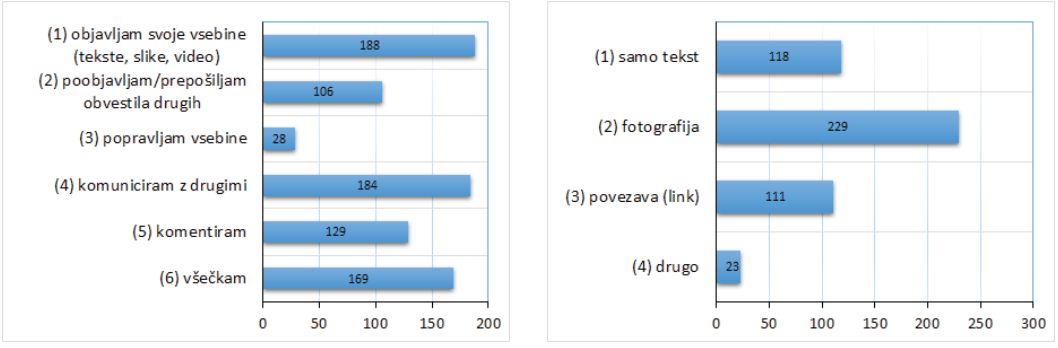
zano število odgovorov po posameznih razredih vprašanja »kako pogosto uporabljate spletna družabna omrežja«. Glavnina vprašanih uporablja družabna omrežja zelo pogosto ali pogosto: 40 % zelo pogosto (večkrat na dan) in 34 % pogosto (enkrat na dan ali vsakih nekaj dni), manjšina pa redko (15 % enkrat tedensko, 5 % enkrat mesečno ali le enkrat na nekaj mesecev).



a b

Slika 4: Odgovori na vprašanji: (a) »kako uporabljate spletna družabna omrežja« (527 veljavnih odgovorov) in (b) »kako pogosto uporabljate spletna družabna omrežja« (442 veljavnih odgovorov). Na obe vprašanji so lahko izbrali le po en odgovor.

Naslednji vprašanji sta bili namenjeni le tistim, ki so na vprašanje glede aktivnosti na družabnih omrežjih (slika 4a) odgovorili z (1) *sem aktiven uporabnik*. Ti so lahko izbrali več odgovorov pri vprašanjih »kako jih največkrat uporabljate« in »v kakšnem formatu so največkrat podatki, ki jih objavljate« (slika 5). Največkrat spletna družabna omrežja uporabljajo tako, da (1) *objavljam svoje vsebine* s 74 %, sledi (4) *komuniciram z drugimi* z 72 % in (6) *všečkam* s 66 %. Manj kot polovica pa je izbrala: (2) *poobjavljam ali prepošiljam obvestila drugih*, (3) *popravljam vsebine* in (5) *komentiram*. Podatki, ki jih objavljajo, so največkrat v obliki (2) fotografije z 90 %, sledi (1) tekst s 46 % in (3) link s 44 %. Pri odgovoru *drugo* so večkrat navedli še uporabo GNSS-sledi.

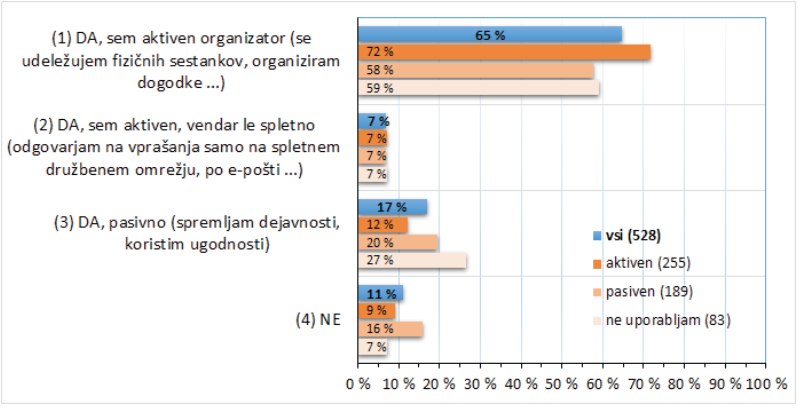


a b

Slika 5: Odgovori na vprašanji: (a) »kako največkrat uporabljate spletna družabna omrežja« in (b) »v kakšnem formatu so največkrat podatki, ki jih objavljate na družabnih omrežjih«. Pri obeh vprašanjih so anketiranci lahko izbrali več odgovorov. Pri obeh vprašanjih je bilo 255 veljavnih odgovorov.

Vprašanje, s katerim smo spraševali o anketirančevi dosedanji dejavnosti v prostovoljskih društvih, je prikazano še glede na odgovore v vprašanju »kakšen tip uporabnika spletnih družabnih omrežij ste« (aktiven, pasiven, ne uporabljam) (slika 6a) in v kateri starostni razred spada anketiranec (slika 6b). Na sliki 6 so povprečja vseh vprašanih izrisana z modrimi stolpci, povprečja glede na posamezen odgovor drugega vprašanja pa v rjavih odtenkih. Na sliki 6a vidimo, da so tisti, ki so aktivnejši na spletnih družabnih

omrežjih, aktivnejši tudi v društvih. Tako lahko aktivnejše v društvih enačimo z aktivnejšimi na družabnih omrežjih in v nadaljevanju preučujemo križanja samo z enim od teh dveh vprašanj. Tistih, ki ne uporabljajo družabnih omrežij, pa je največ v razredu (3) *pasivno sem vključen v društvene dejavnosti, tako da spremljam dejavnosti in koristim ugodnosti*. Na sliki 6b vidimo še, da nadpovprečno velik delež aktivnih organizatorjev v društvih spada v starostna razreda 60–79 let in 40–59 let. V starostnem razredu 20–39 let pa je višje povprečje (3) *pasivno aktivnih v društvih*. To je razumljivo, saj se večina ljudi v tem obdobju intenzivno ukvarja z grajenjem kariere, zaradi česar jim zmanjkuje časa za prostovoljno udejstvovanje.



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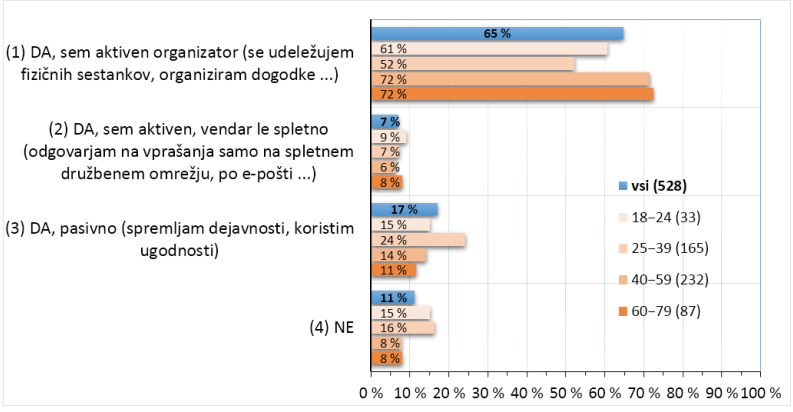


b

Slika 6: Odgovori na vprašanje »ali ste član kakšnega prostovoljnega društva«, razdeljeni na: (a) »kakšen tip uporabnika spletnih družabnih omrežij ste«: (1) sem aktiven uporabnik, (2) sem pasiven uporabnik, (3) ne uporabljam družabnih omrežij (slika 4a) in (b) »starostni razred«: 18–24, 25–39, 40–59 in 60–79 (slika 2a). V oklepaju je zapisano veljavno število odgovorov pri osnovnem vprašanju (528) oziroma razredu podrobnejše delitve (število anketirancev, ki so odgovorili na obe vprašanji hkrati).

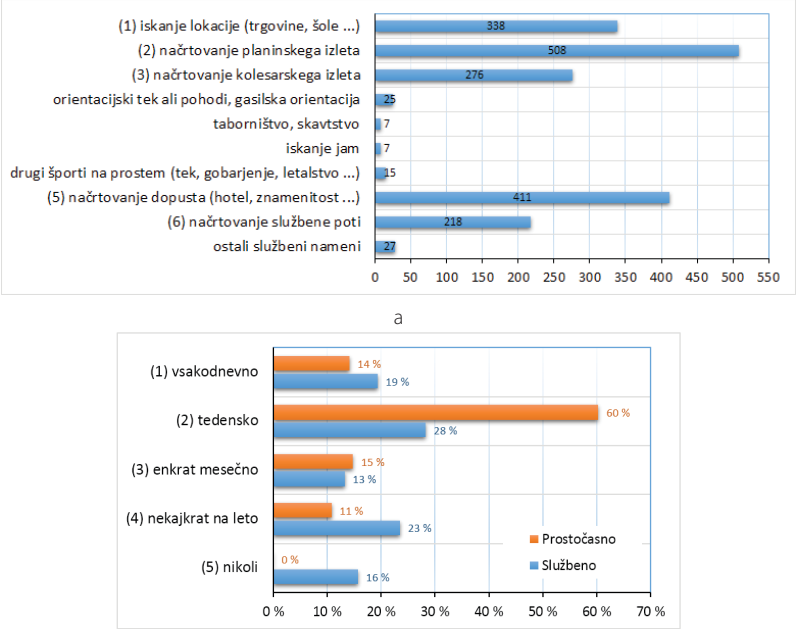
3.3 Dosedanje aktivnosti v prostovoljnih geografskih pobudah

Na začetku ankete smo postavili dve vprašanji o pretekli aktivnosti prostovoljcev v mednarodnih in domačih prostovoljnih pobudah. Pri obeh vprašanjih so lahko izbrali več odgovorov hkrati.

Pri prvem, to je »v katerih mednarodnih prostovoljnih iniciativah za posodabljanje spletnih kart ste že sodelovali«, je bilo veljavnih odgovorov 653. V mednarodnih prostovoljnih pobudah je sodelovalo 17 % anketirancev (108). Največ (80) jih je sodelovalo v pobudi OpenStreetMap (www.openstreetmap.org), devet v Google Maps (www.google.si/maps), osem v Wikimapii (www.wikimapia.org), trije v TomTomu (www.tomtom.com), dva v Here Maps (wego.here.com) in po eden v Bikemapu (www.bikemap.net), Camptocampu (www.camptocamp.org), Esriju (www.esri.com), Garminu (www.garmin.com), Kompassu (www.kompass.de), Wikilocu (www.wikiloc.com), Zooniversu (www.zooniverse.org), enajst pa jih je navedlo različne domače pobude.

Delež takšnih, ki so že sodelovali v domačih prostovoljnih pobudah, je višji kot pri mednarodnih, saj je v njih sodelovalo že 36 % anketirancev (ob 638 veljavnih odgovorih). Največ (115) jih je sporočalo zaznavanje potresov na Agencijo RS za okolje (potresi.arso.gov.si), 111 jih je sporočalo popravke o planinskih poteh na Planinsko zvezo Slovenije (www.planinske-poti.si), 6 podatke o drugih poteh (www.jakobova-pot.si, www.pespoti.si), 28 jih je dodajalo vsebino na sloj zgodovine na Geopedijo (www.geopedija.si), 18 jih je dodajalo podatke o poplavah na sloj Zveze geografov Slovenije na Geopediji (www.geopedija.si), devet jih je sodelovalo v različnih naravoslovnih pobudah (prisotnost različnih živalskih ali rastlinskih vrst, na primer ptic, invazivnih vrst), dva pri sporočanju podatkov o jamah. Posamezniki pa poročajo še o sodelovanju v okviru različnih občinskih pobud ali pobud neprofitnih organizacij.

3.4 Kako anketiranci uporabljajo spletne in tiskane karte



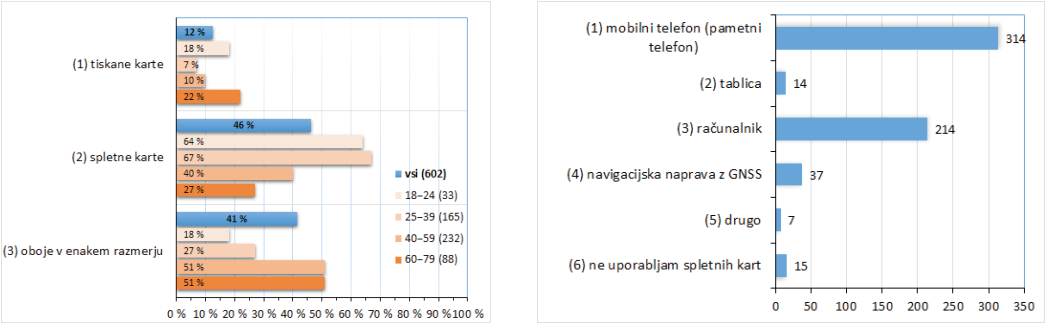
Slika 7: Odgovori na vprašanji: (a) »v okviru katere dejavnosti največkrat uporabljate tiskane ali spletne karte« (611 veljavnih odgovorov) in (b) »kako pogosto uporabljate karte za svoje službene aktivnosti« – modri (605 veljavnih odgovorov) in »kako pogosto uporabljate karte za svoje prostočasne aktivnosti« – rjavi (602 veljavna odgovora).

Pri vprašanju »v okviru katere dejavnosti največkrat uporabljate tiskane ali spletne karte« so lahko anketiranci izbrali več odgovorov. Ker jih je 90 izbralo možnost *drugo*, smo jih naknadno razdelili po

dodatnih razredih, ki so na sliki 7a prikazani brez številke pred opisom aktivnosti. Največ anketirancev (83 %) uporablja karte (2) *za načrtovanje planinskega izleta*, temu sledi (5) *načrtovanje dopusta* s 67 % in 55 % za (1) *različna iskanja lokacije (trgovine, šole)*. Ostale možnosti so prejele manj kot 50 %. V službene namene karte uporablja samo 40 % anketiranih, kar dobimo, če seštejemo skupaj razreda (6) *načrtovanje službene poti* in *ostali službeni nameni*.

Pri naslednjih štirih vprašanjih so anketiranci lahko izbrali le po enega od ponujenih odgovorov.

Tako za službene kot prostočasne aktivnosti anketiranci največkrat uporabljajo karte *enkrat na teden*, saj smo z anketo zajeli izredno kartografsko pismeno populacijo (slika 7b). Enkrat tedensko karte uporablja za službene aktivnosti 171 anketirancev, za prostočasne pa 363. Za prostočasne aktivnosti karte uporabljajo *vsaj nekajkrat na leto* vsi, za službene aktivnosti kart *nikoli* ne uporablja 95 anketirancev (16 %).



a b

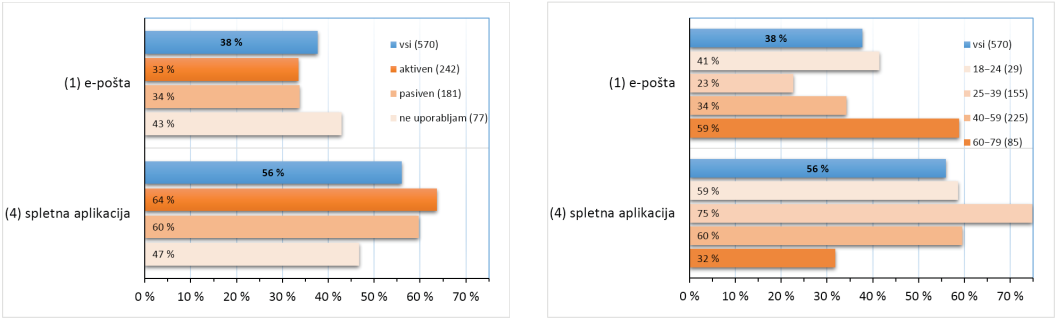
Slika 8: Odgovor na vprašanji: (a) »kakšen tip kart največkrat uporabljate« (602 veljavna odgovora) in (b) »če uporabljate spletne karte, kje si jih največkrat prikazujete« (601 veljaven odgovor).

Večina največkrat uporablja *spletne karte* oziroma *spletne in tiskane karte v enakem razmerju*, le 12 % jih največkrat uporablja samo *tiskane karte* (slika 8a). Od 75 takšnih, ki največkrat uporabljajo samo *tiskane karte*, jih samo 15 nikoli ne uporablja spletnih kart, kar razberemo iz naslednjega vprašanja, ki sprašuje po napravi, na kateri si anketiranci največkrat prikazujejo spletne karte (sliki 8b). Če pogledamo razrez še po starostnih razredih, vidimo, da tiskane karte največ uporablja starostni razred 60–79, kjer je delež takšnih, ki uporabljajo tiskane karte, 22 %. Največ pa uporabljajo samo spletne karte v starostnih razredih 18–24 in 25–39, kjer sta deleža v teh razredih kar 64 % oziroma 67 %. Tiskane in spletne karte pa največkrat uporabljata starostna razreda 40–59 in 60–79 z 51 %. Spletne karte si polovica (52 %) prikazuje na mobilnem telefonu, sledi računalnik s 36 %, veliko manjše deleže imata tablica in navigacijska naprava z GNSS (sliki 8b). Razred *drugo* pa bi lahko enakomerno prišteli k računalniku in mobilnemu telefonu, saj je v njem večina poudarila, da uporabljajo za prikaz spletnih kart več naprav hkrati.

3.5 Pripravljenost za sodelovanje in najljubši način sporočanja sprememb

Na ključno vprašanje ankete »ali bi bili pripravljeni sporočiti spremembo oziroma napako tistim, ki skrbijo za njeno posodabljanje« je odgovorilo 599 anketirancev: 90 % z *da*, 5 % z *ne* in 5 % z *da, pogojno*. V slednjo skupino se je uvrstila večina takšnih, ki so poudarili, da bi sodelovali, če bi bilo sodelovanje dovolj enostavno in če bi jih večkrat opomnili, da se akcija izvaja. Če povzamemo, vidimo, da bi skupno kar 95 % anketirancev sodelovalo v takšnih prostovoljskih akcijah.

Na vprašanje »kako bi najraje sporočili spremembo/napako na karti« je odgovorilo 570 anketirancev. Največ (319 oziroma 56 %) bi jih uporabilo (4) spletno aplikacijo oziroma program za sporočanje sprememb, 215 (38 %) bi jih uporabilo (1) e-pošto, 23 (4 %) (3) telefon, dva (2) klasično pošto in 11 (2 %) jih je odgovorilo *drugo*. V razredu *drugo* prevladujejo odgovori, ki izpostavljajo hkratno uporabo več že naštetih možnosti, med njimi sta dva navedla, da bi napako fotografirala in jo poslala kot MMS. Če odgovore v najštevilčnejših skupinah takšnih, ki bi napako poslali po e-pošti ali bi uporabili spletno aplikacijo, razdelimo po njihovi lastni oceni, kako aktivni so na spletnih družabnih omrežjih (slika 9a), bi spletno aplikacijo raje kot povprečen anketiranec uporabljati anketiranci, ki so že do sedaj bolj spletno aktivni, torej izbiri (1) *sem aktiven uporabnik* in (2) *sem pasiven uporabnik*. Skupina (3) *ne uporabljam spletnih družabnih omrežij* pa je bolj naklonjena uporabi e-pošte za sporočanje sprememb, kjer za nekoliko presega povprečje vseh vprašanih. Če odgovore prikažemo še razdeljene po starostnih skupinah (slika 9b), bi spremembe po e-pošti raje kot povprečni vprašani pošiljala starostna razreda 18–29 let in 60–79 let. Razreda z več kot 80 let nismo prikazali, saj sta v njem samo dva odgovora, ki sta izbrala telefon oziroma e-pošto. Bolj naklonjena spletni aplikaciji sta pričakovano starostna razreda 25–39 let in 40–59 let.



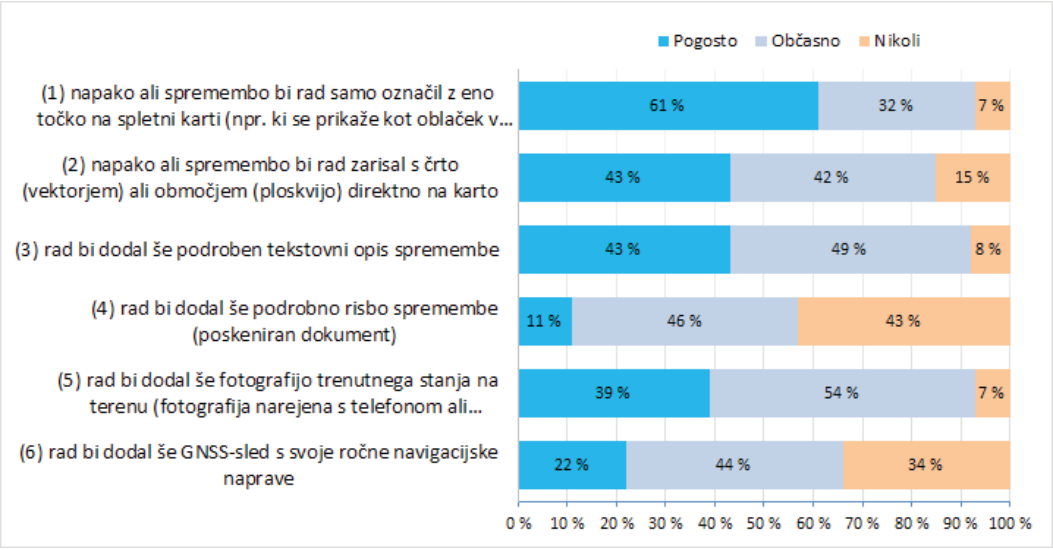
Slika 9: Odgovori na vprašanje: »kako bi najraje sporočili spremembo/napako na karti«: (a) odgovori glede na vprašanje »kakšen tip uporabnika spletnih družabnih omrežij ste«: (1) sem aktiven uporabnik, (2) sem pasiven uporabnik, (3) ne uporabljam družabnih omrežij in (b) glede na »starostni razred«: 18–24, 25–39, 40–59 in 60–79. V oklepaju je zapisano veljavno število vprašanih pri osnovnem vprašanju (570) oziroma razredu podrobnejše delitve (število anketirancev, ki so odgovorili na obe vprašanji).

3.6 Preferenčni način delovanja aplikacije za zbiranje sprememb na kartah

Sledila so tri vprašaja, kako bi morala delovati aplikacija za sporočanje oziroma zbiranje sprememb, da bi vprašani pri tem najraje sodelovali: najprej »na kak način bi najraje sporočili spremembo« (slika 10), potem »kaj vam je najpomembneje, da aplikacija omogoča« (slika 12) in nazadnje »kakšen odziv pričakujete od urednika aplikacije« (slika 11). Vrstni red zadnjih dveh smo pri prikazu in ovrednotenju zamenjali, da ju lahko obravnavamo hkrati z istimi presečnimi vprašanji: »kako aktivni uporabniki spletnih družabnih omrežij ste« ter »kako bi najraje sporočili spremembo na karti«.

Pri vprašanju »Če bi uporabili aplikacijo za sporočanje sprememb, ki vključuje tudi spletno karto, kako bi najraje opisali spremembo/napako na njej?« so se med potencialno največkrat uporabljene možnosti oziroma potencialne funkcionalnosti aplikacije z največ odgovori v razredih *pogosto* ali *občasno* uvrstile (slika 10): (1) *napako ali spremembo bi rad samo označil z eno točko na spletni karti (npr. ki se prikaže*

kot oblaček v Google Maps), (2) *napako ali spremembo bi rad zarisal s črto (vektorjem) ali območjem (ploskvijo) direktno na karto*, (3) *rad bi dodal še podroben tekstovni opis spremembe* in (5) *rad bi dodal še fotografijo trenutnega stanja na terenu (fotografija narejena s telefonom ali fotoaparatom*). Delež takšnih, ki teh možnosti ne bi uporabljali (ki so izbrali *nikoli*), je nižji od 15 %. Le dve možnosti, to sta (4) *rad bi dodal še podrobno risbo spremembe (poskeniran dokument)* in (6) *rad bi dodal še GNSS-sled (angl. GNSS track) s svoje ročne navigacijske naprave*, imata večino odgovorov v razredih *občasno* in *nikoli*, razred *pogosto* pa ne presega 22 %.



Slika 10: Odgovori na vprašanje: »Če bi uporabili aplikacijo za sporočanje sprememb, ki vključuje tudi spletno karto, kako bi najraje opisali spremembo/napako na njej?« Predstavljeni so vsi veljavni odgovori, po zaporedju vprašanj si sledijo: (1) 528, (2) 523, (3) 531, (4) 519, (5) 532, (6) 521.

Če si odgovore na vprašanja ogledamo še ločeno glede na dosedanjo aktivnost anketirancev v spletnih družabnih omrežjih (preglednica 1), predvsem modro obarvane razrede z največ odgovori, opazimo, da so aktivni uporabniki kar na vsa vprašanja večkrat od povprečja vseh anketirancev izbrali možnost *pogosto*. Pri vprašanjih (4) in (6), kjer je večina anketirancev izbrala možnost *občasno*, pa so tudi njihove vrednosti v tem razredu višje od povprečja vseh anketirancev. Anketiranci, ki *ne uporabljajo družabnih omrežij*, pa so kar pri vseh vprašanjih večkrat od povprečja vseh vprašanih izbrali, da ne bi te možnosti uporabili *nikoli*.

V preglednici 2 so odgovori razdeljeni glede na to, kaj so anketiranci izbrali za svojo najljubšo metodo oddaje sprememb: (1) *e-pošto* ali (4) *spletno aplikacijo*. Preostalih treh možnih odgovorov, tj. *navadna pošta*, *telefon* in *drugo*, nismo prikazali, saj se je zanje odločilo veliko manj anketirancev. Pri prvih dveh funkcionalnostih, kjer je večina izbrala *pogosto*, imajo anketiranci iz razreda (4) *uporabil bi spletno aplikacijo*, kar za 10 % višje povprečje v razredu *pogosto* od skupnega povprečja. Razlika med razredoma (1) *oddal bi preko e-pošte* in (4) *preko spletne aplikacije* znaša celo 20 %. Pri vprašanjih (4), (5) in (6), kjer je večina anketirancev izbrala možnost *občasno*, so tudi njihove vrednosti v tem razredu približno enake povprečju vseh anketirancev.

Preglednica 1: Odgovori na vprašanje »Če bi uporabili aplikacijo za sporočanje sprememb, ki vključuje tudi spletno karto, kako bi najraje opisali spremembo/napako na njej?«, ločeni glede na odgovore »kakšen tip uporabnika spletnih družabnih omrežij ste«: (1) *sem aktiven uporabnik*, (2) *sem pasiven uporabnik*, (3) *ne uporabljam družabnih omrežij*. Delež, v katerem je največ odgovorov v posamezni rubriki, je obarvan modro.

Vprašanje	Pogosto	Občasno	Nikoli	Kdo (veljavni odgovori)
(1) napako ali spremembo bi rad samo označil z eno točko na spletni karti (npr. ki se prikaže kot oblaček v Google Maps)	**61 %**	**32 %**	**7 %**	**vsi (528)**
	67 %	27 %	6 %	(1) aktiven (231)
	58 %	34 %	8 %	(2) pasiven (177)
	59 %	29 %	12 %	(3) ne uporabljam (73)
(2) napako ali spremembo bi rad zarisal s črto (vektorjem) ali območjem (ploskvijo) direktno na karto	**43 %**	**42 %**	**15 %**	**vsi (523)**
	53 %	36 %	11 %	(1) aktiven (232)
	37 %	48 %	15 %	(2) pasiven (176)
	40 %	43 %	17 %	(3) ne uporabljam (72)
(3) rad bi dodal še podroben tekstovni opis spremembe	**43 %**	**49 %**	**8 %**	**vsi (531)**
	47 %	46 %	7 %	(1) aktiven (234)
	36 %	55 %	9 %	(2) pasiven (176)
	43 %	47 %	11 %	(3) ne uporabljam (75)
(4) rad bi dodal še podrobno risbo spremembe (poskeniran dokument)	**11 %**	**46 %**	**43 %**	**vsi (519)**
	13 %	50 %	37 %	(1) aktiven (230)
	10 %	40 %	50 %	(2) pasiven (173)
	5 %	47 %	48 %	(3) ne uporabljam (73)
(5) rad bi dodal še fotografijo trenutnega stanja na terenu (fotografija narejena s telefonom ali fotoaparatom)	**39 %**	**54 %**	**7 %**	**vsi (532)**
	45 %	50 %	5 %	(1) aktiven (235)
	35 %	58 %	7 %	(2) pasiven (177)
	27 %	60 %	13 %	(3) ne uporabljam (75)
(6) rad bi dodal še GNSS-sled (angl. *GNSS track*) s svoje ročne navigacijske naprave	**22 %**	**44 %**	**34 %**	**vsi (521)**
	29 %	45 %	26 %	(1) aktiven (232)
	18 %	45 %	37 %	(2) pasiven (172)
	18 %	37 %	45 %	(3) ne uporabljam (73)

V preglednici 3 so odgovori razdeljeni glede na tri starostne razrede, v katerih je bilo največ anketirancev: (2) 25–39, (3) 40–59 in (4) 60–79. V starostnem razredu (4) 60–79 so deleži anketirancev, ki ne bi *nikoli* uporabili opisane funkcionalnosti, višji, kot je povprečje za vse vprašane v razredu *nikoli*. Edina izjema je funkcionalnost (4) *rad bi dodal še podrobno risbo spremembe*, kjer je delež takšnih, ki tega ne bi *nikoli* uporabljali, v tem starostnem razredu kar 12 %.

Presek z vprašanjem »kaj ste ljubiteljsko« (slika 3b) in primerjava samo med najpogosteje izbranim odgovorom (1) *planinec in alpinist* ter vsemi ostalimi odgovori, seštetimi v razred *drugo*, ne da bistvenih razlik, zato ga ne bomo prikazali. Odstopanja od povprečja za vse odgovore so v rangu nekaj odstotkov. V vsako skupino je spadalo največ 242 hkratnih odgovorov na obe vprašanji (kako pogosto bi uporabili, kaj ste ljubiteljsko).

Preglednica 2: Odgovori na vprašanje »Če bi uporabili aplikacijo za sporočanje sprememb, kako bi najraje opisali spremembo/napako na njej?«, ločeni glede na odgovore »kako bi najraje sporočili spremembo na karti?«: (1) *po e-pošti* ter (4) *z aplikacijo za oddajanje sprememb*. Delež, v katerem je največ odgovorov v posamezni rubriki, je obarvan modro.

Vprašanje	Pogosto	Občasno	Nikoli	Kdo (veljavni odgovori)
(1) napako ali spremembo bi rad samo označil z eno točko na spletni karti (npr. ki se prikaže kot oblaček v Google Zemljevidih)	**61 %**	**32 %**	**7 %**	**vsi (528)**
	49 %	38 %	13 %	(1) e-pošto (189)
	70 %	27 %	3 %	(4) spletno aplikacijo (308)
(2) napako ali spremembo bi rad zarisal s črto (vektorjem) ali območjem (ploskvijo) direktno na karto	**43 %**	**42 %**	**15 %**	**vsi (523)**
	32 %	44 %	24 %	(1) e-pošto (184)
	52 %	39 %	9 %	(4) spletno aplikacijo (310)
(3) rad bi dodal še podroben tekstovni opis spremembe	**43 %**	**49 %**	**8 %**	**vsi (531)**
	44 %	48 %	8 %	(1) e-pošto (188)
	43 %	48 %	9 %	(4) spletno aplikacijo (312)
(4) rad bi dodal še podrobno risbo spremembe (poskeniran dokument)	11 %	46 %	43 %	**vsi (519)**
	21 %	45 %	34 %	(1) e-pošto (183)
	5 %	47 %	48 %	(4) spletno aplikacijo (308)
(5) rad bi dodal še fotografijo trenutnega stanja na terenu (fotografija narejena s telefonom ali fotoaparatom)	**39 %**	**54 %**	**7 %**	**vsi (532)**
	42 %	52 %	6 %	(1) e-pošto (190)
	37 %	55 %	8 %	(4) spletno aplikacijo (311)
(6) rad bi dodal še GNSS-sled (ang. *GNSS track*) s svoje ročne navigacijske naprave	**22 %**	**44 %**	**34 %**	**vsi (521)**
	19 %	42 %	39 %	(1) e-pošto (183)
	25 %	45 %	30 %	(4) spletno aplikacijo (310)

Pri vprašanju glede podrobnih postopkovnih navodil za ravnanje urednika aplikacije so se med največkrat zaželene odzive, s skupno največ odgovori v razredih *pogosto* ali *občasno*, uvrstile možnosti (slika 11): (1) *dobim avtomatsko e-pošto, da je bil moj prispevek oddan v sistem*, (3) *da me urednik obvesti, kdaj bo za območje, za katero sem oddal prispevek, izdana nova verzija karte* in (5) *da me obvesti, ko se moj prispevek briše, in pove tudi razlog za brisanje*. Nekako srednje zaželeni sta možnosti (2) *da mi urednik pošlje osebno e-pošto, v kateri me obvesti, da je bil moj prispevek sprejet in kdaj ga bodo obravnavali* in (4) *da je na obnovljeni karti napisano, da so pri njeni izdelavi uporabili tudi prostovoljno pridobljene podatke*. Pri slednjih dveh je največ dogovorov sicer v razredu *občasno*, vendar so deleži v razredih *pogosto* in *nikoli* primerljivi.

Če si odgovore na vprašanja ogledamo še ločeno glede na dosedanjo aktivnosti anketirancev v spletnih družabnih omrežjih (preglednica 4), vidimo enako podrobno razporeditev največkrat izbranih odgovorov kot pri vprašanjih, obravnavanih v preglednici 1. Anketiranci, ki so se opredelili kot *aktivni*, so na vprašanja (1), (3) in (5), kjer je večina odgovorila *pogosto*, večkrat od povprečja izbrali možnost *pogosto*. Na vprašanji (2) in (4), kjer je pri večini glavnina odgovorov v razredu *občasno*, pa je delež aktivnih v tem razredu prav tako višji. Anketiranci, ki *ne uporabljajo družabnih omrežij*, pa so kar pri vseh vprašanjih, večkrat od povprečja, izbrali možnost *nikoli*.

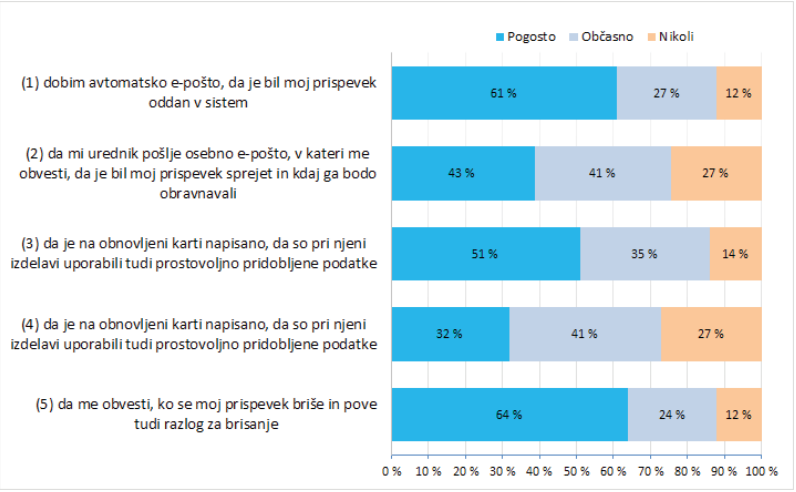
Preglednica 3: Odgovori na vprašanje »Če bi uporabili aplikacijo za sporočanje sprememb, kako bi najraje opisali spremembo/napako na njej?«, ločeni glede na tri starostne razrede z največ anketiranci: (2) 25–39, (3) 40–59 in (4) 60–79. Delež, v katerem je največ odgovorov v posamezni rubriki, je obarvan modro.

Vprašanje	Pogosto	Občasno	Nikoli	Kdo (veljavni odgovori)
(1) napako ali spremembo bi rad samo označil z eno točko na spletni karti (npr. ki se prikaže kot oblaček v Google Zemljevidih)	**61 %**	**32 %**	**7 %**	**vsi (528)**
	72 %	27 %	1 %	(2) 25–39 (154)
	60 %	31 %	9 %	(3) 40–59 (216)
	46 %	37 %	17 %	(4) 60–79 (76)
(2) napako ali spremembo bi rad zarisal s črto (vektorjem) ali območjem (ploskvijo) direktno na karto	**43 %**	**42 %**	**15 %**	**vsi (523)**
	51 %	40 %	9 %	(2) 25–39 (154)
	46 %	40 %	14 %	(3) 40–59 (218)
	32 %	50 %	18 %	(4) 60–79 (74)
(3) rad bi dodal še podroben tekstovni opis spremembe	**43 %**	**49 %**	**8 %**	**vsi (531)**
	45 %	48 %	7 %	(2) 25–39 (154)
	42 %	52 %	6 %	(3) 40–59 (219)
	40 %	47 %	13 %	(4) 60–79 (77)
(4) rad bi dodal še podrobno risbo spremembe (poskeniran dokument)	**11 %**	**46 %**	**43 %**	**vsi (519)**
	6 %	44 %	50 %	(2) 25–39 (154)
	11 %	50 %	39 %	(3) 40–59 (214)
	23 %	46 %	31 %	(4) 60–79 (74)
(5) rad bi dodal še fotografijo trenutnega stanja na terenu (fotografija narejena s telefonom ali fotoaparatom)	**39 %**	**54 %**	**7 %**	**vsi (532)**
	34 %	61 %	5 %	(2) 25–39 (153)
	41 %	52 %	7 %	(3) 40–59 (220)
	35 %	56 %	9 %	(4) 60–79 (79)
(6) rad bi dodal še GNSS-sled (ang. *GNSS track*) s svoje ročne navigacijske naprave	**22 %**	**44 %**	**34 %**	**vsi (521)**
	20 %	50 %	30 %	(2) 25–39 (155)
	27 %	38 %	35 %	(3) 40–59 (214)
	23 %	39 %	38 %	(4) 60–79 (74)

V preglednici 5 so odgovori razdeljeni še glede na to, ali so anketiranci za najljubšo metodo oddaje sprememb izbrali (1) *e-pošto* ali (4) *spletno aplikacijo*. Pri prvem vprašanju (1) *da dobim avtomatsko e-pošto, ko je bil moj prispevek oddan v sistem*, kjer jih je večina odgovorila s *pogosto*, je delež odgovorov v razredu *pogosto* za 10 % višji od povprečja pri takšnih, ki bi najraje uporabljali (1) *e-pošto*. Pri vprašanju (4) *da je na obnovljeni karti napisano, da so pri njeni izdelavi uporabili tudi prostovoljno pridobljene podatke*, kjer je večina odgovorila z *občasno*, pa je delež takšnih iz razreda (1) *z e-pošto* 7 % višji od povprečja. Pri drugih vprašanjih ni zaznati več kot nekajodstotnih razlik.

V preglednici 6 so odgovori deljeni še glede na starostne razrede: (2) 25–39, (3) 40–59 in (4) 60–79. V starostnem razredu 60–79 so vsa povprečja za odgovor *nikoli* nižja od skupnih povprečij, kar pomeni, da starejši izjemno cenijo vse povratne informacije, ki jih dobijo od organizatorja. Pri vprašanju (1)

da dobim avtomatsko e-pošto, ko je bil moj prispevek oddan v sistem, kjer je večina odgovorila *pogosto*, je delež takšnih v starostnem razredu 60–79 za 17 % višji od skupnega povprečja, v starostnem razredu 25–39 pa 6 % nižji od povprečja. Zelo povedna je še razporeditev odgovorov pri vprašanju (4) *da je na obnovljeni karti napisano, da so pri njeni izdelavi uporabili tudi prostovoljno pridobljene podatke*, kjer je večina izbrala možnost *občasno*. V starostnem razredu 25–39 je bil delež takšnih, ki so izbrali *pogosto*, najvišji.



Slika 11: Odgovori na vprašanje »Če bo urednik aplikacije za javljanje sprememb na kartah odgovarjal prostovoljcem, ki bodo oddali prispevke, kako pomembno vam je, da …«. Predstavljeni so vsi veljavni odgovori, po zaporedju vprašanj si sledijo: (1) 499, (2) 499, (3) 501, (4) 498 in (5) 499.

Ker na podlagi analize teh dveh vprašanj (preglednice 1, 2, 3, 4, 5, 6) že lahko sklepamo na zakonitost, bomo pri naslednjem vprašanju »Kako pomembno vam je, da spletna aplikacija za javljanje sprememb na kartah omogoča naslednje?« prikazali samo povprečja vseh anketirancev (slika 12). Zakonitost lahko strnemo v: pri vprašanjih, kjer je najvišji delež odgovorov v razredu *pogosto*, delež odgovorov *pogosto* še zraste, če vprašamo samo takšne, ki so se opredelili kot aktivni na spletnih družabnih omrežjih oziroma so tudi aktivnejši v prostovoljskih društvih. Deleži v razredu *nikoli ne bi uporabil te funkcionalnosti* narastejo pri vseh odgovorih, če vprašamo samo takšne, ki so se opredelili za *neaktivne*.

Vprašanje z največ razpoložljivimi odgovori je bilo »kako pomembno vam je, da spletna aplikacija za javljanje sprememb na kartah omogoča naslednje«. V njem smo spet spraševali po pomenu različnih funkcionalnosti aplikacije za zbiranje sprememb (slika 12). Največ odgovorov v razredu *zelo pomembno* in tudi velik delež odgovorov v razredu *srednje pomembno*, skupno 87 %, je pri funkcionalnosti (1) *poleg karte v aplikaciji vidim še državni ortofoto ali satelitski posnetek (s katerima si pomagam, da identificiram lokacijo spremembe)*. Med pomembnejše lahko štejemo še funkcionalnosti (4) *da ob oddaji dobim odziv urednika, da je prejel mojo pripombo* in (8) *da vidim status prispevkov (npr. prispevek je bil posredovan naprej, prispevek so upoštevali pri popravi karte)*. Slednji sta imeli v razredih *zelo* in *srednje pomembno* skupaj 73 % oziroma 75 %. Kot najmanj pomembne funkcionalnosti, torej takšne z največ odgovori v

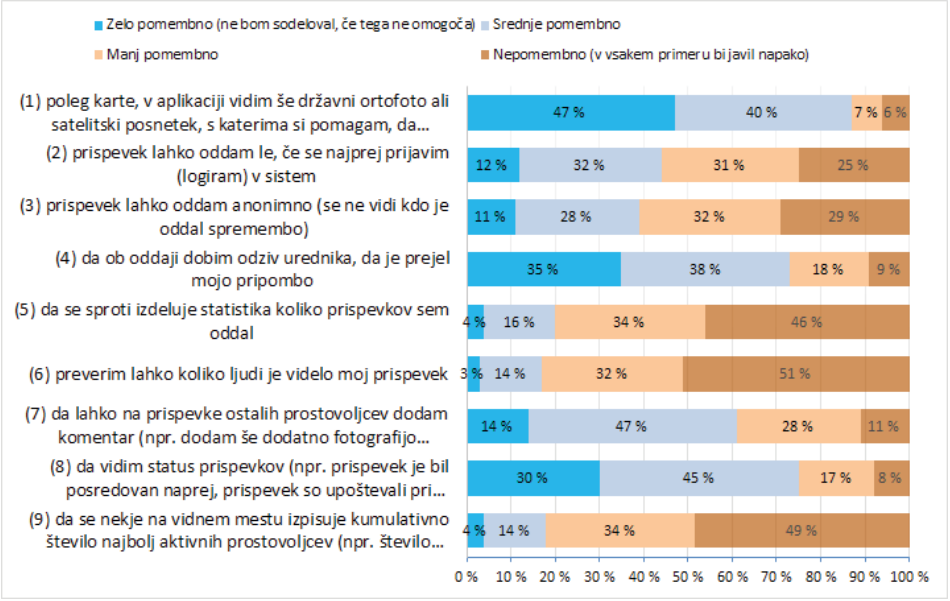
razredih *nepomembno* in *manj pomembno*, so izbrali: (5) *da se sproti izdeluje statistika, koliko prispevkov sem oddal*, (6) *preverim lahko, koliko ljudi je videlo moj prispevek* in (9) *da se nekje na vidnem mestu izpisuje kumulativno število najbolj aktivnih prostovoljcev (npr. število oddanih prispevkov prvih treh prostovoljcev)*. Slednje imajo v razredih *zelo* in *srednje pomembno* manj kot 20 % odgovorov. Kot vprašanje, v katerem je bilo izrazito največ odgovorov v razredu *srednje pomembno*, kar 47 %, lahko izpostavimo funkcionalnost (7) *da lahko na prispevke ostalih prostovoljcev dodam komentar (npr. dodam še dodatno fotografijo spremembe)*. Vprašanji, ki sta spraševali ravno po nasprotnih možnostih izvedbe osnovnega sistema za oddajanje sprememb (2) *prispevek (spremembo ali napako) lahko oddam le, če se najprej prijavim (logiram) v sistem* in (3) *prispevek lahko oddam anonimno (se ne vidi, kdo je oddal spremembo)*, pa sta bili deležni približno enakomerne razporeditve odgovorov v vseh štirih razredih. Pri obeh prevladujejo odgovori v razredih *srednje* in *manj pomembno*, skupno je v prvem 63 % in drugem 60 % odgovorov.

Preglednica 4: Odgovori na vprašanje »Če bo urednik aplikacije za javljanje sprememb na kartah odgovarjal prostovoljcem, ki bodo oddali prispevke, kako pomembno vam je, da …«, ločeni glede na odgovore »kakšen tip uporabnika spletnih družabnih omrežij ste«: (a) *aktiven uporabnik*, (b) *pasiven uporabnik*, (c) *ne uporabljam družabnih omrežij*. Delež, v katerem je največ odgovorov v posamezni rubriki, je obarvan modro.

Vprašanje	Pogosto	Občasno	Nikoli	Kdo (veljavni odgovori)
(1) dobim avtomatsko e-pošto, da je bil moj prispevek oddan v sistem	**61 %**	**27 %**	**12 %**	**vsi (499)**
	66 %	24 %	10 %	(1) aktiven (238)
	60 %	28 %	12 %	(2) pasiven (179)
	49 %	35 %	16 %	(3) ne uporabljam (77)
(2) da mi urednik pošlje osebno e-pošto, v kateri me obvesti, da je bil moj prispevek sprejet in kdaj ga bodo obravnavali	**32 %**	**41 %**	**27 %**	**vsi (499)**
	33 %	44 %	23 %	(1) aktiven (238)
	31 %	41 %	28 %	(2) pasiven (180)
	25 %	34 %	41 %	(3) ne uporabljam (76)
(3) da me urednik obvesti, kdaj bo za območje, za katero sem oddal prispevek, izdana nova verzija karte	**51 %**	**35 %**	**14 %**	**vsi (501)**
	55 %	32 %	13 %	(1) aktiven (238)
	48 %	37 %	15 %	(2) pasiven (180)
	48 %	36 %	16 %	(3) ne uporabljam (77)
(4) da je na obnovljeni karti napisano, da so pri njeni izdelavi uporabili tudi prostovoljno pridobljene podatke	**32 %**	**41 %**	**27 %**	**vsi (498)**
	30 %	48 %	22 %	(1) aktiven (238)
	34 %	34 %	32 %	(2) pasiven (179)
	32 %	37 %	31 %	(3) ne uporabljam (76)
(5) da me obvesti, ko se moj prispevek briše in pove tudi razlog za brisanje	**64 %**	**24 %**	**12 %**	**vsi (499)**
	66 %	22 %	12 %	(1) aktiven (238)
	63 %	27 %	10 %	(2) pasiven (180)
	61 %	23 %	16 %	(3) ne uporabljam (75)

Preglednica 5: Odgovori na vprašanje »Če bo urednik aplikacije za javljanje sprememb na kartah odgovarjal prostovoljcem, kako pomembno vam je, da …«, ločeni glede na odgovore »kako bi najraje sporočili spremembo na karti«: (1) *po e-pošti* ter (4) *v aplikacijo za oddajanje sprememb*. Delež, v katerem je največ odgovorov v posamezni rubriki, je obarvan modro.

Vprašanje	Pogosto	Občasno	Nikoli	Kdo (veljavni odgovori)
(1) dobim avtomatsko e-pošto, da je bil moj prispevek oddan v sistem	**61 %**	**27 %**	**12 %**	**vsi (499)**
	71 %	22 %	7 %	(1) e-pošto (173)
	57 %	30 %	13 %	(4) spletno aplikacijo (299)
(2) da mi urednik pošlje osebno e-pošto, v kateri me obvesti, da je bil moj prispevek sprejet in kdaj ga bodo obravnavali	**32 %**	**41 %**	**27 %**	**vsi (499)**
	39 %	41 %	20 %	(1) e-pošto (174)
	32 %	41 %	27 %	(4) spletno aplikacijo (298)
(3) da me urednik obvesti, kdaj bo za območje, za katero sem oddal prispevek, izdana nova verzija karte	**51 %**	**35 %**	**14 %**	**vsi (501)**
	50 %	38 %	12 %	(1) e-pošto (175)
	51 %	34 %	15 %	(4) spletno aplikacijo (299)
(4) da je na obnovljeni karti napisano, da so pri njeni izdelavi uporabili tudi prostovoljno pridobljene podatke	**32 %**	**41 %**	**27 %**	**vsi (498)**
	29 %	48 %	23 %	(1) e-pošto (173)
	35 %	37 %	28 %	(4) spletno aplikacijo (298)
(5) da me obvesti, ko se moj prispevek briše in pove tudi razlog za brisanje	**64 %**	**24 %**	**12 %**	**vsi (499)**
	62 %	27 %	11 %	(1) e-pošto (175)
	65 %	23 %	12 %	(4) spletno aplikacijo (298)



Slika 12: Odgovori na vprašanje »Kako pomembno vam je, da spletna aplikacija za javljanje sprememb na kartah omogoča naslednje …«. Predstavljeni so vsi veljavni odgovori, po zaporedju vprašanj si sledijo: (1) 503, (2) 503, (3) 505, (4) 506, (5) 505, (6) 505, (7) 503, (8) 506 in (9) 506.

Preglednica 6: Odgovori na vprašanje »Če bo urednik aplikacije za javljanje sprememb na kartah odgovarjal prostovoljcem, kako pomembno vam je, da …« ločeni glede na odgovore treh starostnih razredov, v katerih je bilo največ anketirancev: (2) 25–39, (3) 40–59 in (4) 60–79. Delež, v katerem je največ odgovorov v posamezni rubriki, je obarvan modro.

Vprašanje	Pogosto	Občasno	Nikoli	Kdo (veljavni odgovori)
(1) dobim avtomatsko e-pošto, da je bil moj prispevek oddan v sistem	**61 %**	**27 %**	**12 %**	**vsi (499)**
	55 %	35 %	10 %	(2) 25–39 (155)
	61 %	24 %	15 %	(3) 40–59 (222)
	78 %	13 %	9 %	(4) 60–79 (81)
(2) da mi urednik pošlje osebno e-pošto, v kateri me obvesti, da je bil moj prispevek sprejet in kdaj ga bodo obravnavali	**32 %**	**41 %**	**27 %**	**vsi (499)**
	34 %	41 %	25 %	(2) 25–39 (155)
	26 %	41 %	33 %	(3) 40–59 (222)
	38 %	43 %	19 %	(4) 60–79 (81)
(3) da me urednik obvesti, kdaj bo za območje, za katero sem oddal prispevek, izdana nova verzija karte	**51 %**	**35 %**	**14 %**	**vsi (501)**
	53 %	33 %	14 %	(2) 25–39 (155)
	49 %	36 %	15 %	(3) 40–59 (222)
	50 %	35 %	15 %	(4) 60–79 (82)
(4) da je na obnovljeni karti napisano, da so pri njeni izdelavi uporabili tudi prostovoljno pridobljene podatke	**32 %**	**41 %**	**27 %**	**vsi (498)**
	40 %	37 %	23 %	(2) 25–39 (155)
	29 %	40 %	31 %	(3) 40–59 (221)
	23 %	51 %	26 %	(4) 60–79 (81)
(5) da me obvesti, ko se moj prispevek briše in pove tudi razlog za brisanje	**64 %**	**24 %**	**12 %**	**vsi (499)**
	68 %	24 %	8 %	(2) 25–39 (155)
	61 %	22 %	17 %	(3) 40–59 (222)
	60 %	29 %	11 %	(4) 60–79 (81)

Na koncu so anketiranci lahko zapisali še dodatne komentarje, kar jih je naredilo 96. V slednjih je bilo podanih več predlogov, ki delno povzemajo že v prejšnjih vprašanjih obravnavane možnosti. Večina jih je dodatno izpostavila pomen povratnih informacij. Poudarjajo še velik pomen enostavnega uporabniškega vmesnika aplikacije za zbiranje sprememb, nekateri dodajajo še primere že obstoječih pobud za zbiranje sprememb na različnih mednarodnih in domačih portalih. Izpostavljajo še razdrobljenost na tem področju, saj za vsako pobudo obstaja drug način sporočanja sprememb.

4 DISKUSIJA

V opisani raziskavi, narejeni na podlagi spletne ankete, ki je zajela 653 slovenskih potencialnih prostovoljcev za oddajo sprememb na topografskih kartah, hitro opazimo podobnosti z rezultati tujih raziskav. Že v dodatnih komentarjih anketiranci izpostavljajo, da obstajajo ločene pobude za zbiranje popravkov na različnih kartah (na primer PlanGIS, Open Street Map, Google Maps), ki pa se ne povezujejo med seboj. Zato bi moral prostovoljec vnašati isto zaznano spremembo v naravi v več sistemov, če bi želel, da bi se napaka odpravila na več različnih kartah. To ga odvrne od sodelovanja, saj nikakor ne more odstraniti napake z vseh kart hkrati (državnih kart, kart različnih založb, mednarodnih prostovoljnih kartografskih portalov). Podobno je bilo po rušilnem potresu leta 2018 v Mehiki, ko je hkrati delovalo veliko različnih prostovoljnih pobud za sporočanje posledic in potreb. Tam je Tapia-McClung (2018) ugotovil, da zaradi velikega števila vzporednih pobud nikakor nisi mogel najti vseh ustreznih informacij na enem mestu. S tem se je še poglobil problem digitalne izključenosti, ne samo tistih, ki niso znali

uporabljati spleta, ampak tudi takšnih, ki niso vedeli, katere pobude že obstajajo.

Razliko glede na starost anketirancev v naši raziskavi najprej opazimo pri analizi vprašanja, kakšen tip kart običajno uporabljajo: tiskane, spletne ali oboje v enakem razmerju. Tu smo videli, da povprečno 12 % vprašanih največkrat uporablja samo tiskane karte. V starostnem razredu 60–79 se delež uporabnikov tiskanih kart dvigne na 22 %. Mlajši anketiranci več uporabljajo spletne karte, skupno povprečje je 46 %, v starostnih razredih 18–24 in 25–39 pa ti deleži poskočijo na 64 % oziroma 67 %. Starejši raje kombinirajo tiskane in spletne karte, kjer v starostnih razredih 40–59 in 60–79 za 10 % presegajo povprečje kombinirane uporabe obeh tipov kart, ki znaša 41 %. Višji deleži kombiniranja spletnih in tiskanih kart ter višji deleži uporabe tiskanih kart v najstarejšem starostnem razredu lahko ponujajo več ugotovitev. Prvič, da starejši tiskane karte uporabljajo kot medij, ki so ga navajeni in jim je v veliko pomoč pri razumevanju spletnih kart, in drugič, da jih begajo različni tipi spletnih kart ali motijo premajhne črke ali znaki. Mogoče je tudi sklepati, da čutijo odpor do računalniških novosti oziroma so slabše digitalno pismeni. Vse te vzroke lahko uvrstimo med kognitivne, motorične in senzorične zaviralce sodelovanja starejših v prostovoljnih spletnih pobudah (Gottwald et al., 2016). Zato moramo med možnostmi, kako označiti spremembo, vsekakor dopustiti tudi tiskane karte, saj bomo tako lahko zagotovili večjo vključenost starejših. Podobno sta ugotovila Rzeszewski in Kotus (2019). Na razmeroma majhnem vzorcu 30 preizkuševalcev testne aplikacije za sodelovalno prostorsko načrtovanje sta sklepala, da bi v prihodnje kar 27 % njunih preizkuševalcev želelo spremembe sporočiti z uporabo tiskane karte, torej brez spletne aplikacije.

Digitalna pismenost ne pomeni težave samo pri uporabi spletnih kartografskih portalov, temveč ima veliko vlogo tudi pri tem, kako bi anketiranci najraje posredoval podatke o zaznanih spremembah oziroma napakah na karti, in tudi katere funkcionalnosti aplikacije za zbiranje sprememb na kartah bi uporabljali večkrat. V našem primeru lahko kot digitalno slabše pismene obravnavamo takšne, ki so se opredelili, da ne uporabljajo spletnih družabnih omrežij. Vendar jih zanimivo ne moremo kar enačiti s starostnim razredom 60–79, saj se jih je v tem starostnem razredu največ, to je 72 %, opredelilo kot aktivnih organizatorjev v prostovoljskih društvih, kar je za 7 % več, kot znaša povprečje vseh anketiranih.

Ker smo imeli v naši anketi zadostno število anketirancev v starostnih razredih 25–39, 40–59 in 60–79, lahko potrdimo, da je starost pomemben dejavnik pri tem, kako bi prostovoljci najraje oddali spremembo in kako pogosto bi uporabljali posamezne funkcionalnosti aplikacije za oddajanje sprememb. V celotni populaciji je razmerje 38 % za pošiljanje sprememb po e-pošti in 56 % za spletno aplikacijo, nekaj odstotkov pa odpade še na telefon in klasično pošto. Anketiranci iz starostnega razreda 60–79 let bi raje kot povprečni anketiranec oddajali spremembe po e-pošti, saj je v tej skupini razmerje naslednje: 59 % po e-pošti in 32 % s spletno aplikacijo. V starostnem razredu 25–39 let pa je razmerje ravno obratno: 23 % po e-pošti in 75 % s spletno aplikacijo.

Pri analizi pogostosti uporabe posamezne funkcionalnosti spletne aplikacije za sporočanje sprememb smo ugotovili višja povprečja odgovorov v razredu *nikoli ne bi uporabil vseh predlaganih funkcionalnosti* v starostnem razredu 60–79 let. Gre jih pripisati strahu pred uporabo novih računalniških orodij, ki je že dobro poznan v raziskavah, kjer obravnavajo smernice, kako prilagoditi spletna kartografska orodja ali aplikacije za pridobivanje prostovoljnih podatkov starejšim potencialnim uporabnikom oziroma sodelujočim (Vrenko in Petrovič, 2015; Gottwald et al., 2016; Haklay et al., 2018; Rzeszewski in Kotus, 2019). Nižja povprečja v razredu *nikoli* v starostnem razredu 60–79 let pri vprašanjih, ki so obravnavala različne odzive urednika spletne aplikacije za oddajanje sprememb po e-pošti nazaj k prostovoljcu, pa kažejo, da je starejšim uporabnikom povratna komunikacija izrednega pomena. Baruck et al. (2016) so enako zaznali velik pomen povratnih informacij za

nadaljevanje sodelovanja starejših prostovoljcev v prostovoljni pobudi Tomnod, ki je delovala pod okriljem DigitalGlobe in je bila namenjena razpoznavanju objektov na satelitskih posnetkih (na primer požari, iskanje ostankov pogrešanih letal).

5 SKLEP

Na podlagi analize dosedanje aktivnosti naših anketirancev na spletnih družabnih omrežjih in v prostovoljskih društvih vidimo, da smo zajeli nadpovprečno veliko prostovoljno zelo aktivnih posameznikov (65 % zelo aktivnih v prostovoljskih društvih, 48 % zelo aktivnih na spletnih družabnih omrežjih), ki pomenijo velik potencial za sodelovanje v spletnih pobudah za sporočanje sprememb oziroma napak na kartah. Da bi zagotovili njihovo čim številčnejše in čim dlje trajajoče sodelovanje, ki lahko postopoma postane omejeno z njihovo starostjo, pa bomo pri načrtovanju takšne pobude morali upoštevati, da:

- se poleg spletne aplikacije za sporočanje sprememb omogoči tudi sporočanje sprememb po e-pošti;
- bo administrator pobude skrbel za redno, čim bolj poglobljeno komuniciranje s prostovoljci;
- števci, ki štejejo in kažejo statistike sodelovanja v spletni pobudi (koliko prispevkov sem oddal, koliko ljudi je videlo moj prispevek, kdo je najbolj aktiven prostovoljec), večini niso najbolj pomembni;
- prostovoljec odda zaznano spremembo le na eno mesto in se ta potem samodejno popravi na vseh portalih z različnimi kartami, ki pokrivajo neko geografsko območje.

Predvsem zadnja točka kar kliče po tem, da se pred izvedbo nove pobude za sporočanje sprememb na kartah razišče, kako bi lahko v njej sodelovale tako državne kot zasebne kartografske ustanove in kako bi v proces vključili že obstoječe prostovoljne kartografske pobude.

ZAHVALA

Avtorja se najlepše zahvaljujeva vsem anketirancem in kolegom, ki so poskrbeli, da je anketa dosegla tako velik krog naslovnikov. Raziskava je nastala v okviru aplikativnega raziskovalnega projekta *L2-1826: Lidarsko podprte prostovoljne geografske informacije za ugotavljanje topografskih sprememb*, ki ga sofinancirajo Javna agencija za raziskovalno dejavnost Republike Slovenije, Geodetska uprava Republike Slovenije in Ministrstvo za obrambo Republike Slovenije.

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