

# Barriers for Contributing to VGI Projects

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**Abstract.** Based on the results of an online survey with 516 participants, this paper provides insights into barriers for contributing to VGI projects. The study is based on the VGI platform OpenStreetMap (OSM) and focuses on persons, who are familiar with OSM but don't actively contribute. The findings indicate that the time-consuming aspect of mapping is the most prevalent barrier for contributing to OSM, followed by the completeness of maps, forgetting, and the complexity of editing. These quantitative results are complemented with qualitative responses.

**Keywords:** Volunteered Geographic Information, User-Generated Content, OpenStreetMap

## 1. Introduction

Volunteered geographic information (VGI) – the creation of geographic data outside of professional routines – has gained great importance in the field of geo information over the last decade. Collaboratively created geo data is not only used by private persons and non-governmental organizations, but also by companies and administrations. In order to evaluate if VGI is a sustainable source of data, it is important to know why some people participate in VGI projects and why others do not. While a range of studies are focusing on the motivations of active VGI contributors (Budhatoki et al. 2010, Stark 2011, Lin 2011), barriers and reasons for not contributing to VGI have not been investigated yet.

As a base for our research we are focusing on the platform OpenStreetMap (OSM) – the largest and most successful VGI platform up to now. Target audiences of our study are persons, who are familiar with OSM but don't actively contribute yet, as well as persons, who are not active anymore.

A survey by Budhathoki & Nedovic-Budic (2010) found that only about 30% of the registered users have ever contributed or altered data. Among these, only around 60% contributed more than once. This means, that 80% of the

by now 1.1 million registered users<sup>1</sup> are not active data contributors. While they found the project interesting enough to register, this study tries to investigate what hindered them from being (more) active contributors.

Gaining more insights into barriers for participating in VGI projects is relevant in order to assure the sustainability of VGI projects. VGI can only stay relevant, if there are people willing to contribute and to keep existing data up-to-date.

## **2. Surveying Barriers for Contributing to VGI Projects – the Example of OSM**

### **2.1. Pre-questionnaire**

As a starting point for analysis, we conducted a study among the attendees of the 8th International Symposium on Location-Based Services in Vienna in November 2011. Of the around 200 visitors, who received the printed questionnaire, we retrieved 46 completed questionnaires. As expected, all respondents had at least heard of OSM, with 69% (N=31) stating that they are “familiar with it” and 11% (N=5) considering themselves an expert on OSM. However, only 37% (N=17) ever participated in OSM activities. Those, who never participated (63%, N=29) were asked, if they would be interested in participating in OSM activities and what their motivation would be. Only one person stated no interest in OSM activities at all. 66% stated they would be interested in data collection, 38% in developing tools which use OSM data, 21% in developing tools for OSM and 7% would be interested in organizing events for OSM. 55% are willing to spread the word about OSM. The prospect of “having free geo data” was mentioned as a motivation for a possible contribution by 79% (N=23) of the respondents. 59% find it motivating to contribute their local knowledge, 38% would be motivated by the outdoor aspect of mapping; 21% by the social aspects and 10% would like to use and improve their mapping skills. These results are in accordance with existing studies of active contributors (Budhathoki et al. 2010, Stark 2011).

We also asked about the reasons for not yet being a contributor. The most often mentioned barrier was a lack of time (72%, N=21). 38% mentioned, that they do not possess a GPS device; 24% do not want to spend their spare-time on the computer; 10% stated that it is difficult to use and 7% are afraid to do something wrong.

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<sup>1</sup> [http://www.openstreetmap.org/stats/data\\_stats.html](http://www.openstreetmap.org/stats/data_stats.html) Accessed on April 14, 2013.

However, these results are based on a rather small number of participants and are too small for wider conclusions. Also, the range of questions and answers was limited. Consequently, a larger study on barriers for participating in OSM was conducted, going more into details and depth on technical barriers, usability problems and possible insecurities on working in a community project by allowing also qualitative responses.

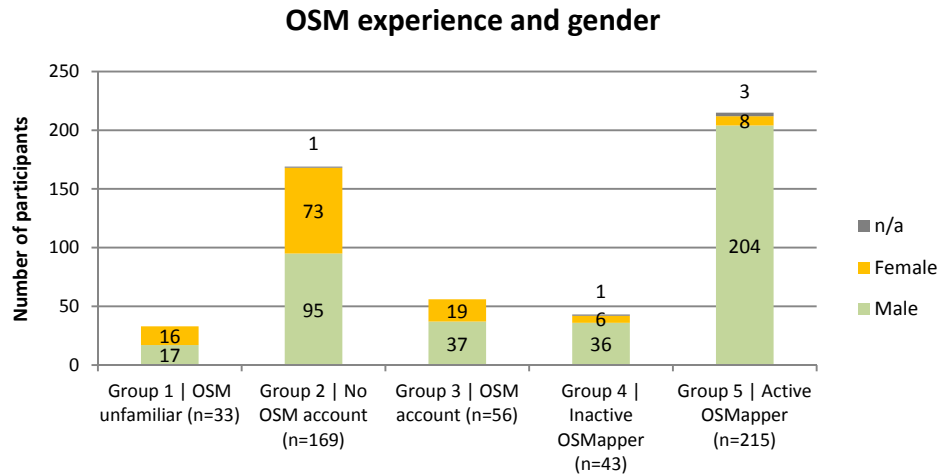
## 2.2. Online questionnaire on barriers for contributing

In January 2013 an online survey implemented in Lime Survey was set up, which was open for one month. As an incentive, five vouchers were raffled among all participants. The questionnaire was mainly disseminated through mailing lists to the general geo community, in order to address people who know OSM, but do not actively contribute (anymore); however, the survey also spread on OSM channels through OSM mailing lists, forums and Twitter.

In total 516 persons ( $MeanAge = 35.8$ ;  $SD = 11.7$ ) completed the questionnaire. 23.6 per cent of the respondents were female and 75.4 per cent male (five participants did not assign to female or male gender). The respondents were assigned according to their OSM experience into five groups:

1. OSM unfamiliar: "I have never heard of OSM."
2. No OSM account: "I know OSM, but I have never contributed data myself."
3. OSM account: "I have an OSM account, but hardly ever contributed."
4. Inactive OSMapper: "I used to be active in OSM, but I am not anymore (e.g. no edits within the last 6 months)."
5. Active OSMapper: "I am currently active in OSM."

Most respondents (41.7%) were assigned to the group of active OSMappers (group 5), followed by group 2, which has never contributed data, but has heard of OSM (32.8%). The rest of the respondents of the questionnaire were assigned to group 3 of people with an OSM account but hardly any mapping experience (10.9%), group 4, which are persons who used to be active (8.3%), and group 1, which has never heard of OSM (6.4%). In these groups of OSM experience, females and males were not equally distributed (see *Figure 1*). As for group 5, the currently active contributors are predominantly male (96.2%). This number is in line with other research which discloses 3 to 5 per cent female contributors (Budhathoki et al. 2010, Coleman 2009).



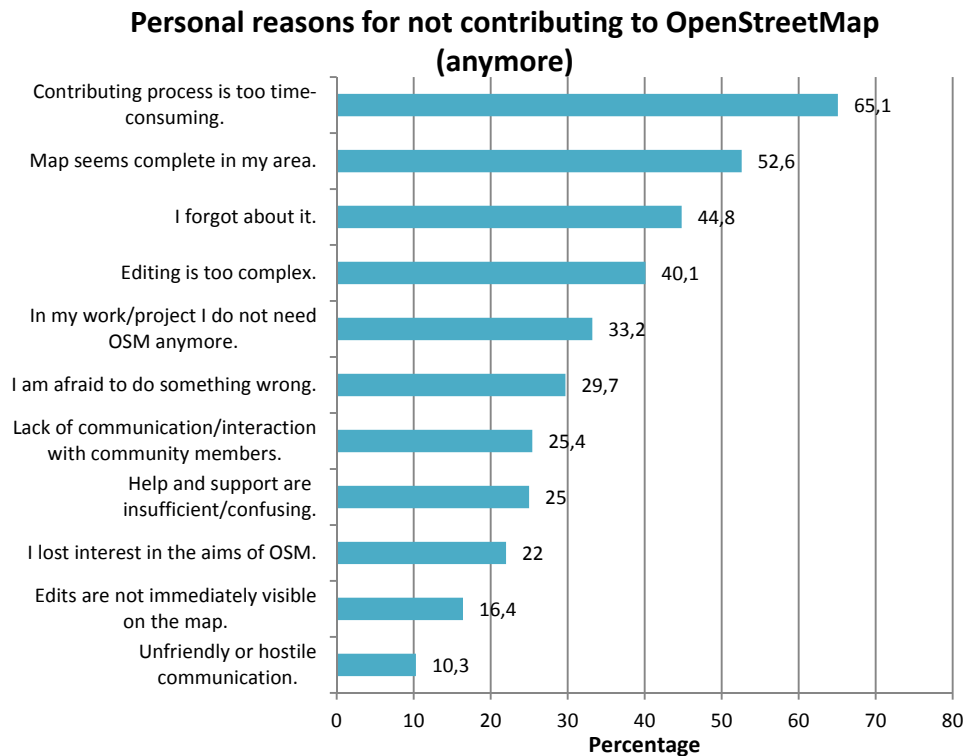
**Figure 1.** OSM experience and gender of the survey participants (N = 516).

For studying barriers for not contributing (anymore), we excluded Group 1 (unfamiliar with OSM) and Group 5 (active OSMapper) from further analyses. In sum 232 respondents were somewhat familiar with OSM but not active contributors at the time of the survey.

### Barriers

The participants were asked to indicate their personal reasons for not contributing to OSM (group 2: no OSM account), respectively for not contributing to OSM anymore (group 3: OSM account and group 4: inactive OS-Mappers). The answer options for this question were derived from a qualitative long term study with 12 new mappers in 2013 (Klettner et al. 2013).

The results of 232 responses showed that the reasons for not contributing (anymore) are not significantly different between the three groups (tested with the non-parametric Kruskal-Wallis test, significance level 0.05; due to violating the assumptions for parametric tests). The findings indicate that the time-consuming aspect of mapping was the most prevalent barrier for contributing to OSM (selected by 65.1% of the 232 respondents), followed by the completeness of maps (52.6%), forgetting (44.8%), and the complexity of editing (40.1%) (see *Figure 2*).



**Figure 2.** Reasons for not contributing to OSM (anymore) from 232 respondents (Group 2, 3, 4 combined).

Additionally, participants of the survey were asked to give further reasons which hinder them from contributing and have not been covered by the options of answers. 71 participants left a comment. Among these, the aspects mentioned most often in all groups were related to a lack of time or a shift of priorities, for example:

- *“I haven't got much time and it's just one more thing that sounds very interesting but that I just haven't looked into.”*, female, 44, group 2
- *“Not sufficient time to provide reliable contributions”*, male, 62, group 2
- *“I prefer to spend my time with my family...”*, male, 42, group 2
- *“I had things in my life that needed higher priority”*, male, 35, group 4

Seven statements refer to a lack of suitable equipment, with examples like:

- *“I don't have a GPS anymore”, female, 49, group 2*
- *“I am not in possession of the necessary kit”, male, 42, group 2*
- *“Cannot afford equipment”, male, 66, group 4*

Specific to group 2 were statements on high barriers to learn mapping, with statements like:

- *“I don't know how to contribute, would like to, but am afraid to try it out”, female, 27, group 2*
- *“High methodological / technical threshold / barrier to overcome (how do I actually map something correctly?)”, male, 37, group 2*
- *“I would need a personal introduction”, male, 56, group 2*

Eight participants in groups 2 and 3 mentioned that they don't feel the need to map, with statements like:

- *“no need to do commit data ... just using [them]”, male, 39, group 2*
- *“I don't see a reason to contribute. How will it make the world better?”, male, 41, group 2*
- *“I have access to official and authoritative data”, male, 46, group 2*

Specific to group 4 (inactive OSMappers) are critical comments on OSM as a community or as an organization, as for example:

- *“Disagreement with contributor terms, organisation of the OSM Foundation, poor communication, no effective means for users or even foundation members to influence the decision making.”, male, 31, group 4*
- *“Others persistently altering / deleting my data when I know it is correct”, male, 66, group 4*

Other aspects mentioned were for example:

- *“Not so many mapping parties that I am aware of.”, male, 32, group 3*
- *“I'm not really into mapping [...] as a hobby or interest. I only ever intended to fix things I happened to notice in OpenStreetMap as a user, rather than spending time actively looking for things to do on it.”, male, 35, group 3*

### 3. Conclusion

The results indicate that the time-consuming aspect of mapping was the most prevalent barrier for contributing to OSM, followed by the completeness of maps, forgetting, and the complexity of editing.

Therefore, in order to motivate inactive or not yet active VGI contributors, the following strategies can be suggested: (1) Providing easy-to-use tools, which allow for a fast data acquisition, e.g. smartphone apps for direct mapping in the field. (2) Identifying “meaningful” contribution tasks, also in the field of makro mapping and keeping data up-to-date. With increasingly detailed maps in urban areas, the motivation to contribute additional data seems to decrease for certain volunteers. However, detailed data also need to be kept up-to-date. Therefore, new and attractive strategies to motivate broad groups of contributors for these tasks must be identified.

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