

# Gender and Experience-Related Motivators for Contributing to OpenStreetMap

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## Abstract

Understanding the motivations for contributing to VGI platforms like OpenStreetMap (OSM) is important in order to foster a broader contributor base and increase content contributions. This paper presents results from an online survey with 516 participants with different levels of experience with OSM. We focus on participants, who are not actively contributing to OSM at the moment and explore, which aspects would motivate them to contribute to OSM (again). Mapping for a dedicated purpose and less time-consuming mapping solutions are the most prevalent motivators; however, responses differ according to OSM experience and gender.

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

## 1 Introduction

With over a million contributors, OpenStreetMap (OSM) can be seen as the most extensive and successful volunteered geographic information (VGI) platform up to now. With the growing number of contributors, there is also a growing interest in studying the structure of the community and reasons for contributing [1, 2]. Studies on the demographics of OSM contributors reveal that the typical OSM contributor is male, well-educated and technology-savvy; the number of women who contribute to OSM is only about 2-5% [3, 4, 5]. This not only leads to less contributors and thereby less collected data, but might also affect the quality of the data. Different groups of people have different needs and requirements on geographic data. These data may not be represented in the current situation, due to the contributors' uniformity.

In order to attract more diverse groups of contributors, motivations and barriers for participating in OSM need to be examined first. In this context, we conducted an online survey focussing on motivational aspects for persons, who know OSM but are not active OSM contributors at the moment. We divide our sample according to different levels of experience with OSM and gender. In addition to the quantitative results, also qualitative responses will be discussed.

## 2 Method

In a qualitative pre-study, we identified barriers that hinder new mappers from contributing to OSM as well as examined motivational aspects which may encourage mappers to contribute to OSM [6]. The study was carried out in a longitudinal action research design, examining motivations

and barriers over time and according to different mapping activities performed in OSM. Twelve female students from the Vienna University of Technology participated, with equivalent profiles to the typical OSM-contributor: technology-savvy, well-educated, 20-40 year old [3, 4, 5]. The participants attended four OSM-sessions, each covering different mapping tasks: 1) mapping with *Walking Papers*, 2) mapping from satellite images, 3) mapping with GPS devices, and 4) a final mapping task where participants could freely choose the method for mapping. The first three mapping sessions were carried out with instructors, whereas the final one was without. After each of the four sessions, participants were asked to write down their negative and positive experiences as well as motivational aspects for contributing in the future in an online diary.

After the four mapping sessions, post-event online questionnaires were sent to the participants two and four months after end of the course. We aimed at examining whether the participants continued to map, to understand their reasons for contributing as well as for not-contributing anymore, and to collect motivational aspects that make them contribute or may make them contribute again in the future.

Finally, we summarized motivators for contributing to OSM mentioned by the participants from the diary and from the post-event-questionnaires into nine major aspects:

1. Improved help and support options.
2. Dedicated tutorial for beginners.
3. A more user-friendly interface.
4. Less time-consuming mapping solutions.
5. Positive feedback / rewards for editing.
6. Mapping with other people indoors.
7. Mapping with other people outdoors.

8. More profile options (e.g. for networking and sharing).
9. Mapping for a dedicated purpose.

These nine motivational aspects were used in an online survey, aiming at studying the importance of these motivators for different groups of inactive OSM-mappers. The online questionnaire was disseminated in February 2013 within the general geo community (via mailing lists), as well as in the OSM community via mailing lists, forums and Twitter. We aimed at particularly reaching a large number of people who are familiar with OSM, but who do not actively contribute to OSM anymore. Also, in order to receive a sufficient number of responses by women, we posted invitations on dedicated mailing lists for women in (geo)technology.

### 3 Results

#### 3.1 Contributors, gender, and experience

In total 516 persons (*MeanAge* = 35.8; *SD* = 11.7) completed the online questionnaire. 26.6 percent of the respondents were female and 75.4 percent male (five participants did not assign to female or male gender). According to their OSM experience the respondents assigned themselves into one of five groups:

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

Most respondents (41.7%) were assigned to group 5 (active OSMappers), followed by group 2 with 32.8 percent (people who never contributed data, but have heard of OSM). 10.9 percent assigned themselves to group 3 (people with an OSM account but hardly mapping experience), 8.3 percent to group 4, which are persons who used to be active, and 6.4 percent to group 1, which is the group of people which has never heard of OSM. However, in these groups of OSM experience females and males were not equally distributed (see Figure 1). Our survey shows that currently active contributors to OSM (group 5) are predominantly male (96.2 %). This number is in line with other research which discloses 3 to 5 percent female contributors [3, 4, 5].

The context in which male respondents (n=389) worked with OSM were primarily related to private interest, followed by work for research or for university, work for a company, and work related to NGOs. Female respondents (n=122) on the other hand primarily dealt with OSM due to work for research or for university (46.9%), followed by private interest, work for a company, and work related to NGOs (see Figure 2).

Figure 1: OSM-experience (accelerating from group 1 to 5) according to the participants gender (n=516).

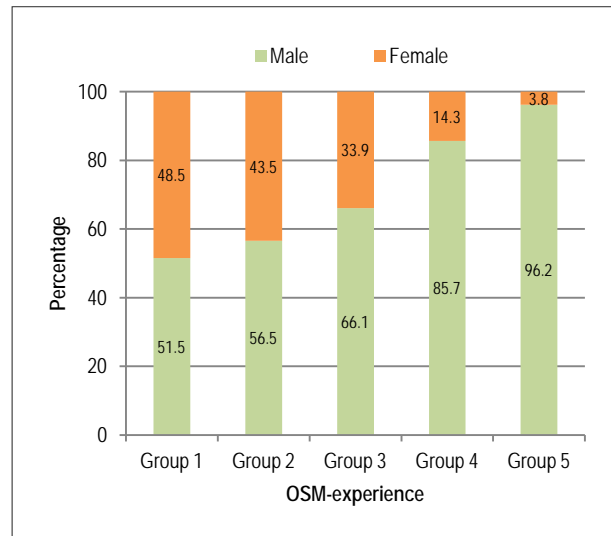
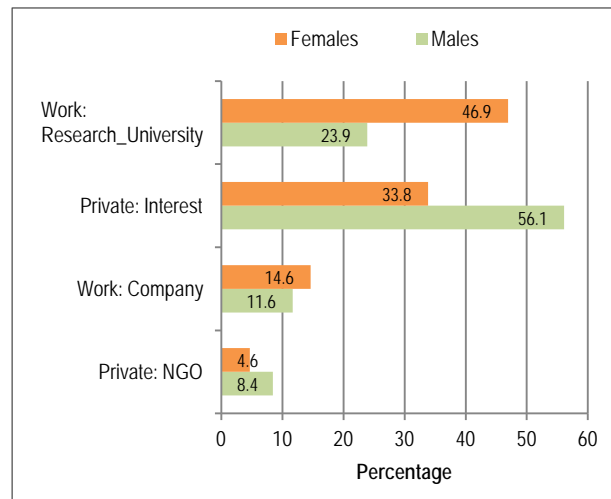


Figure 2: Contexts in which respondents worked with OSM according to gender (n=516).

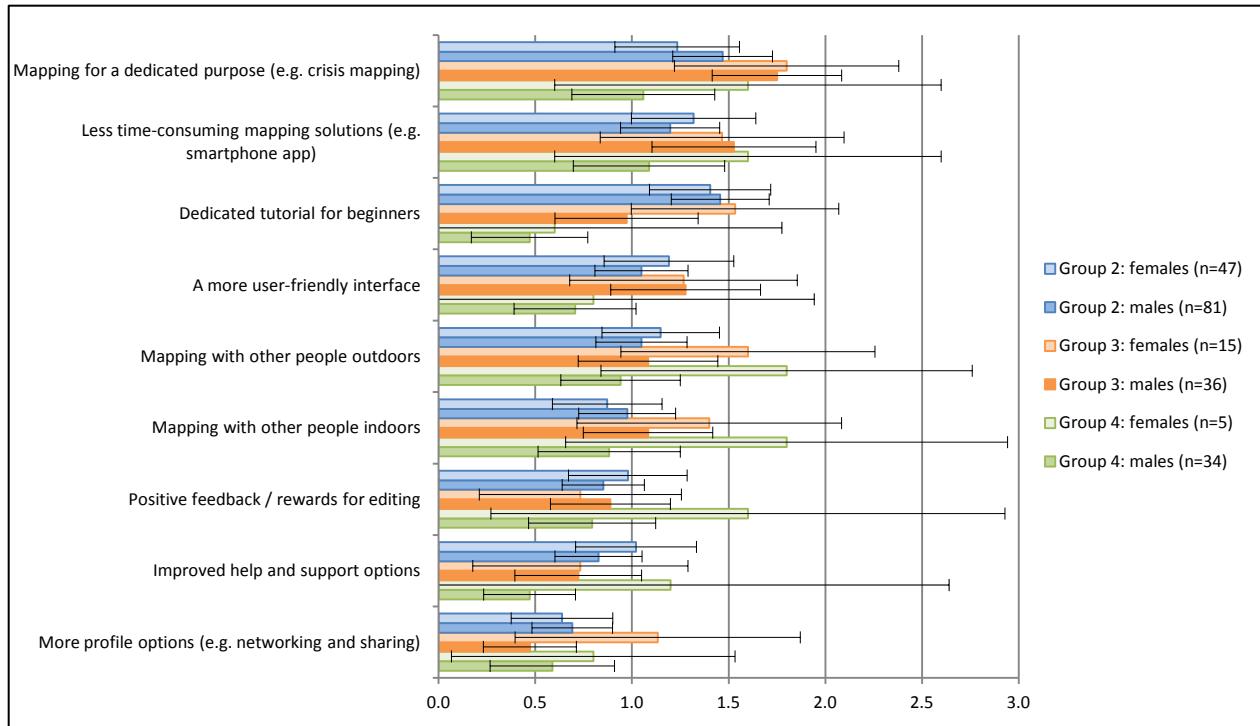


### 3.2 Motivators

#### 3.2.1 Quantitative results

For analyzing aspects that may make former OSMappers contribute again, groups 2, 3, and 4 were asked to indicate motivational aspects, which may make them contribute again. The results of 218 responses (67 females, 151 males) indicate no gender-related difference in respect to motivational factors. However, two specific aspects for contributing (again) differed significantly according to the respondents experience with OSM (tested with Kruskal-Wallis test, significance level 0.05; due to violating the assumptions for parametric tests). In particular for beginners the claim for a dedicated tutorial was significantly higher for new mappers ( $H(2) = 21.12, p < 0.00$ ).

Figure 3: Motivational aspects for contributing to OSM of 218 respondents according to their OSM experience and gender, ranging from 0 (very unlikely) to 3 (very likely). Error bars denote 95% confidence intervals.



The claim for mapping with a dedicated purpose differed significantly between the three groups ( $H(2) = 7.35, p < 0.03$ ), with a higher demand of those people with an OSM account, but without profound mapping experience (group 3). Figure 3 illustrates the responses for each group.

### 3.2.2 Qualitative results

In order to disclose more motivational aspects, participants were asked to mention further reasons which may motivate them to contribute again, which have not been covered by the answer option of the rating scales in the quantitative survey. 43 participants left a comment. 11 of these comments refer to a lack of time, with some of them also stating, that this is not a problem of OSM, e.g.:

- “Changes in my life, the problems are not on the side of OSM” Male, 35, Group 4
- “more time from my side” Male, 43, Group 2

Responses from group 2 refer to solutions how to overcome first technical barriers or how to motivate themselves:

- “courses offered at Universities etc., get a first time experience on how to contribute (how easy or difficult it really is)” Female, 27, Group 2
- “I think should be ok that beginners could map easy features, and somehow the community advice how to do easy things within only some minutes of learning, a video o something” Female, 35, Group 2
- “A strong argument how it will make the world better” Male, 41, Group 2

- “If I happen to be somewhere where there is little mapping coverage” Female, 39, Group 2
- “user community for OSM mapping” Male, 60, Group 2

Motivators mentioned by group 3 refer to the practical and social sides of mapping, e.g.

- “If my friends were still contributing” Female, 32, Group 3
- “Better UI, more Standard-Classes” Male, 32, Group 3
- “Better legend information” Female, 47, Group 3
- “reward” Male, 18, Group 3

Two statements in the group of the inactive mappers refer to a discontentment with the current license and organization of OSM and suggest:

- “Less offensive contributor terms, transparency in OSMF, including clear policies and the ability for users and members to influence decisions (something akin to the policies of the Debian project)” Male, 31, Group 4
- “a share-alike licence” Male, 55, Group 4

Other motivating aspects include e.g.

- “Start local mapping group” Male, 56, Group 4
- “A good free/open routing service would make me use & update OSM maps more. e.g. more public interfaces to OSM” Male, 25, Group 4
- “Having enough money to afford the equipment” Male, 66, Group 4

## 4 Conclusion and outlook

The present survey studied the likelihood of nine motivational aspects to make currently inactive mappers contribute (again). “Meaningful” contribution tasks, less time-consuming mapping solutions as well as dedicated tutorials for beginners identified as the most important factors. However, the motivating aspects of purposeful contribution tasks and a dedicated tutorial for beginners differed significantly between the groups of OSM experience. Mapping for a dedicated purpose is most important for those, who have an OSM account, but hardly ever contributed. A dedicated tutorial for beginners is less relevant to mappers, who were already active in the past. However, such a tutorial seems to be especially important to females in group 3. No significant gender-related differences were found in this study. However, the small sample sizes of the subgroup “females” in groups 3 and 4 need to be taken into consideration.

Also, not all participants can be motivated with the suggested methods. As expressed in the qualitative responses (3.2.2), also a lack of time might hinder people from voluntarily collecting geo information.

The discussed motivational aspects can be used for concrete action to (re)integrate currently inactive users. It can also be the base for more research into attracting more diverse groups of contributors to VGI.

## Acknowledgement

This work is funded by the Austrian Ministry for Transport, Innovation and Technology (BMVIT) within the structural research program FEMtech fFORTE.

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