

# WORKFORCE DEVELOPMENT AND YOUTHMAPPERS: UNDERSTANDING PERCEPTIONS OF STUDENTS IN HUMANITARIAN MAPPING

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## PURPOSE

To evaluate the impact of humanitarian mapping on workforce preparation of students engaged in YouthMappers

Over the last few decades, the geospatial workforce has grown globally across all sectors and the sector is expected to grow at a compound annual growth rate (CAGR) of 19% from 2017 to 2023. Humanitarian mapping efforts are one way for young people to gain valuable career preparation experience in both technical and practical aspects of the geospatial industry to take advantage of such opportunities. While students prepare themselves for careers through tertiary education, their association with extracurricular activities such as YouthMappers may help them acquire certain geospatial skill sets, networking, as well as other “soft” job skills that are critical for this growing job market because of its connection to authentic, real-world applications, and a framework that is explicitly linked to geospatial competencies and learning objectives. How does participation in YouthMappers chapters lead to better preparation for a global workforce? And for whom?



## BACKGROUND

YouthMappers® chapters are student-led groups based out of currently 160 university campuses in 42 countries around the world. The network gives opportunities to participate in open mapping for humanitarian / development needs while serving as a platform for workforce capacity building.



Within a span of 4 years, over 5,000 students have associated themselves YouthMappers across its various chapters. YouthMappers, through its activities have been actively contributing to various local capacity building efforts which aids international development organizations like USAID, while also help achieve Sustainable Development Goals. Between April 2016 – July 2017, YouthMappers made over 15 million map changes in more than 45 countries, with visible infrastructure like buildings (19,01,195) and highways (2,54,741) being most mapped (Solís et al. 2018).

## METHODS

The data was collected through an online survey of students associated with YouthMappers program conducted in early 2019. The survey consisted of questions relating to gender, country of respondent, education and years associated with YouthMappers. To assess the workforce preparedness, we asked about number of geospatial tools used, perception of student's proficiency in such tools, skills learnt as result of participation in YouthMappers, job/internship opportunities received, and overall satisfaction with YouthMappers experiences.

Independent t-tests were used to assess gender differences. Differences between students who are associated with YouthMappers for different periods (less than 1 year; 1-2 years; 2 years or more) was evaluated using one-way ANOVA tests. A total of 239 responses were collected, of which 223 were validated for use in the analysis for this study.

### Acknowledgements

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### Key References

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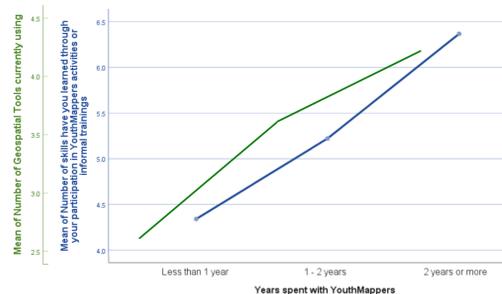
## CONCLUSIONS

- Humanitarian mapping can be effectively leveraged to improve geospatial skills of university students
- It is possible to address gender disparities in workforce preparation through participation in youth chapter based mapping programming
- Multi-year experience of students through a YouthMappers chapter matters for perceived competencies
- YouthMappers as a network affords professional development opportunities unique to campuses in the Global South
- Integrating extracurricular activities such as YouthMappers in universities/colleges can enhance learning experiences that prepare students for a global workforce



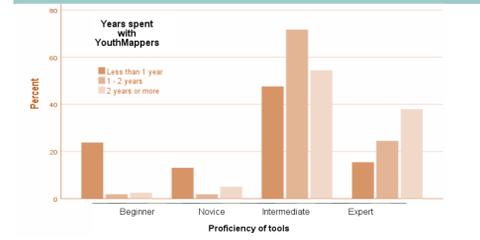
we don't just build maps. we build mappers.

## ANALYSIS AND RESULTS



▲ [F(2,215)=9.821, p < 0.01]. Significant differences found between Group<1 year and Group 1 to 2 years (p < 0.05); and between Group<1 year and Group 2 years or more (p < 0.01)  
▲ [F(2,215)=5.33, p < 0.01]. Difference is significant between Group<1 year and Group 2 years or more (p < 0.01)  
▶ [F(2,213)=19.211, p < 0.01]. Significant differences found between Group<1 year and Group 1 to 2 years (p < 0.01); and between Group<1 year and Group 2 years or more (p < 0.01)

Geospatial skillsets, use of new tools, and self-reported proficiency all increase over time spent in YouthMappers



Participation in YouthMappers provides direct opportunities such as attending conferences, internships and job offers

### Self-reported Soft Job Skills Gained from YouthMappers Participation

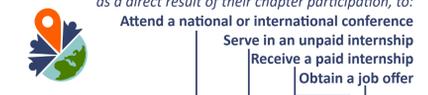
Teamwork	89.8%
Global Learning	71.1%
Creative Thinking	70.3%
Critical Thinking	68.0%
Civic Engagement	53.9%

### Selected Self-reported Geospatial Competencies

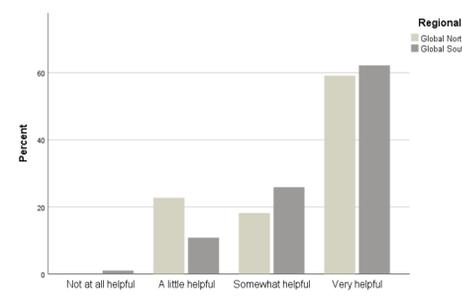
Geospatial Competencies	Gained from YouthMappers participation	Difference from Gain through College Coursework alone
Recognize opportunities for mobile end-user applications	25.0%	5.1%
GIS&T and Society Ethical Issues	25.5%	-0.9%
Digitization	58.5%	-3.2%
Imagery Resolution	43.0%	-5.3%
Organizational & Institutional Aspects of Geospatial Technologies	18.5%	-6.4%
Geospatial Data Quality	34.0%	-7.8%
Data Classification or Tagging	45.5%	-8.7%

Select self-reported learning includes both soft skills and key technical competencies

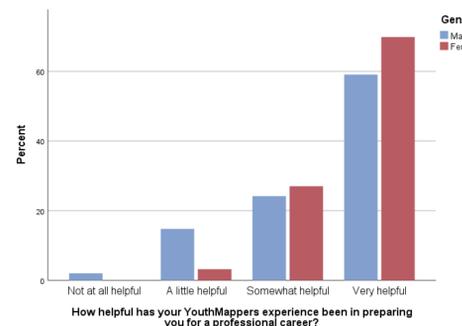
Students doing these YouthMappers activities say they were able, as a direct result of their chapter participation, to:



MALE	FEMALE	ACTIVITIES	Attend a national or international conference	Serve in an unpaid internship	Receive a paid internship	Obtain a job offer
83%	80%	Attended or organized a Mapathon	46%	13%	24%	5%
78%	88%	Received training	47%	17%	20%	6%
28%	27%	Initiated a local chapter-led project	47%	18%	23%	5%
70%	48%	Conducted field mapping	48%	17%	26%	6%
55%	53%	Recruited new members to their chapter or for a new chapter	50%	16%	22%	5%
59%	30%	Taught local community members how to use open mapping	48%	15%	25%	8%
18%	16%	Took college curriculum with humanitarian mapping	51%	11%	26%	9%
17%	9%	Completed a formal university course dedicated to humanitarian mapping	55%	6%	29%	13%
33%	28%	Conducted online exchange with another chapter	53%	14%	24%	10%
28%	17%	Performed outreach to local secondary, middle or primary schools	57%	11%	21%	4%
57%	55%	Served as an officer or leader of their local YouthMappers chapter	51%	14%	26%	6%
28%	23%	Participated in an in-person exchange with another chapter	63%	20%	29%	8%
14%	13%	Served as a mapping intern	63%	29%	25%	11%
23%	31%	Received a YouthMappers Leadership or Research Fellowship	76%	16%	30%	4%



Respondents from the Global South (M=3.52, SD=.74) feel their experience with YouthMappers has been more helpful compared to respondents from the Global North (M=3.10, SD=.79) and the difference is significant at p < 0.05.

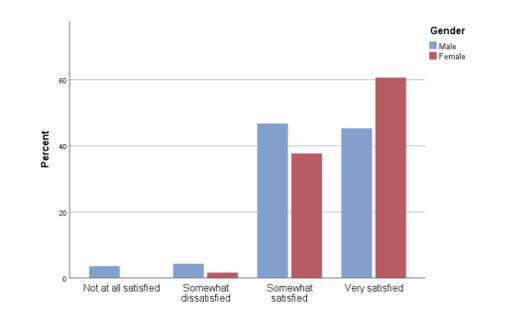


Females respondents (M=3.67, SD=.65) feel their experience with YouthMappers has been more helpful as compared to males (M=3.40, SD=.81) and the difference is significant at p < 0.05.

The findings presented here confirm that the YouthMappers design contributes to key capacity building elements for students to prepare for geospatial careers, which include positive results for female mappers. The study indicates areas for further research and potential awareness-raising among participants about the value of extracurricular humanitarian mapping. By increasing geospatial skills among university/college students to prepare them for employment and careers, along with its efforts to eliminate gender disparities in acquiring such skills and deploying such activity in service to humanitarian and development purposes, YouthMappers makes important contributions to Sustainable Development Goal 4 (Quality Education) in a global context. On the basis of our findings, this paper hopes to stimulate discussions around the need to introduce such purposefully-designed extracurricular activities like YouthMappers in universities/colleges to both enhance the learning experience, and develop additional job market skills, in order to better prepare university/college students for working as global citizens in a geospatial workforce.

Our study indicates that, on average, respondents report having experience with using 3.39 different geospatial tools, where males have a mean of 3.45 and females, 3.26. One-way ANOVA tests shows that there is a significant difference in the mean number of geospatial tools used by YouthMappers [F (2,215) = 9.821, p = 0.000] among groups spending shorter versus longer time periods participating in YouthMappers activities. The percentage of students who consider their skill level as ‘expert’ in geospatial tools increases with the time spent participating in YouthMappers activities. Overall, 38 percent of students with 2 years or more participation in YouthMappers consider themselves as ‘expert’, while only 24.5 percent with 1 to 2 years do so; meanwhile 15.5 percent of those with less than 1 year participation opine the same. Almost 47 percent of YouthMappers feel “very prepared” for their professional career after they finish their degree, and we found no statistically significant difference between male and female respondents. Results show that 65.7 percent of students “strongly agree” that ‘their frequent participation with geospatial/mapping technology through YouthMappers make them a stronger candidate for employment’. Likewise, 62.3 percent feel that their YouthMappers experience has been “very helpful” in preparing students for a professional career, where answers were statistically significantly higher for female respondents at p < 0.05 level. The gender analysis reveals that 52 percent of females attribute being able to attend or participate in a national or international level conference, workshop, or meeting as a direct result of their participation in YouthMappers, compared to 38.7 percent of males. More than one-third of students indicate receiving an internship and/or job offer as a direct result of their YouthMappers experience.

YouthMappers experiences especially help students from universities in the global south and female students better prepare for professional careers



Satisfaction difference is statistically significant between female students (M=3.59, SD=.73) and male students (M=3.34, SD=.65), p < 0.05.