

21st Century Workforce Training: Reimagining Doctoral Education 2021 Summer Project Executive Summary

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Motivation and Approach: The Nicholas School is keen to provide resources and skills training for PhD students, especially those who wish to pursue future careers outside academia, including industry, government, nonprofits, etc. What training and professional opportunities could be offered or enhanced in NSOE to better prepare PhD students for careers outside of academia? NSOE PhD alumni represent a focus group well-positioned to offer insight into skills they wish they had learned in graduate school and skills they look for in new hires. We surveyed this alumni group (sent to 366 alumni, 70 responses received) in July 2021 and summarize our findings and recommendations below and detailed findings and demographics (appendix).

Main findings: Top ranked skills alumni wish they had taken and look for when hiring in non-academic and academic careers (based on % of respondents - detailed results in appendix).

Top-ranked skills NSOE PhD Alumni wished they obtained as graduate students

Non-Academic Careers (n = 13⁺/41 ~ 33%)

- stakeholder management
- negotiating skills
- team leadership
- budgeting
- diversity and inclusion training

Academic Careers (n = 19⁺/41 ~ 46%)

- negotiating skills
- budgeting
- diversity and inclusion
- lay language/ communications writing
- team leadership
- stakeholder management

Top-ranked skills NSOE PhD Alumni look for in new hires

Non-Academic Careers (n = 8⁺/41 ~ 20%)

- scientific communication
 - report writing
 - scientific writing
 - editing
 - Lay language/communications writing
- team leadership
- data analytics

Academic Careers (n = 13⁺/41 ~ 33%)

- data visualization
- data analytics
- statistical analysis
- scientific writing
- field work

Comments and Recommendations: Duke offers a variety of courses and professional development opportunities at the Nicholas School and Graduate School that can fill training gaps, therefore we recommend;

Encouraging students to:

- Understand skills valued by employers inside and outside academia.
- Incorporate professional development opportunities/courses as a question in the IDP. Identify opportunities within (and outside Duke) to obtain relevant credentials and skills with advisors. A list of opportunities can be found at Duke Options: <https://options.duke.edu/>

Encouraging NSOE to:

- Continue to evaluate its priorities for professional training through further assessment of skills required in contemporary professional job markets.
- Create a PhD student job that focuses on planning fireside chats with alumni
- Increase visibility of training opportunities within NSOE and Duke.

Appendix: Detailed Survey Results

Respondent Demographics

The survey (see attachment) was sent to 366 NSOE PhD alumni using the alumni database maintained by the Nicholas School Office of Development and Alumni Relations. 70 PhD alumni responded to the survey, with representation from each of 6 PhD program concentrations. Most respondents (45%) were employed in Academia (research or education), 20% were employed by government agencies. Respondents graduated in 1996 through 2021, with a mean graduation year of 2011. 62% of respondents have a management role in their current workplace – either through direct reports or the hiring of others.

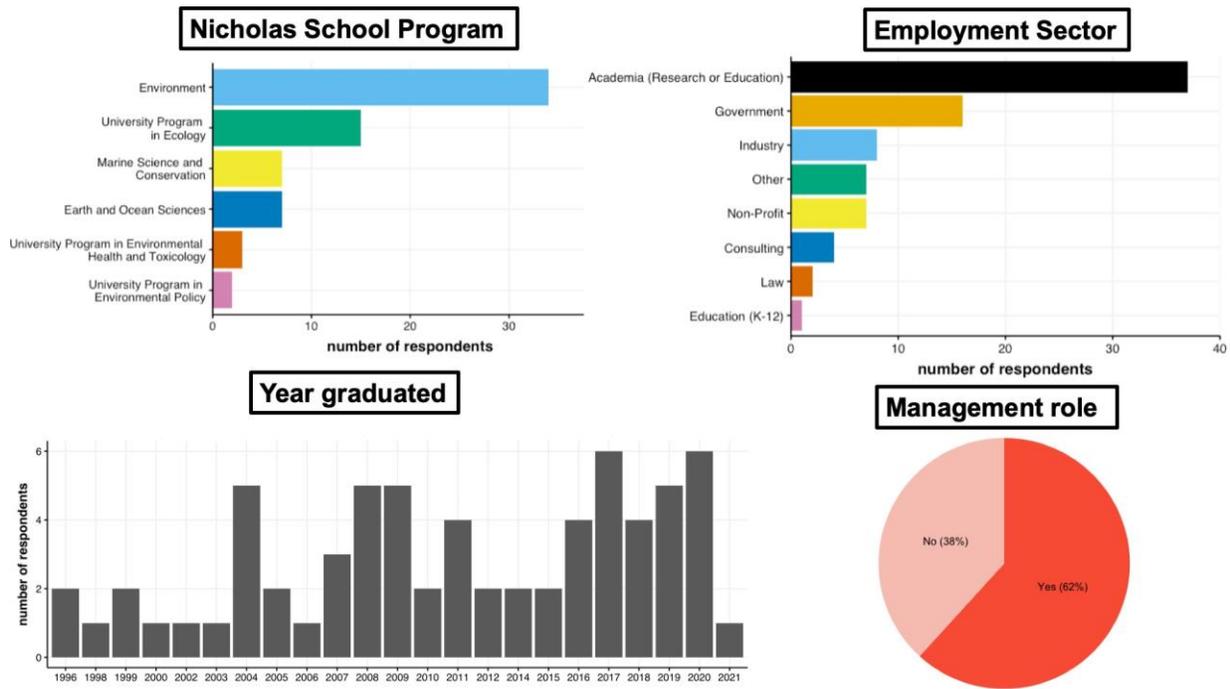


Figure 1. Respondent demographics. Nicholas school PhD program concentration, current employment sector, year graduated, and management role of respondent.

Training Alumni wished they had received and training they look for in new PhD hires: Non-academic careers

We asked alumni which trainings and opportunities they received while at Duke, which trainings they wish they had taken, and which trainings they look for when hiring others. The following three figures are ordered by the three different variables. Data includes alumni in non-academic sectors.

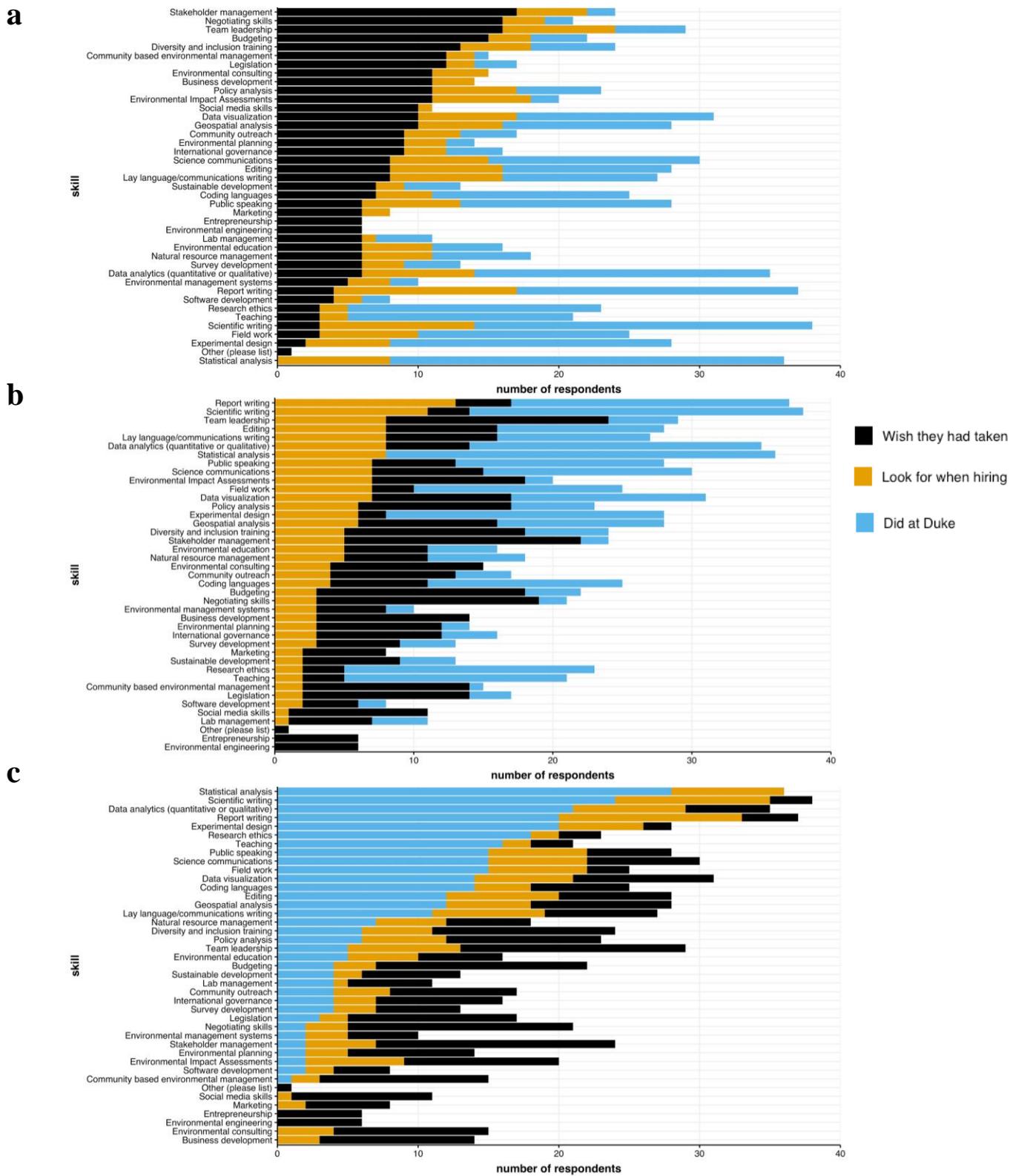


Figure 2. Trainings at Duke (careers outside academia). For each training category, respondents could select from the following options (multiple allowed): They received the training at Duke (blue), they wish they had received the training while at Duke (black), and they

look for this skill or training when hiring employees (orange). Descending order by “wish they had taken” (a), “look for when hiring” (b), and “did at Duke” (c).

For the skills they wish they had taken, we asked alumni why they did not receive these skills while at duke. Most alumni currently working outside academia may not have received a specific type of training because they believed it was not offered at Duke (Figure 3). In fact, some training in these topics is available at Duke (e.g. stakeholder management), but may not be on the radar of PhD students (e.g., courses geared towards MEM students pursuing a certificate in community based environmental management).

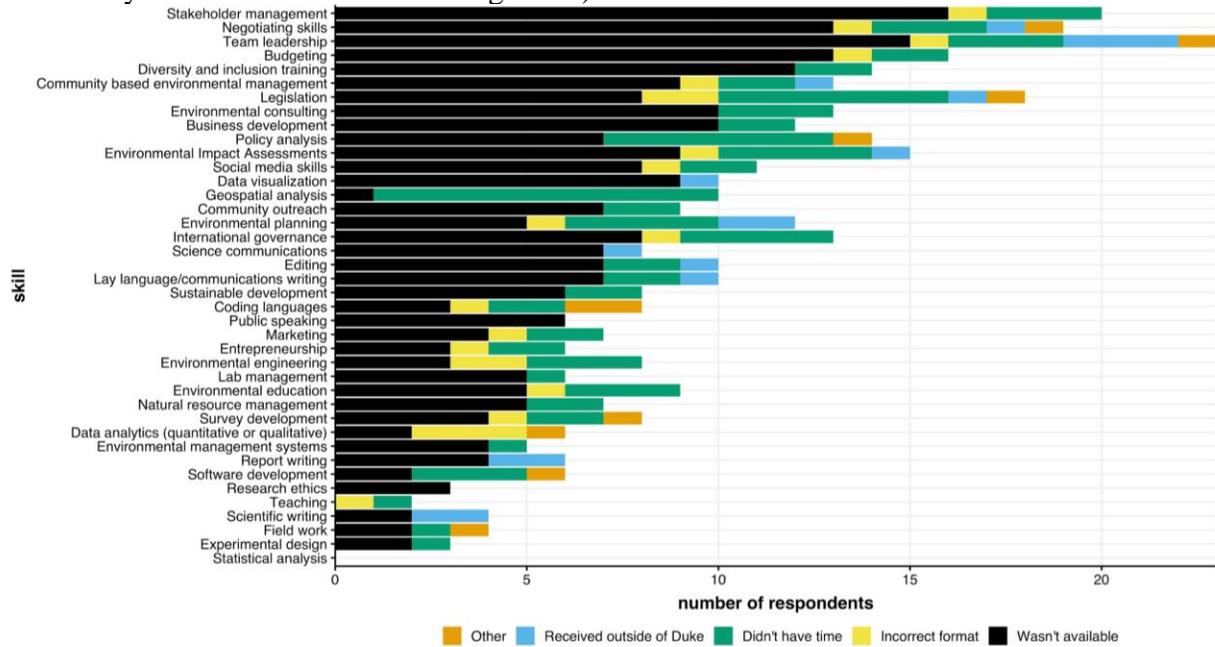


Figure 3. Why alumni did not receive these trainings. Alumni could not have received these trainings because they weren't (or they didn't realize they were) available (black), the trainings were in the incorrect format (yellow), they didn't have time (green), they received them outside of duke (blue), or other reasons (orange). Note this figure is in the same descending order by “wish they had taken” as Figure 2a.

Results from alumni in Academic careers

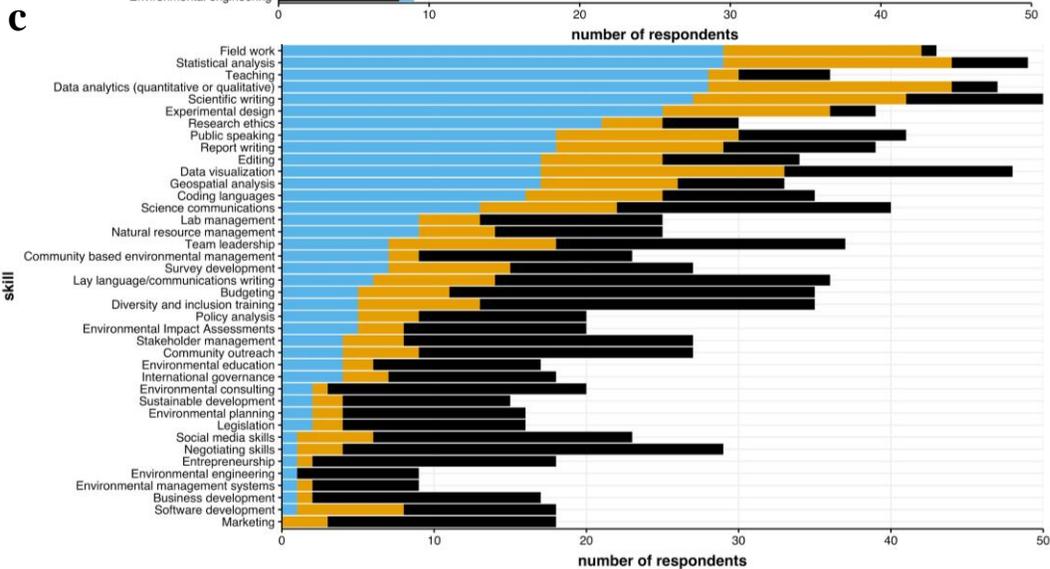
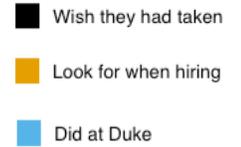
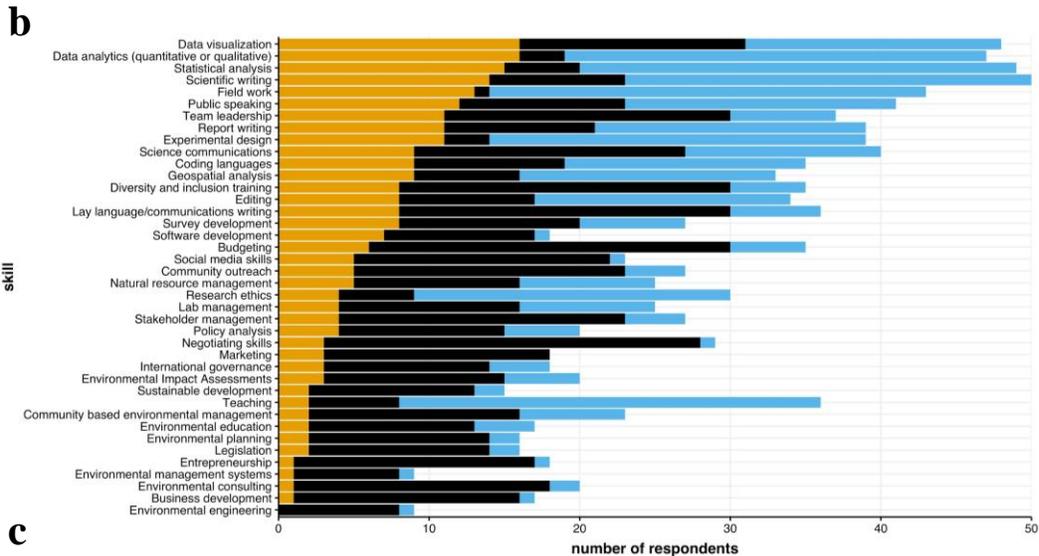
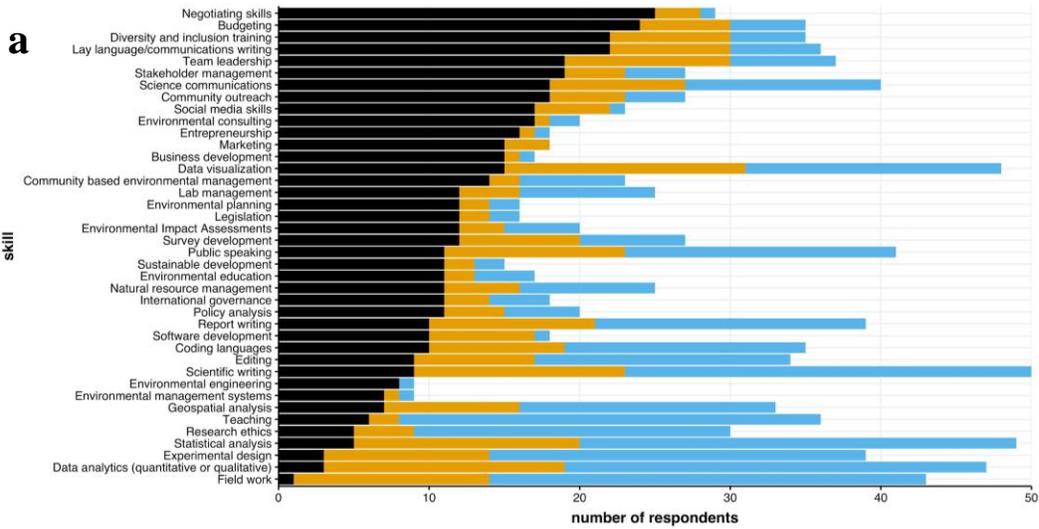


Figure 4. Trainings at Duke (academic sector). For each training category, respondents could select from the following options (multiple allowed): They received the training at Duke (blue), they wish they had received the training while at Duke (black), and they look for this skill or training when hiring employees (orange). Descending order by “wish they had taken” (a), “look for when hiring” (b), and “did at Duke” (c).

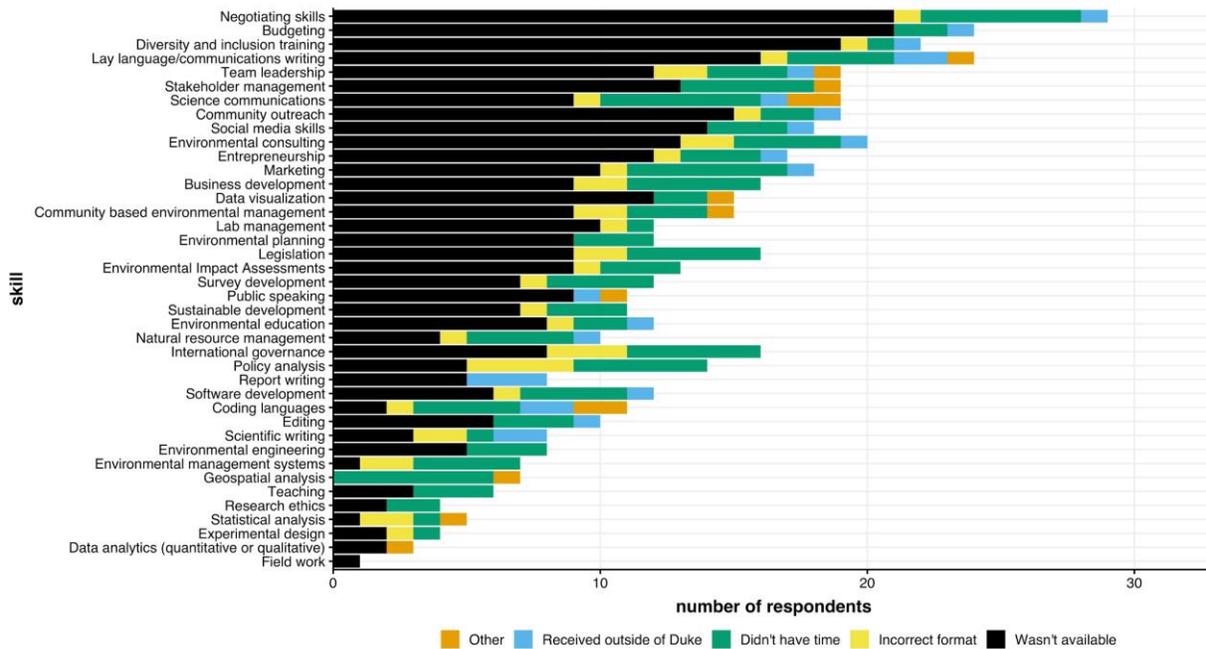


Figure 5. Why alumni did not receive these trainings (academic sector). Alumni could not have received these trainings because they weren't (or they didn't realize they were) available (black), the trainings were in the incorrect format (yellow), they didn't have time (green), they received them outside of duke (blue), or other reasons (orange). Note this figure is in the same descending order by “wish they had taken” as Figure 4a.