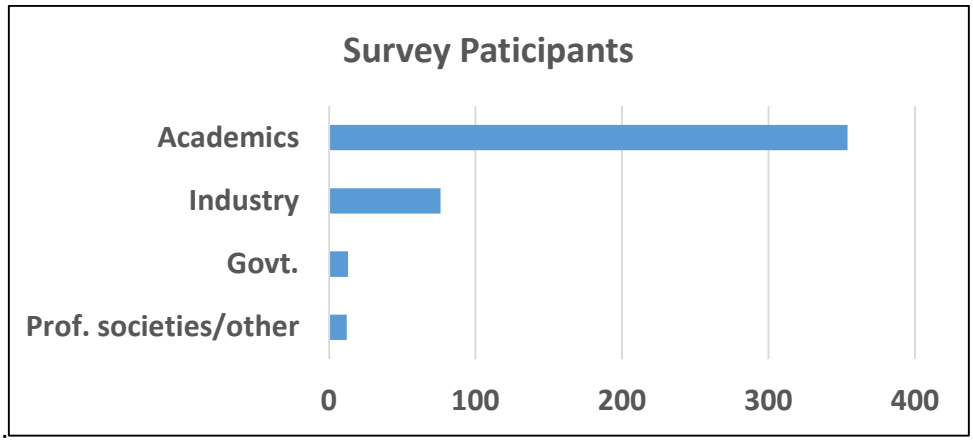
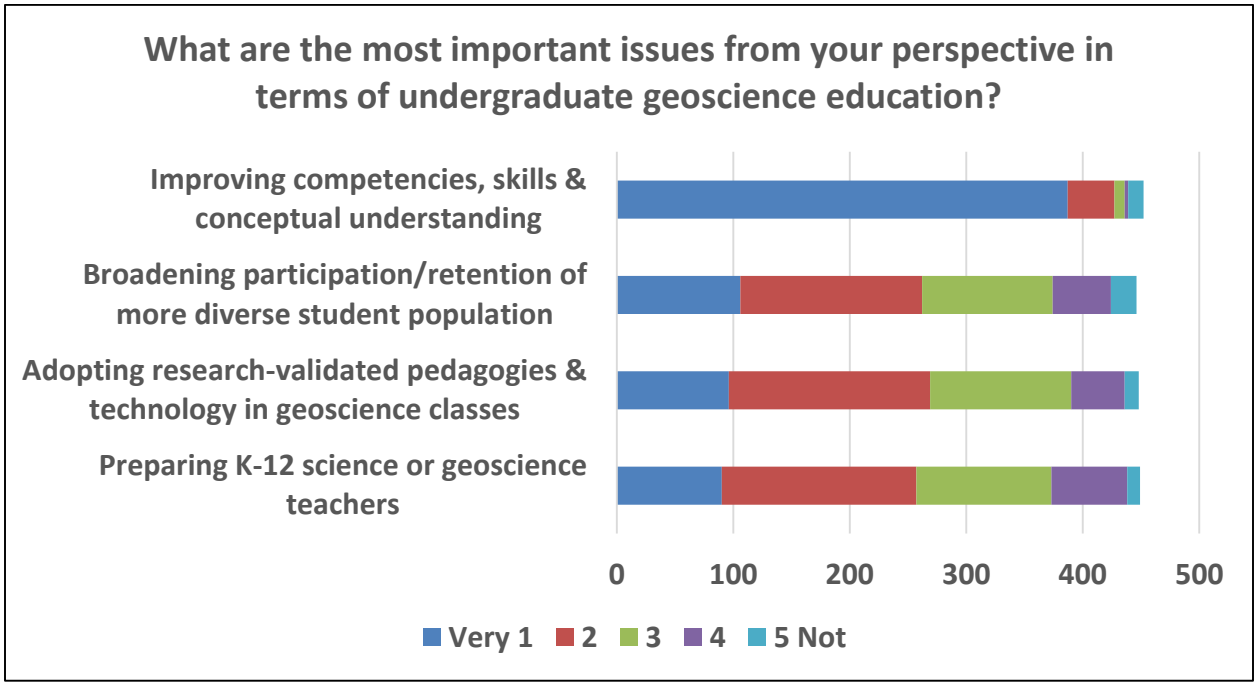
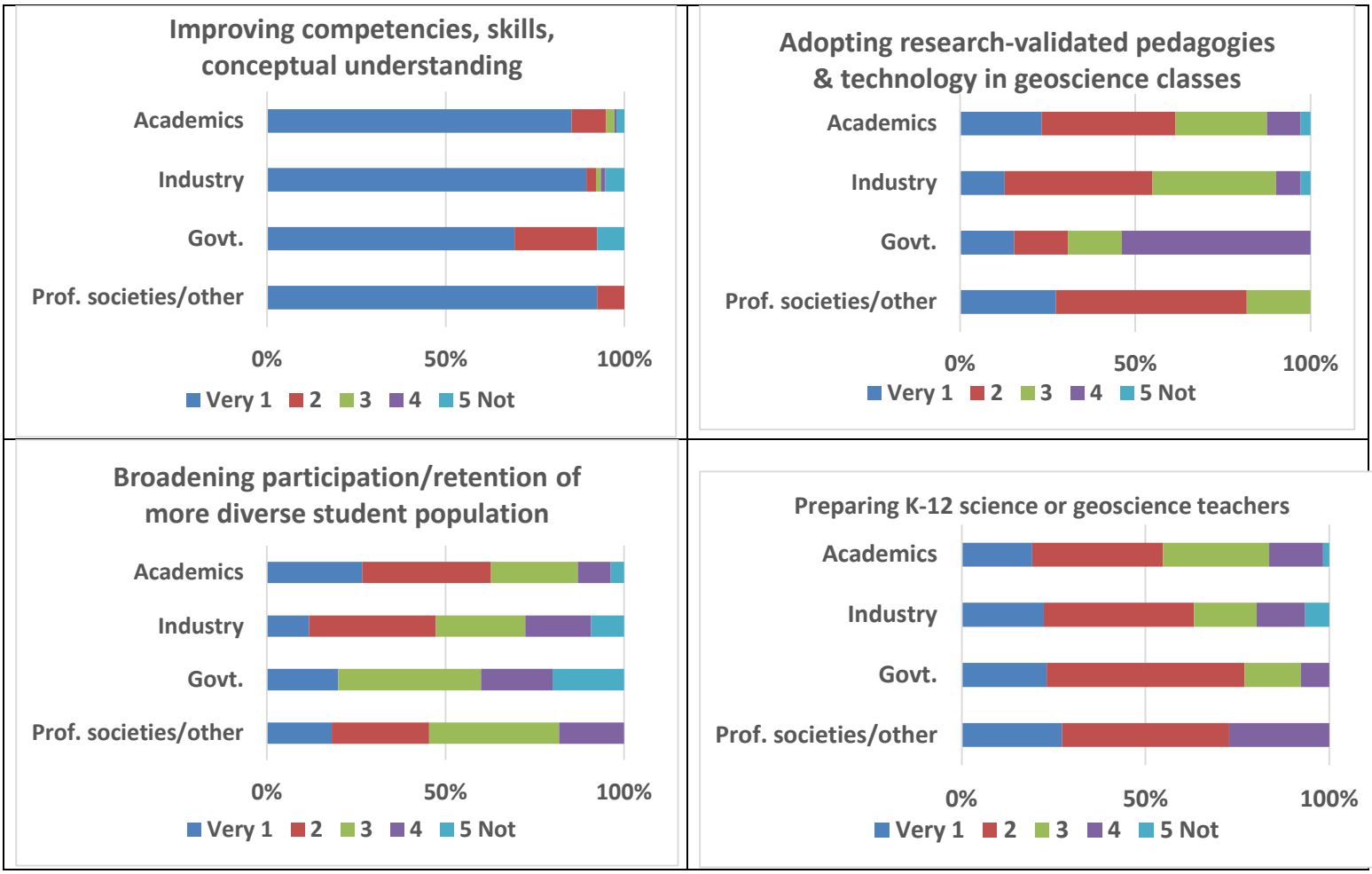
EAR-1347209: The Future of Undergraduate Geoscience Education

Survey: 2014-15 results:

We have had ~455 respondents to the online, ongoing survey with: 354 academics (78%), 76 industry (17%), 13 government agencies (3%), 7 other (1%), 5 professional society representatives (1%). Of these, 85% were not Summit participants, indicating that between the ~200 Summit participants and the ~390 non-participant survey respondent, we are receiving input from a large segment of the geoscience community. The gender distribution on the survey is 308 male and 147 female.

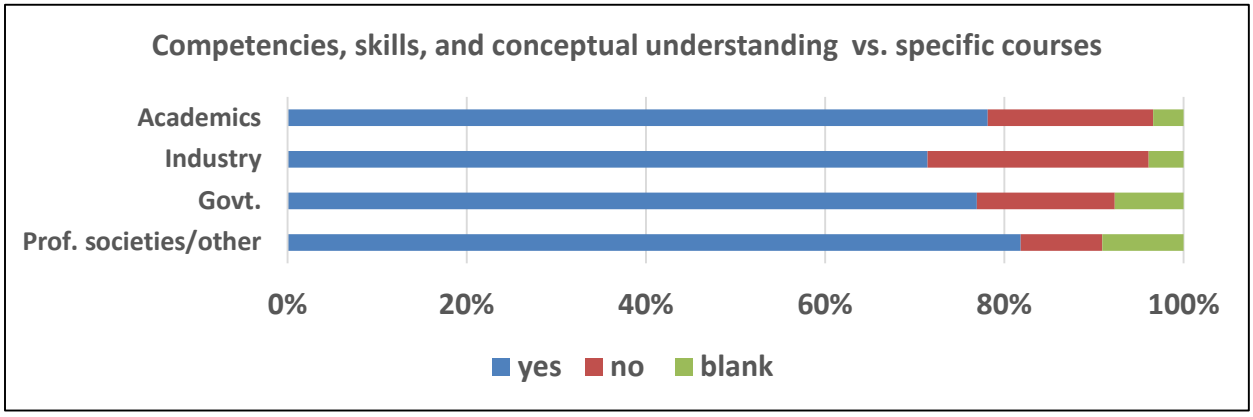


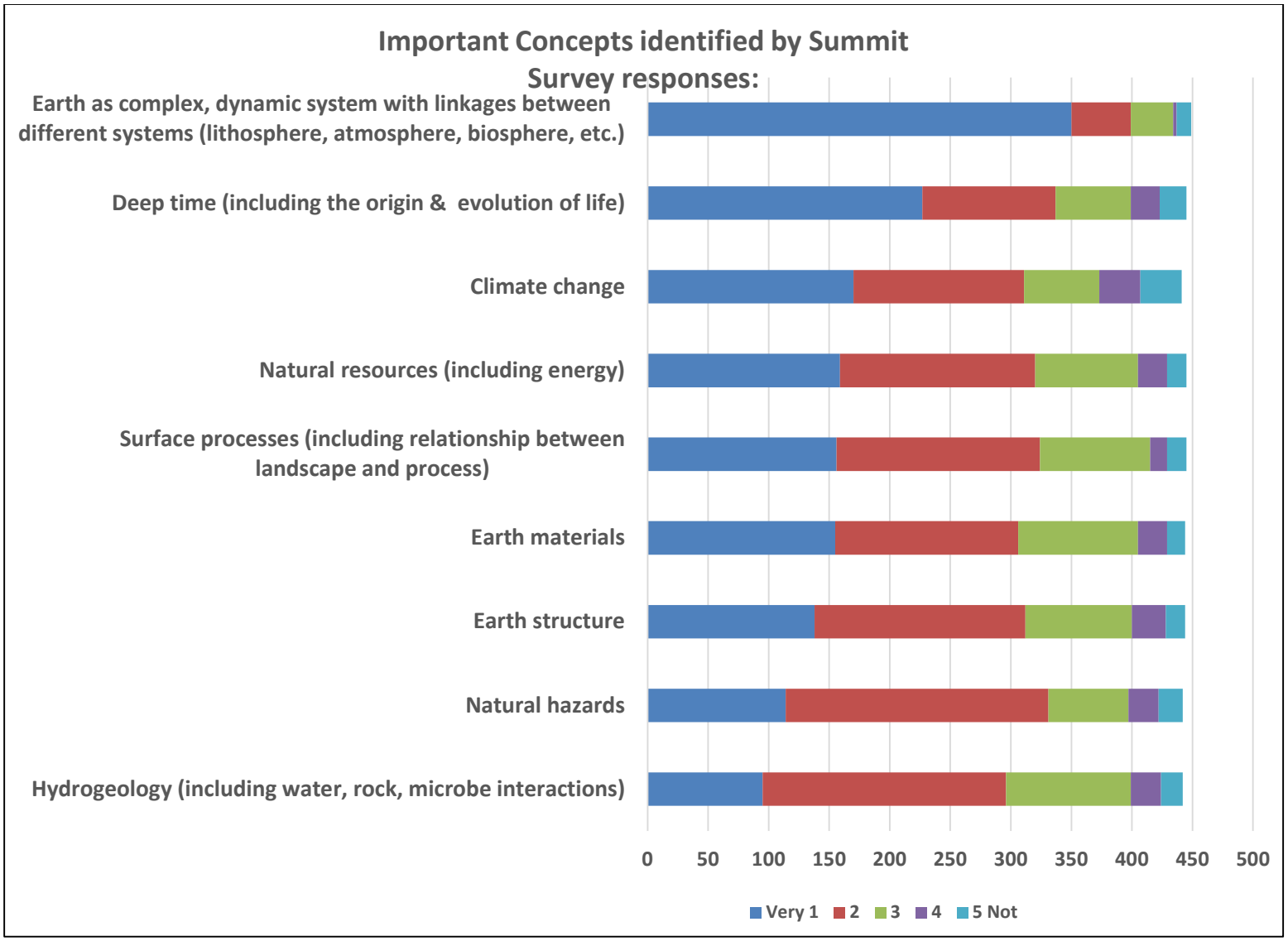




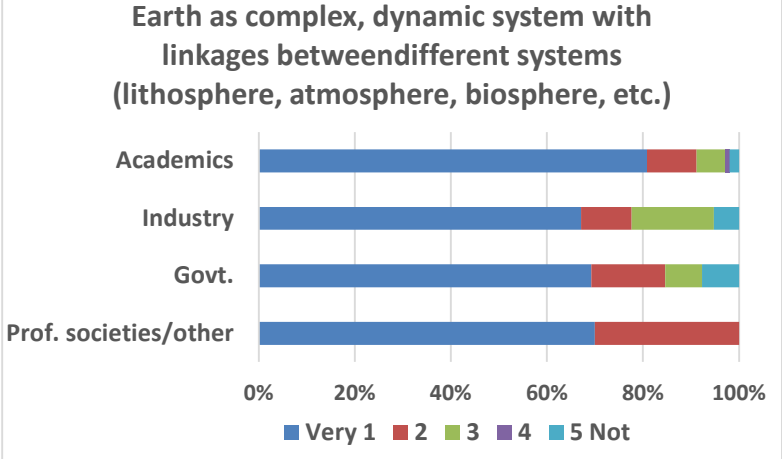
Major conclusion of Summit: Developing competencies, skills, and conceptual understanding is more important than taking specific courses

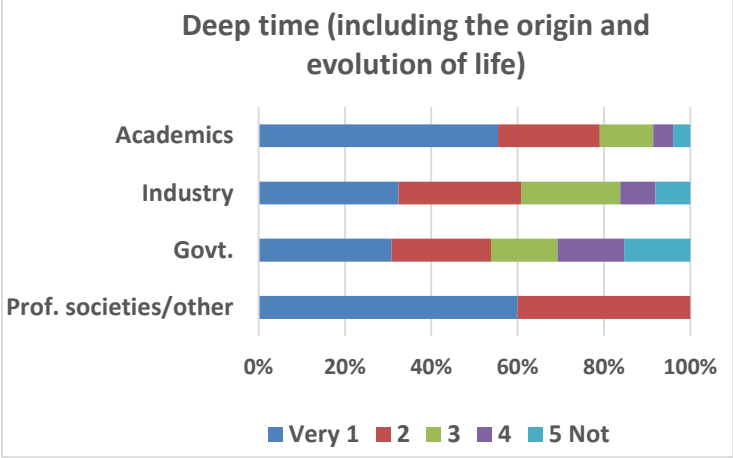
<u>Survey Responses</u>:

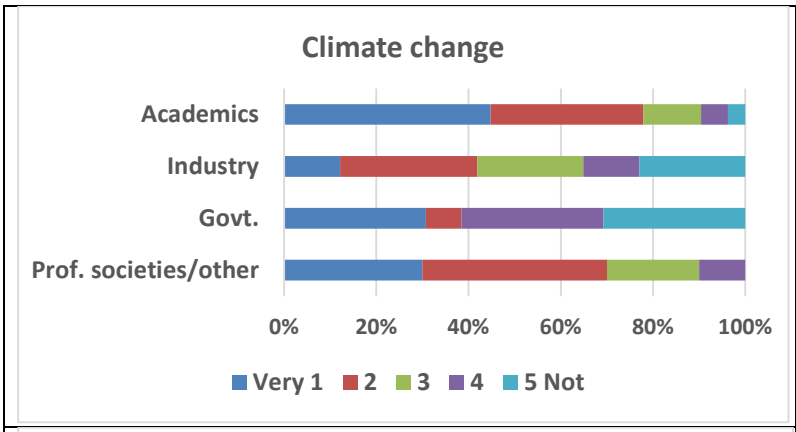


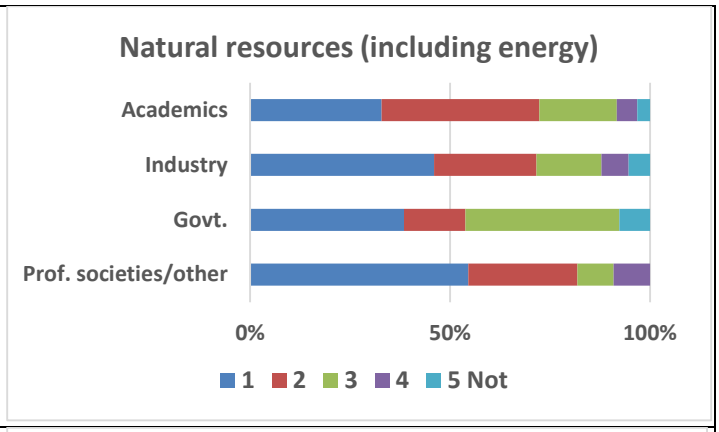


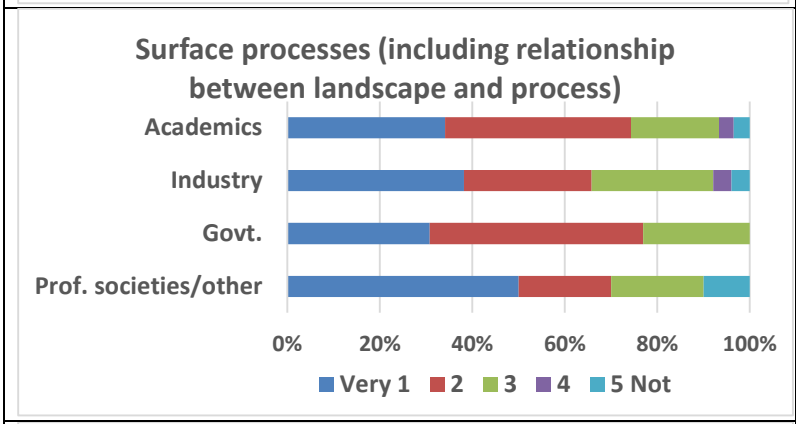
Breakdown by Employment Category

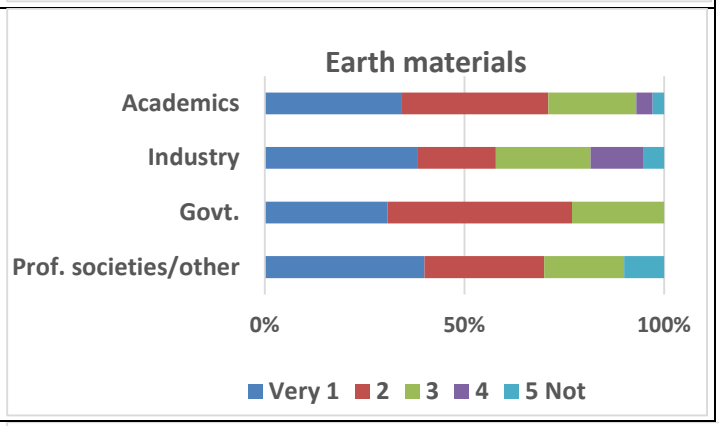


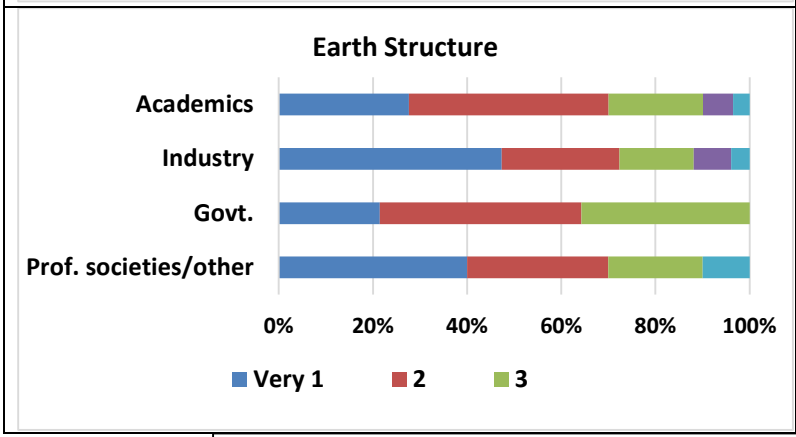


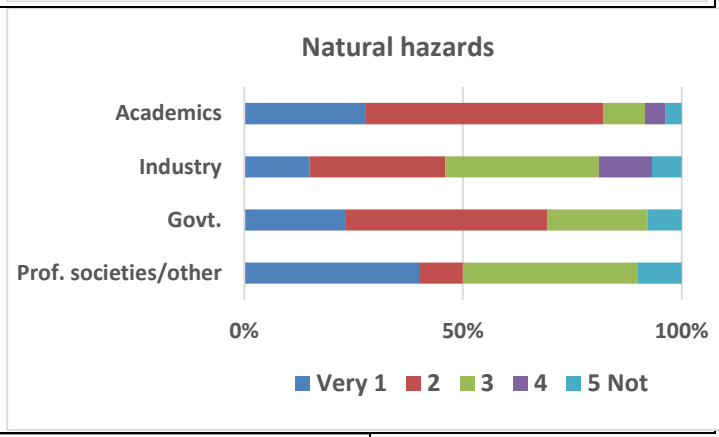

Climate change
Academics
Industry
Govt.
Prof. societies/other
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not

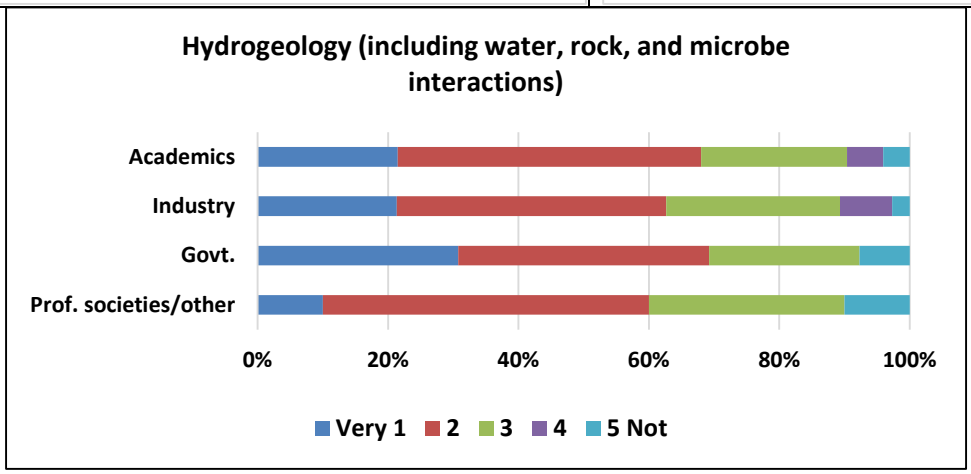

Natural resources (including energy)
Academics
Industry
Govt.
Prof. societies/other
0%
50%
100%
1
2
3
4
5 Not


Surface processes (including relationship between landscape and process)
Academics
Industry
Govt.
Prof. societies/other
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not

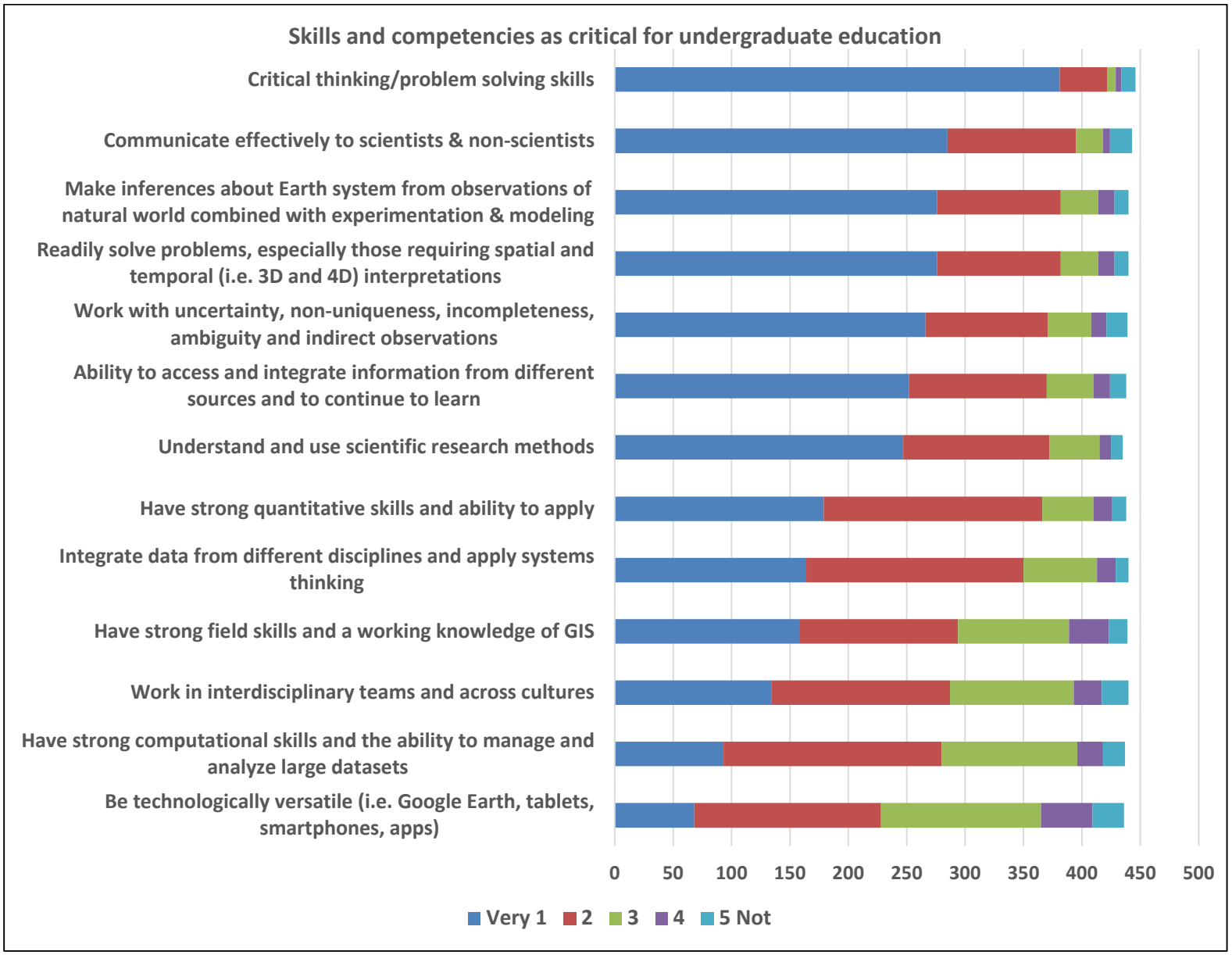

Earth materials
Academics
Industry
Govt.
Prof. societies/other
0%
50%
100%
Very 1
2
3
4
5 Not


Earth Structure
Academics
Industry
Govt.
Prof. societies/other
0%
20%
40%
60%
80%
100%
Very 1
2
3

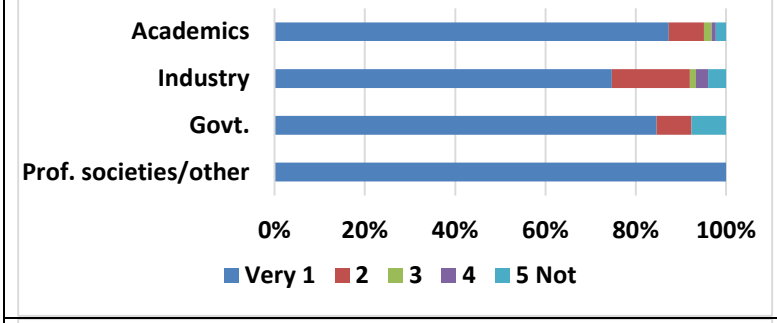

Natural hazards
Academics
Industry
Govt.
Prof. societies/other
0%
50%
100%
Very 1
2
3
4
5 Not

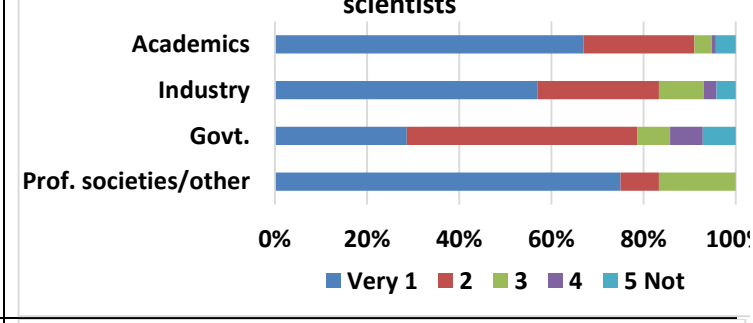

Hydrogeology (including water, rock, and microbe interactions)
Academics
Industry
Govt.
Prof. societies/other
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not

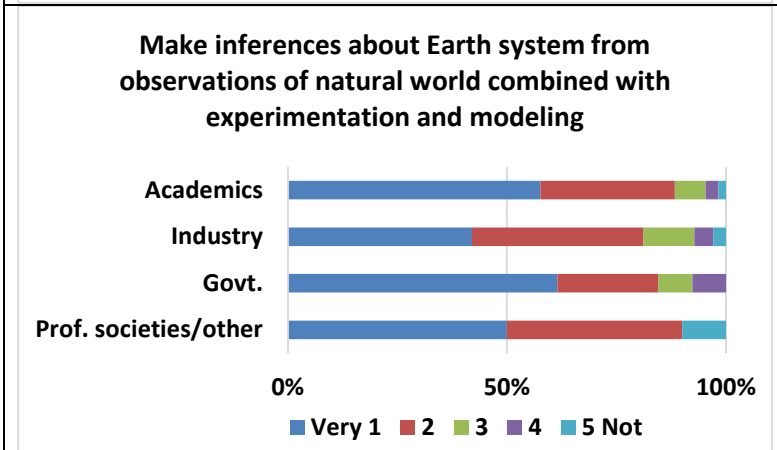
In addition to geoscience concepts, the Summit identified specific skills and competencies that undergraduate students should have when they graduate. These were divided into skills that all science students should have, such as communication, use of the scientific method, etc. and those that were specific to the geosciences, such as solving problems that require spatial and temporal (3D and 4D) thinking, working with uncertainty, etc. The survey also asked the respondents to indicate how important each of these skills were.

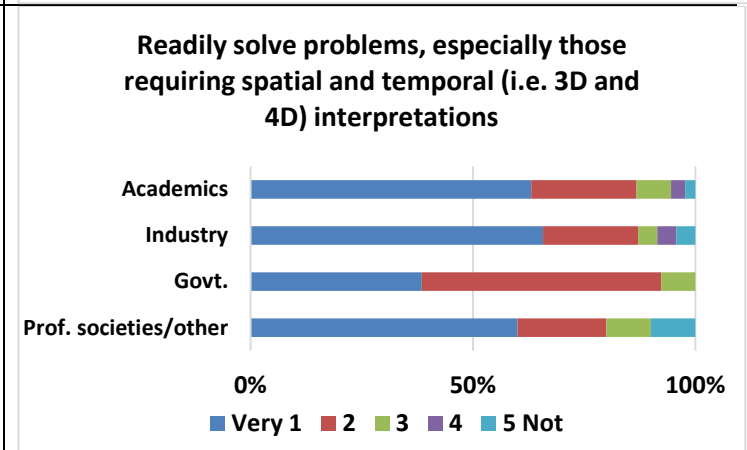


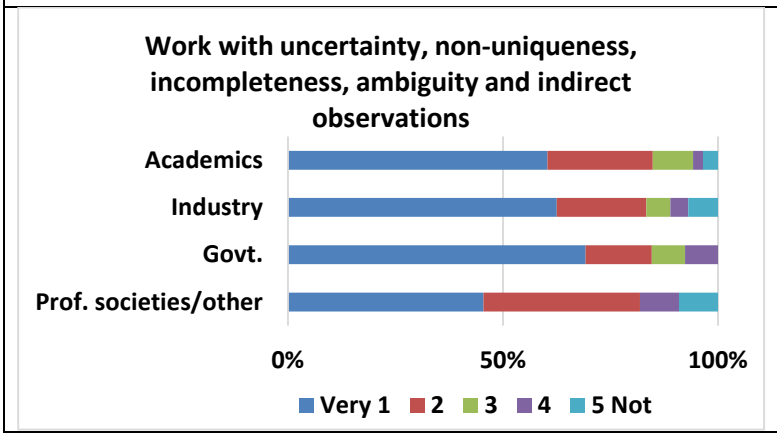
Breakdown by Employment Category

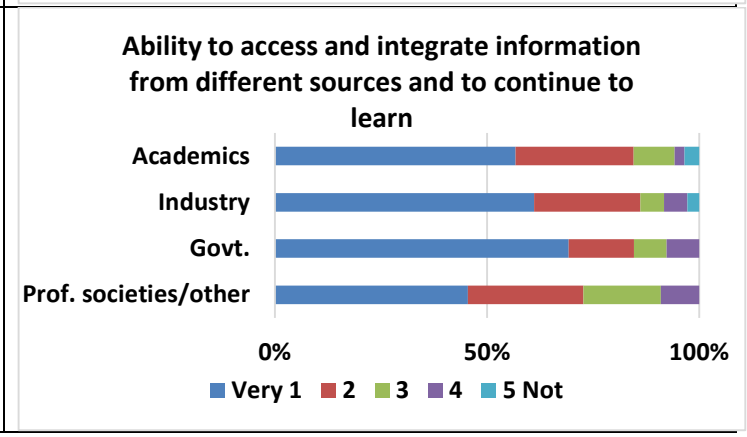


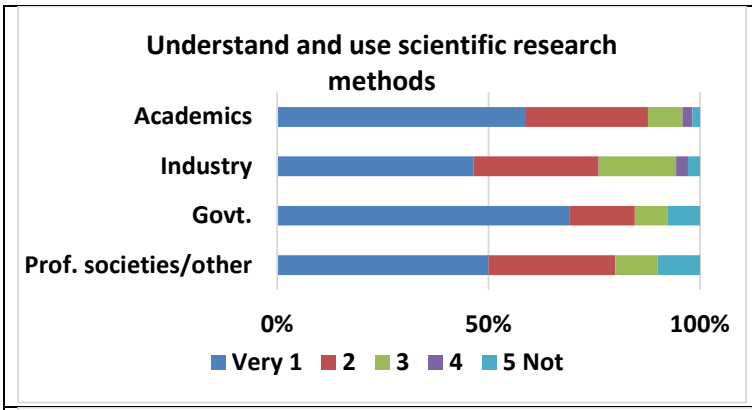


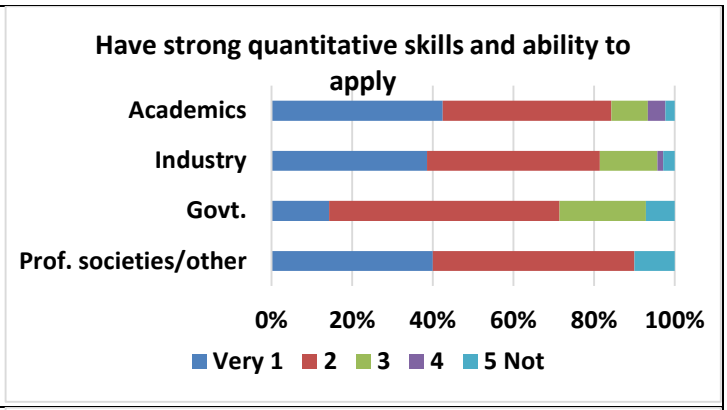


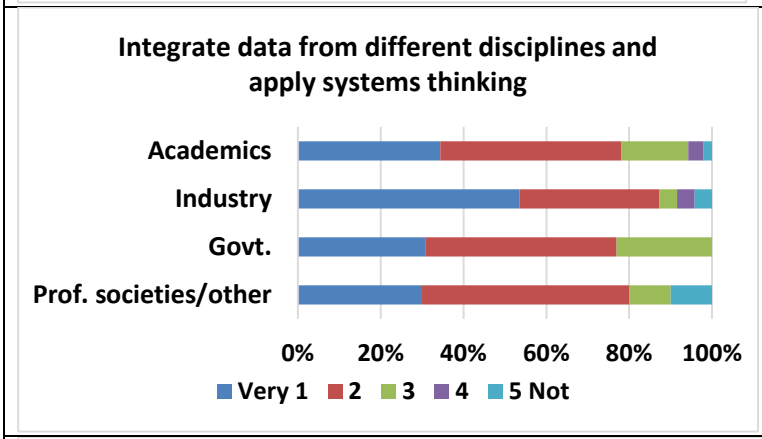


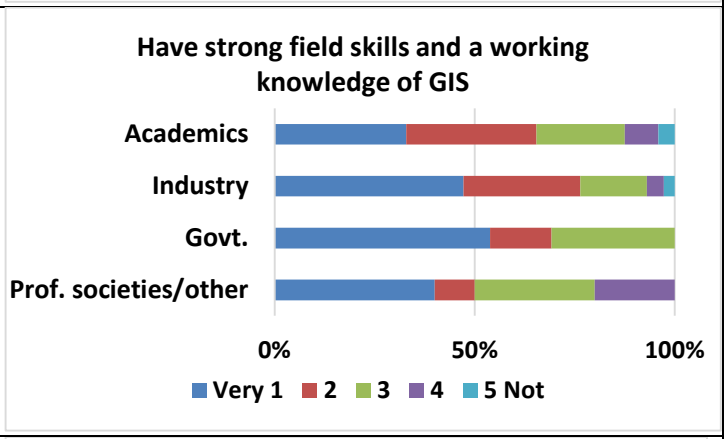


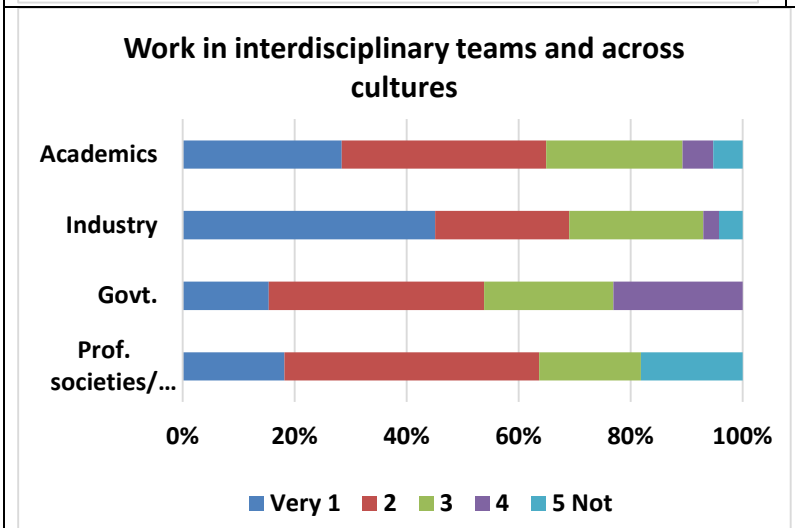


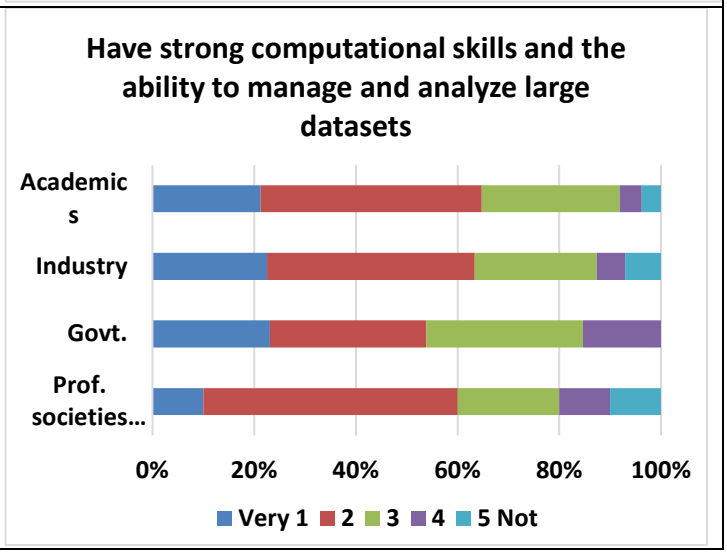

Understand and use scientific research methods
Academics
Industry
Govt.
Prof. societies/other
0%
50%
100%
Very 1
2
3
4
5 Not

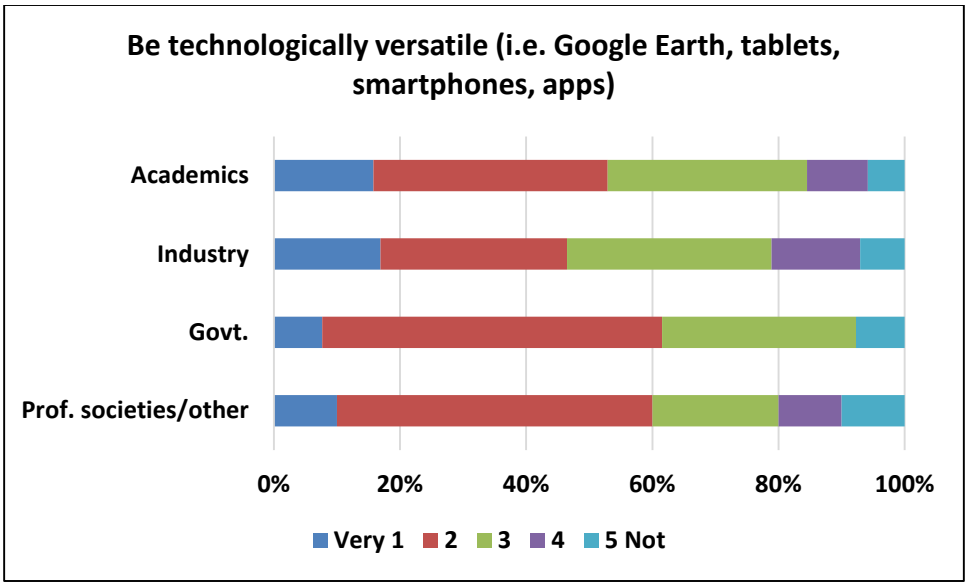

Have strong quantitative skills and ability to apply
Academics
Industry
Govt.
Prof. societies/other
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not


Integrate data from different disciplines and apply systems thinking
Academics
Industry
Govt.
Prof. societies/other
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not


Have strong field skills and a working knowledge of GIS
Academics
Industry
Govt.
Prof. societies/other
0%
50%
100%
Very 1
2
3
4
5 Not


Work in interdisciplinary teams and across cultures
Academics
Industry
Govt.
Prof. societies/...
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not


Have strong computational skills and the ability to manage and analyze large datasets
Academics
Industry
Govt.
Prof. societies...
0%
20%
40%
60%
80%
100%
Very 1
2
3
4
5 Not



Additional questions focused on pedagogy, departmental practices, requirements, and learning outcomes and K-12 teacher preparation and recruiting and retaining underrepresented groups. This data was analyzed at an early stage (~250 respondents), but needs to be reanalyzed now that the database is larger.