

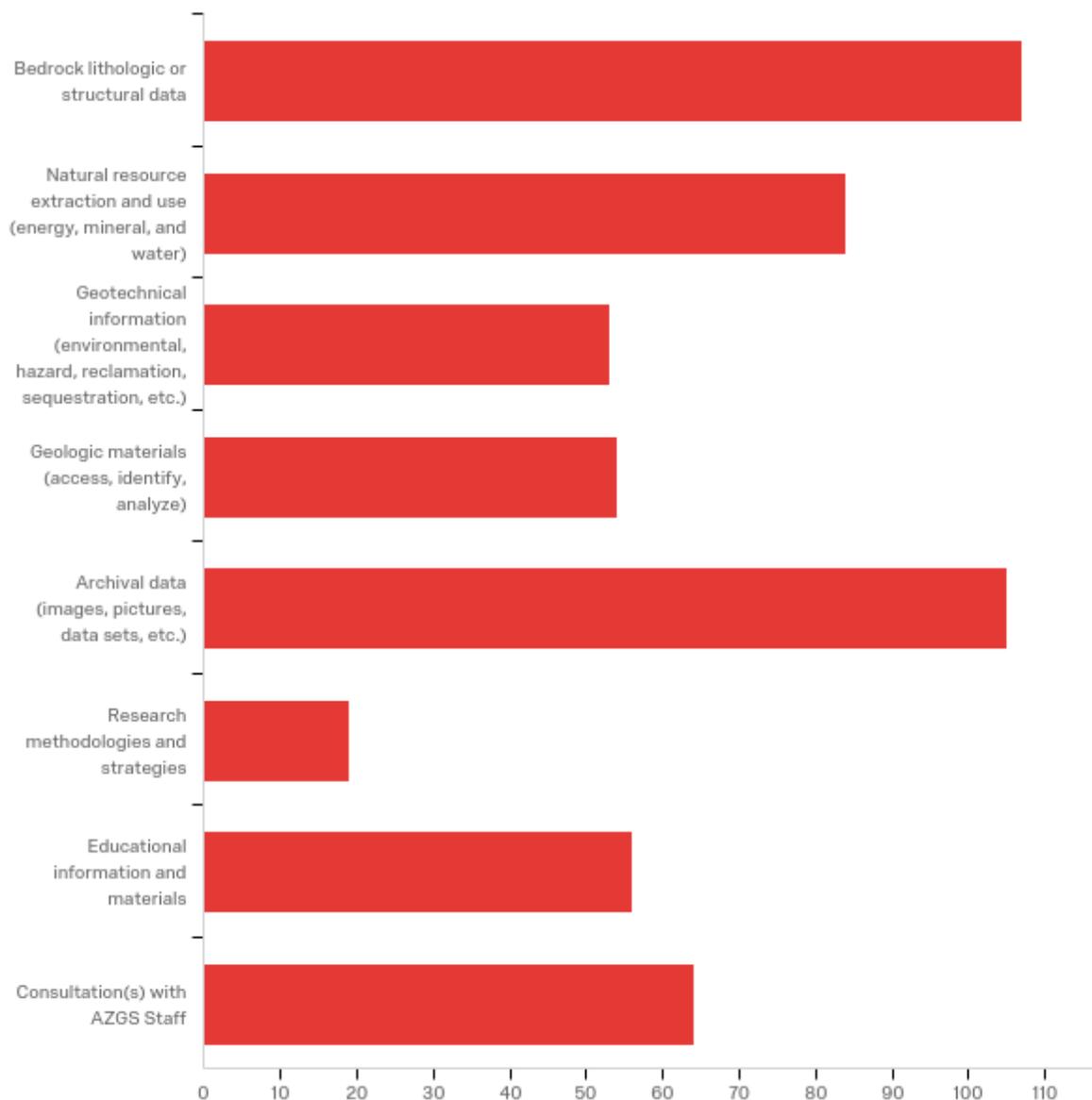
Appendix B

AZGS-Economic Impact Assessment Results of Closed-Ended Questions

Appendix B comprises participant responses to close-ended questions of Economic Impact Assessment survey; questions summarized by basic statistics and bar graphs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 30 and 31.

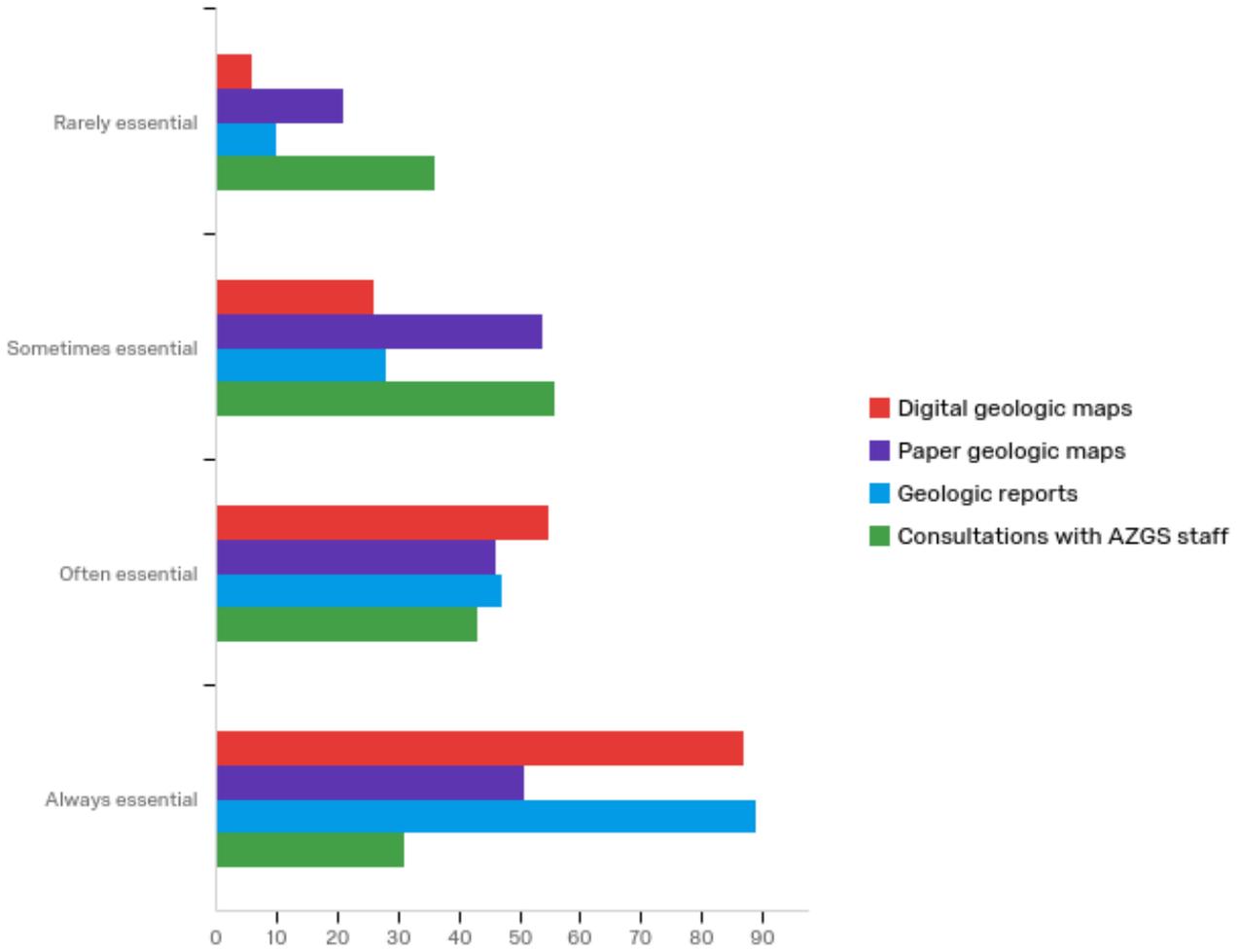
Responses to open-ended questions or to those questions that resulted in a range of values that did not lend themselves to simple statistical analysis are included in Appendix C: 6, 11, 15, 16, 20, and 29. Questions 6 and 29 were entirely open-ended and did not lend themselves to statistical tests.

Q1 - Within the past 2 years, which of the following products or services did you use/obtain from AZGS? Check all that apply.



#	Answer	%	Count
2	Bedrock lithologic or structural data	19.74%	107
1	Natural resource extraction and use (energy, mineral, and water)	15.50%	84
3	Geotechnical information (environmental, hazard, reclamation, sequestration, etc.)	9.78%	53
4	Geologic materials (access, identify, analyze)	9.96%	54
5	Archival data (images, pictures, data sets, etc.)	19.37%	105
6	Research methodologies and strategies	3.51%	19
7	Educational information and materials	10.33%	56
8	Consultation(s) with AZGS Staff	11.81%	64
	Total	100%	542

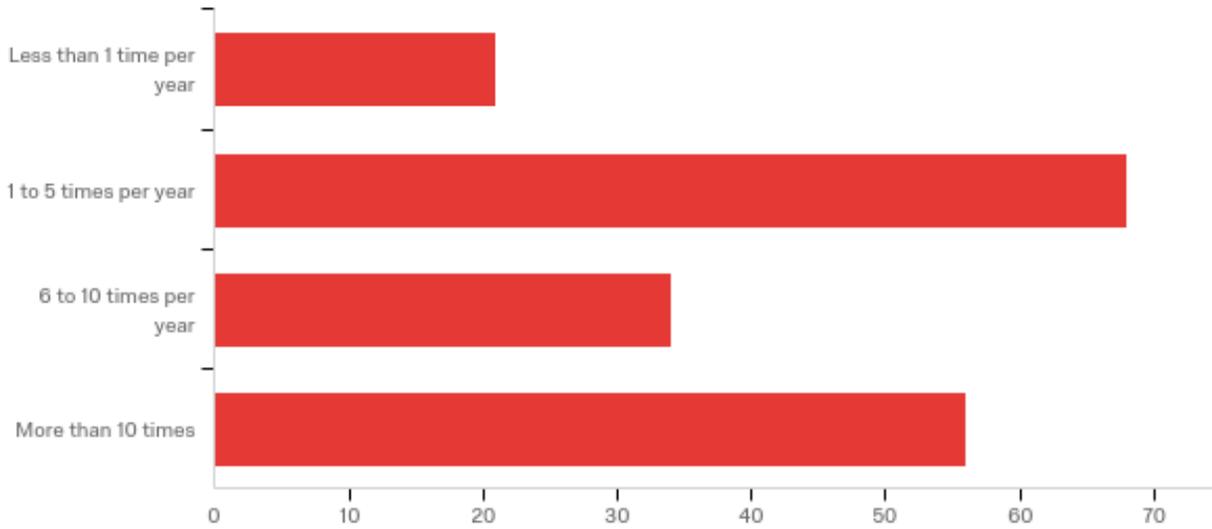
Q2 - Please rate how essential the following AZGS products are to fulfilling your organization's mission - Rank



#	Question	Rarely essential	Sometimes essential	Often essential	Always essential	Total
1	Digital geologic maps	3.45% 6	14.94% 26	31.61% 55	50.00% 87	174
2	Paper geologic maps	12.21% 21	31.40% 54	26.74% 46	29.65% 51	172
3	Geologic reports	5.75% 10	16.09% 28	27.01% 47	51.15% 89	174
4	Consultations with AZGS staff	21.69% 36	33.73% 56	25.90% 43	18.67% 31	166

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Digital geologic maps	1.00	4.00	3.28	0.84	0.71	174
2	Paper geologic maps	1.00	4.00	2.74	1.02	1.03	172
3	Geologic reports	1.00	4.00	3.24	0.92	0.85	174
4	Consultations with AZGS staff	1.00	4.00	2.42	1.02	1.05	166

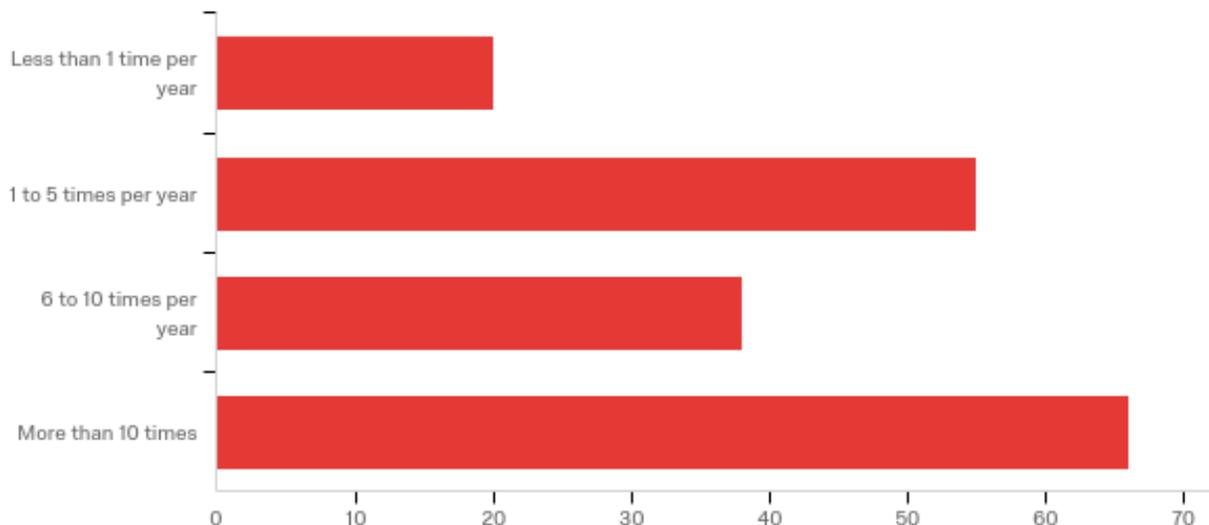
Q3 - Over the past 2 years, how many times per year did you use AZGS products and services?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Over the past 2 years, how many times per year did you use AZGS products and services?	1.00	4.00	2.70	1.03	1.07	179

#	Answer	%	Count
1	Less than 1 time per year	11.73%	21
2	1 to 5 times per year	37.99%	68
3	6 to 10 times per year	18.99%	34
4	More than 10 times	31.28%	56
	Total	100%	179

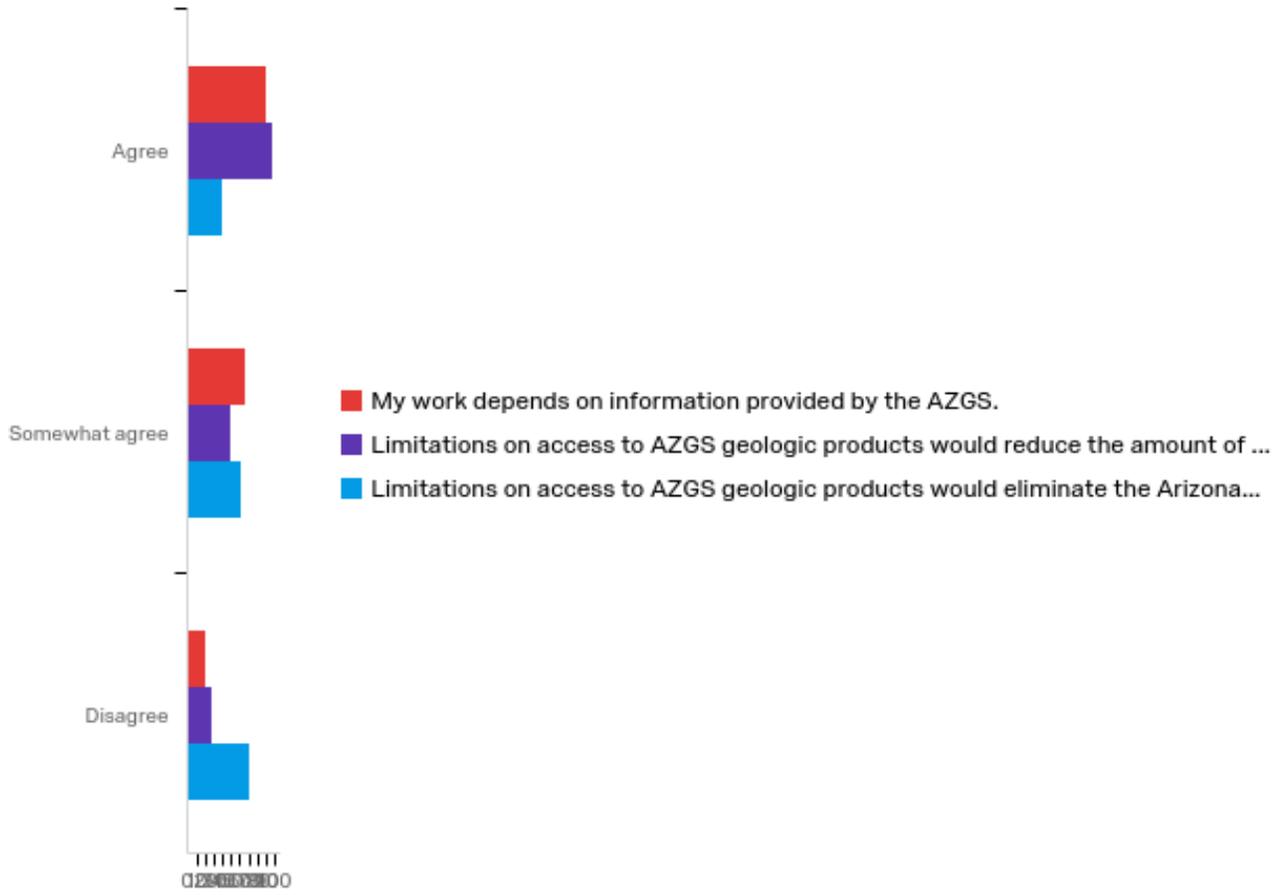
Q4 - Over the past 2 years, how many times per year did you access/use AZGS web based geologic products (e.g., AZGS portal page; AZGS Document Repository; AZGS Mining Data; Natural Hazards in Arizona viewer).



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Over the past 2 years, how many times per year did you access/use AZGS web based geologic products (e.g., AZGS portal page; AZGS Document Repository; AZGS Mining Data; Natural Hazards in Arizona viewer).	1.00	4.00	2.84	1.05	1.10	179

#	Answer	%	Count
1	Less than 1 time per year	11.17%	20
2	1 to 5 times per year	30.73%	55
3	6 to 10 times per year	21.23%	38
4	More than 10 times	36.87%	66
	Total	100%	179

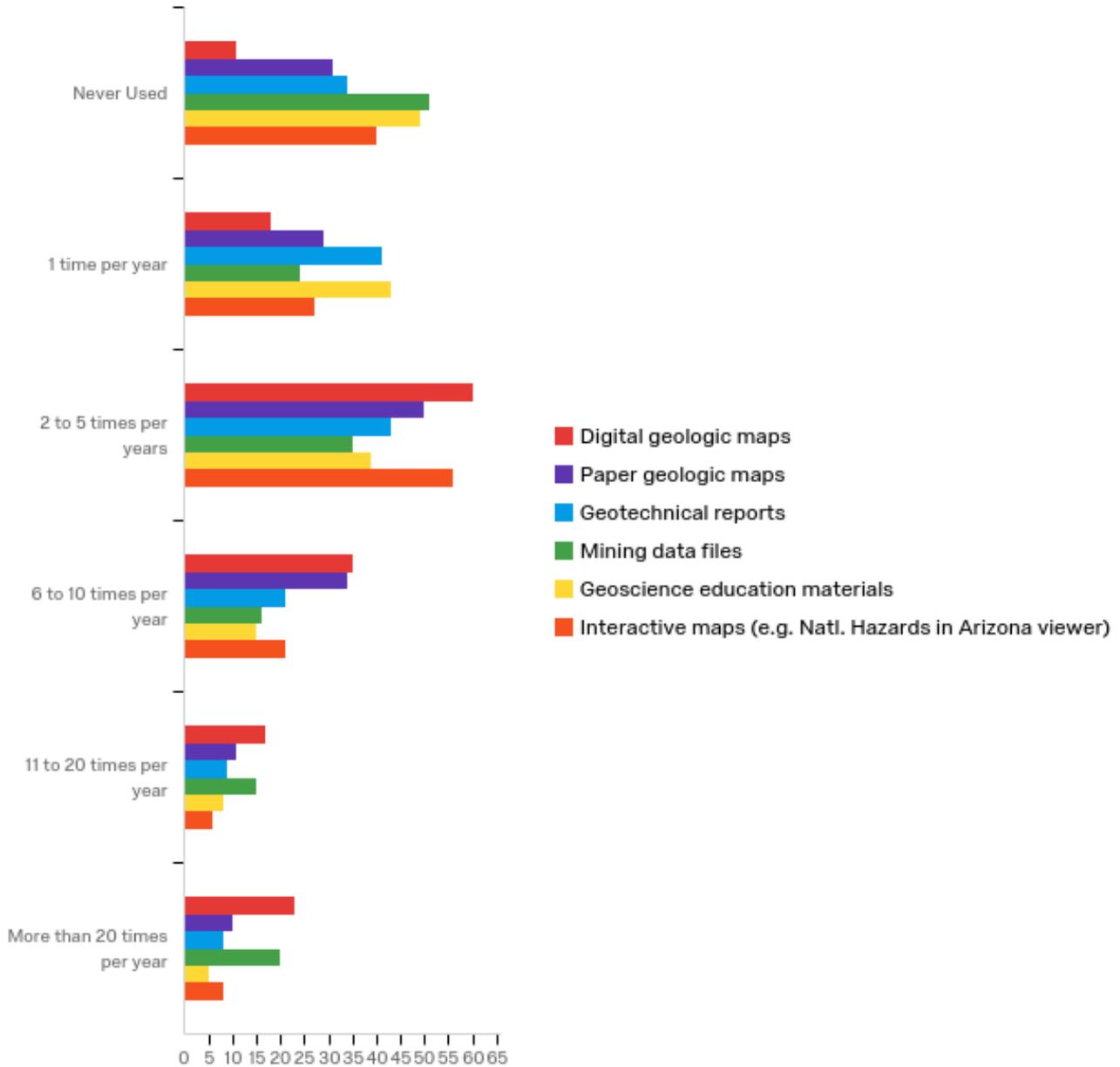
Q5 - Please rate each of the items below based on your level of agreement.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	My work depends on information provided by the AZGS.	2.00	4.00	2.60	0.68	0.47	176
2	Limitations on access to AZGS geologic products would reduce the amount of Arizona based work I/we would do.	2.00	4.00	2.60	0.74	0.55	174
3	Limitations on access to AZGS geologic products would eliminate the Arizona-based work we do.	2.00	4.00	3.19	0.78	0.61	173

#	Question	Agree		Somewhat agree		Disagree		Total
1	My work depends on information provided by the AZGS.	51.14%	90	37.50%	66	11.36%	20	176
2	Limitations on access to AZGS geologic products would reduce the amount of Arizona based work I/we would do.	55.75%	97	28.74%	50	15.52%	27	174
3	Limitations on access to AZGS geologic products would eliminate the Arizona-based work we do.	22.54%	39	35.84%	62	41.62%	72	173

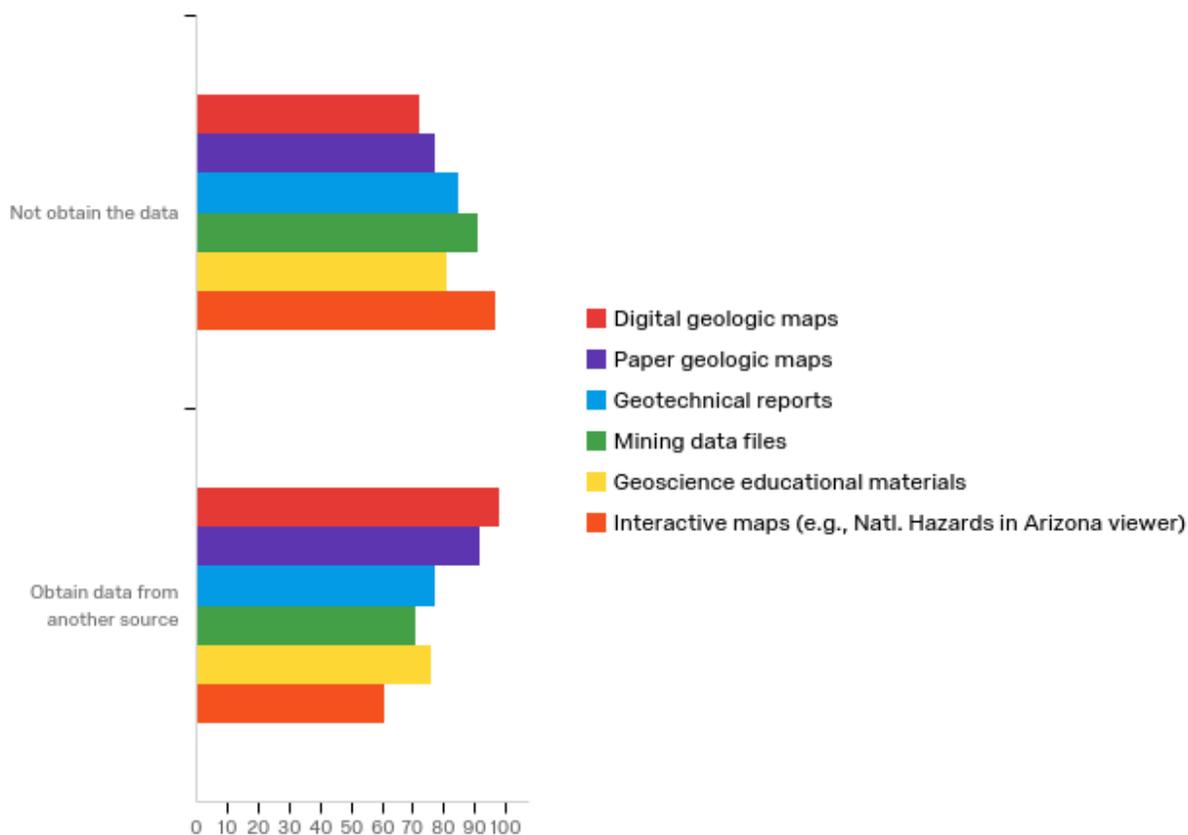
Q7 - Over the past 2 years, how many times per year have you used the following AZGS products?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Digital geologic maps	1.00	6.00	3.60	1.38	1.91	164
2	Paper geologic maps	1.00	6.00	2.97	1.39	1.94	165
3	Geotechnical reports	1.00	6.00	2.71	1.37	1.87	156
4	Mining data files	1.00	6.00	2.88	1.73	2.99	161
5	Geoscience education materials	1.00	6.00	2.40	1.31	1.72	159
6	Interactive maps (e.g. Natl. Hazards in Arizona viewer)	1.00	6.00	2.68	1.35	1.82	158

#	Question	Never Used		1 time per year		2 to 5 times per years		6 to 10 times per year		11 to 20 times per year		More than 20 times per year		Total
1	Digital geologic maps	6.71%	11	10.98%	18	36.59%	60	21.34%	35	10.37%	17	14.02%	23	164
2	Paper geologic maps	18.79%	31	17.58%	29	30.30%	50	20.61%	34	6.67%	11	6.06%	10	165
3	Geotechnical reports	21.79%	34	26.28%	41	27.56%	43	13.46%	21	5.77%	9	5.13%	8	156
4	Mining data files	31.68%	51	14.91%	24	21.74%	35	9.94%	16	9.32%	15	12.42%	20	161
5	Geoscience education materials	30.82%	49	27.04%	43	24.53%	39	9.43%	15	5.03%	8	3.14%	5	159
6	Interactive maps (e.g. Natl. Hazards in Arizona viewer)	25.32%	40	17.09%	27	35.44%	56	13.29%	21	3.80%	6	5.06%	8	158

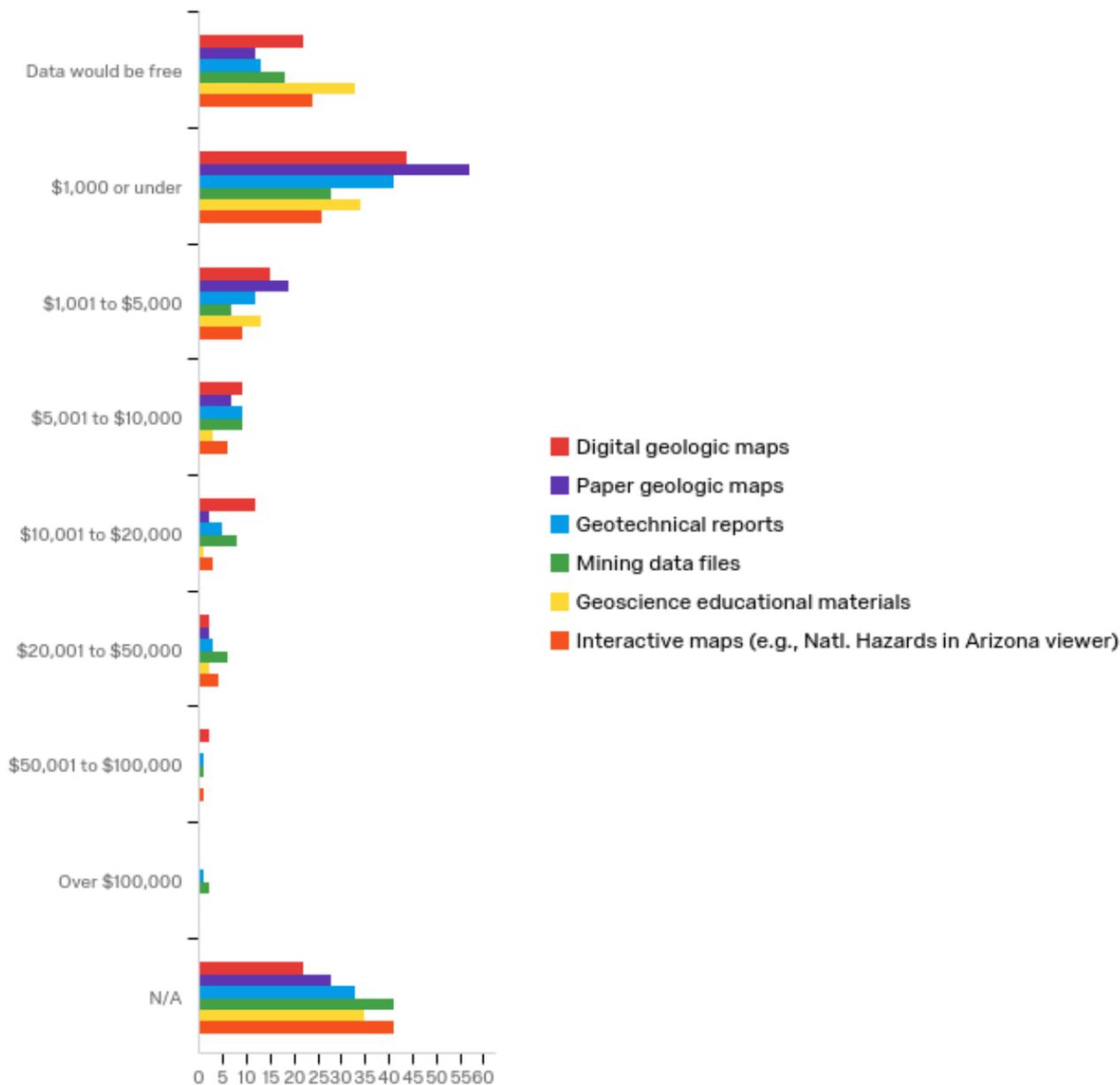
Q8 - What would your organization do if AZGS was no longer able to provide the following products?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Digital geologic maps	2.00	4.00	3.15	0.99	0.97	171
2	Paper geologic maps	2.00	4.00	3.09	0.99	0.99	170
3	Geotechnical reports	2.00	4.00	2.95	0.99	0.99	164
4	Mining data files	2.00	4.00	2.88	0.99	0.98	163
5	Geoscience educational materials	2.00	4.00	2.97	0.99	0.98	160
6	Interactive maps (e.g., Natl. Hazards in Arizona viewer)	2.00	4.00	2.78	0.97	0.93	161

#	Question	Not obtain the data	Obtain data from another source	Total
1	Digital geologic maps	42.35% 72	57.65% 98	170
2	Paper geologic maps	45.56% 77	54.44% 92	169
3	Geotechnical reports	52.47% 85	47.53% 77	162
4	Mining data files	56.17% 91	43.83% 71	162
5	Geoscience educational materials	51.59% 81	48.41% 76	157
6	Interactive maps (e.g., Natl. Hazards in Arizona viewer)	61.39% 97	38.61% 61	158

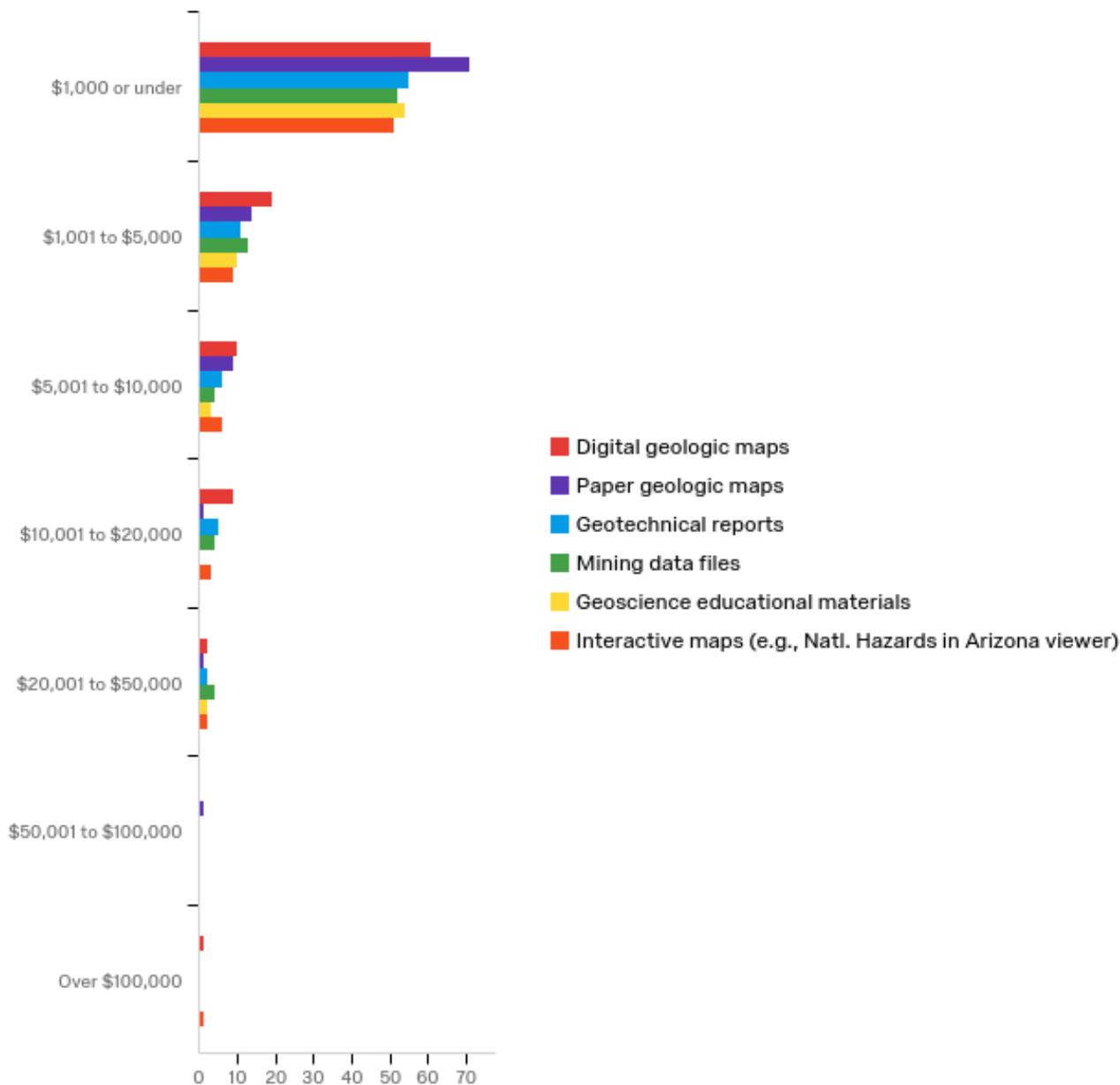
Q9 - If you answered "Obtained data from another source" for any of the products listed above, please estimate the anticipated cost of obtaining that information.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Digital geologic maps	1.00	9.00	3.77	2.87	8.25	128
2	Paper geologic maps	1.00	9.00	3.02	2.53	6.39	127
3	Geotechnical reports	1.00	9.00	3.62	2.61	6.81	118
4	Mining data files	1.00	9.00	4.39	2.62	6.89	120
5	Geoscience educational materials	1.00	9.00	4.60	3.13	9.79	121
6	Interactive maps (e.g., Natl. Hazards in Arizona viewer)	1.00	9.00	4.61	2.81	7.89	114

#	Question	Data would be free		\$1,000 or under		\$1,001 to \$5,000		\$5,001 to \$10,000		\$10,001 to \$20,000		\$20,001 to \$50,000		\$50,001 to \$100,000		Over \$100,000		N/A		Total
1	Digital geologic maps	17.19%	22	34.38%	44	11.72%	15	7.03%	9	9.38%	12	1.56%	2	1.56%	2	0.00%	0	17.19%	22	128
2	Paper geologic maps	9.45%	12	44.88%	57	14.96%	19	5.51%	7	1.57%	2	1.57%	2	0.00%	0	0.00%	0	22.05%	28	127
3	Geotechnical reports	11.02%	13	34.75%	41	10.17%	12	7.63%	9	4.24%	5	2.54%	3	0.85%	1	0.85%	1	27.97%	33	118
4	Mining data files	15.00%	18	23.33%	28	5.83%	7	7.50%	9	6.67%	8	5.00%	6	0.83%	1	1.67%	2	34.17%	41	120
5	Geoscience educational materials	27.27%	33	28.10%	34	10.74%	13	2.48%	3	0.83%	1	1.65%	2	0.00%	0	0.00%	0	28.93%	35	121
6	Interactive maps (e.g., Haz Viewer)	21.05%	24	22.81%	26	7.89%	9	5.26%	6	2.63%	3	3.51%	4	0.88%	1	0.00%	0	35.96%	41	114

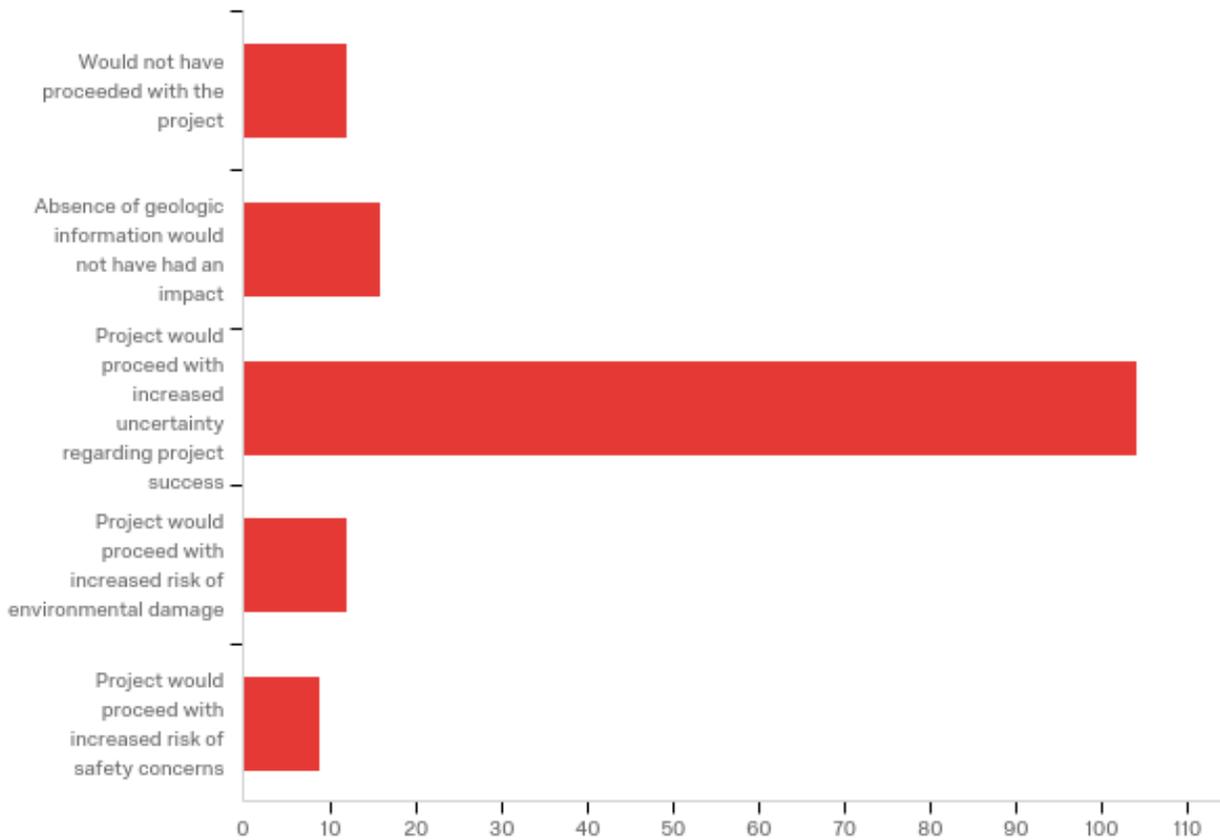
Q10 - If you answered "Obtained data from another source", please estimate what you would have been willing to pay for the information.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Digital geologic maps	1.00	7.00	1.78	1.19	1.42	102
2	Paper geologic maps	1.00	6.00	1.45	0.91	0.83	97
3	Geotechnical reports	1.00	5.00	1.58	1.04	1.08	79
4	Mining data files	1.00	5.00	1.64	1.13	1.27	77
5	Geoscience educational materials	1.00	5.00	1.35	0.81	0.66	69
6	Interactive maps (e.g., Natl. Hazards in Arizona viewer)	1.00	7.00	1.61	1.19	1.40	72

#	Question	\$1,000 or under		\$1,001 to \$5,000		\$5,001 to \$10,000		\$10,001 to \$20,000		\$20,001 to \$50,000		\$50,001 to \$100,000		Over \$100,000		Total
1	Digital geologic maps	59.80%	61	18.63%	19	9.80%	10	8.82%	9	1.96%	2	0.00%	0	0.98%	1	102
2	Paper geologic maps	73.20%	71	14.43%	14	9.28%	9	1.03%	1	1.03%	1	1.03%	1	0.00%	0	97
3	Geotechnical reports	69.62%	55	13.92%	11	7.59%	6	6.33%	5	2.53%	2	0.00%	0	0.00%	0	79
4	Mining data files	67.53%	52	16.88%	13	5.19%	4	5.19%	4	5.19%	4	0.00%	0	0.00%	0	77
5	Geoscience educational materials	78.26%	54	14.49%	10	4.35%	3	0.00%	0	2.90%	2	0.00%	0	0.00%	0	69
6	Interactive maps (e.g., Natl. Hazards in Arizona viewer)	70.83%	51	12.50%	9	8.33%	6	4.17%	3	2.78%	2	0.00%	0	1.39%	1	72

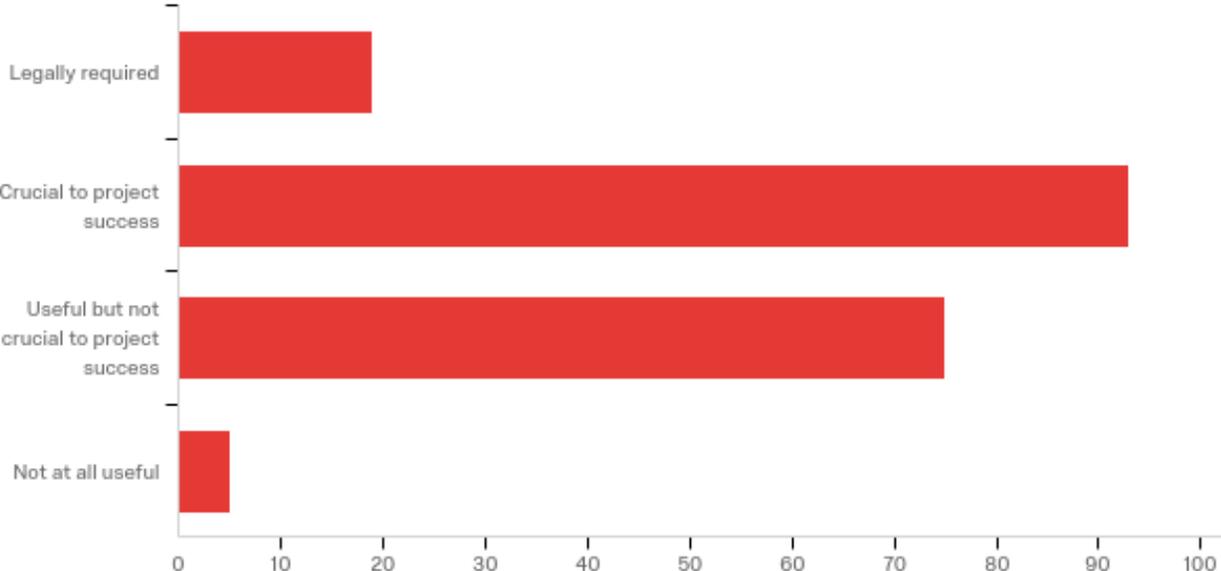
Q12 - If you answered "Not obtain the data" for any of the products listed above, which outcome is most likely?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If you answered "Not obtain the data" for any of the products listed above, which outcome is most likely?	1.00	6.00	2.99	0.94	0.89	156

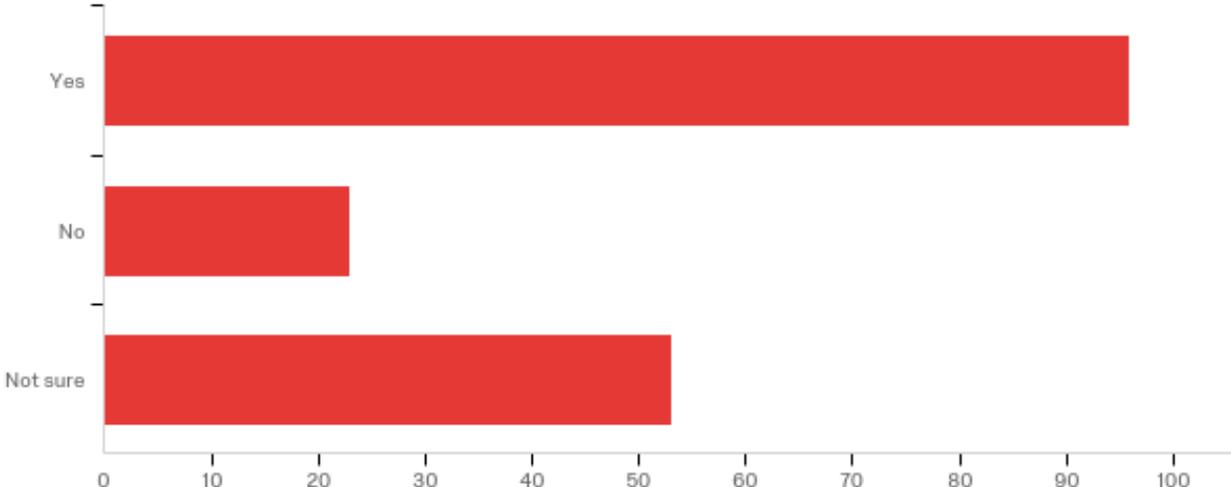
#	Answer	%	Count
1	Would not have proceeded with the project	7.84%	12
2	Absence of geologic information would not have had an impact	10.46%	16
3	Project would proceed with increased uncertainty regarding project success	67.97%	104
4	Project would proceed with increased risk of environmental damage	7.84%	12
5	Project would proceed with increased risk of safety concerns	5.88%	9
	Total	100%	153

Q13 - Think of the last time you used an AZGS geoproduct. How important was that product to that project? Please check all that apply.



#	Answer	%	Count
1	Legally required	9.90%	19
2	Crucial to project success	48.44%	93
4	Useful but not crucial to project success	39.06%	75
5	Not at all useful	2.60%	5
	Total	100%	192

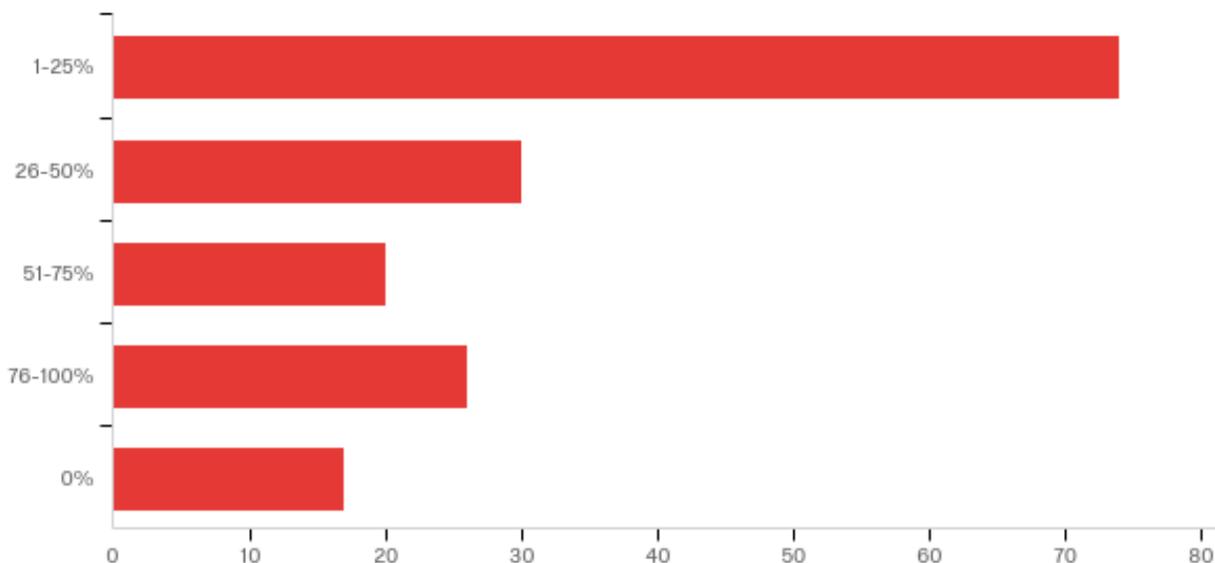
Q14 - Can you think of a specific instance when products of the AZGS (maps / reports / consultations) saved you or your organization money?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Can you think of a specific instance when products of the AZGS (maps / reports / consultations) saved you or your organization money?	1.00	3.00	1.75	0.90	0.80	172

#	Answer	%	Count
1	Yes	55.81%	96
2	No	13.37%	23
3	Not sure	30.81%	53
	Total	100%	172

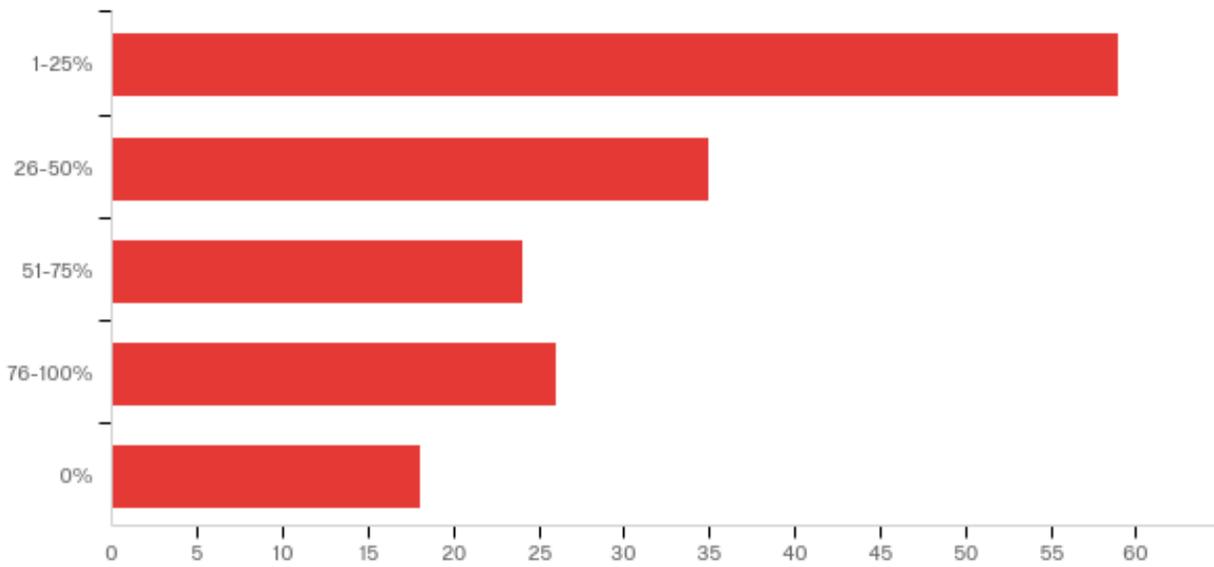
Q17 - What percent of your work in the past 2 years required 1:24,000-scale geologic quadrangle maps?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What percent of your work in the past 2 years required 1:24,000-scale geologic quadrangle maps?	4.00	8.00	5.29	1.42	2.02	167

#	Answer	%	Count
4	1-25%	44.31%	74
5	26-50%	17.96%	30
6	51-75%	11.98%	20
7	76-100%	15.57%	26
8	0%	10.18%	17
	Total	100%	167

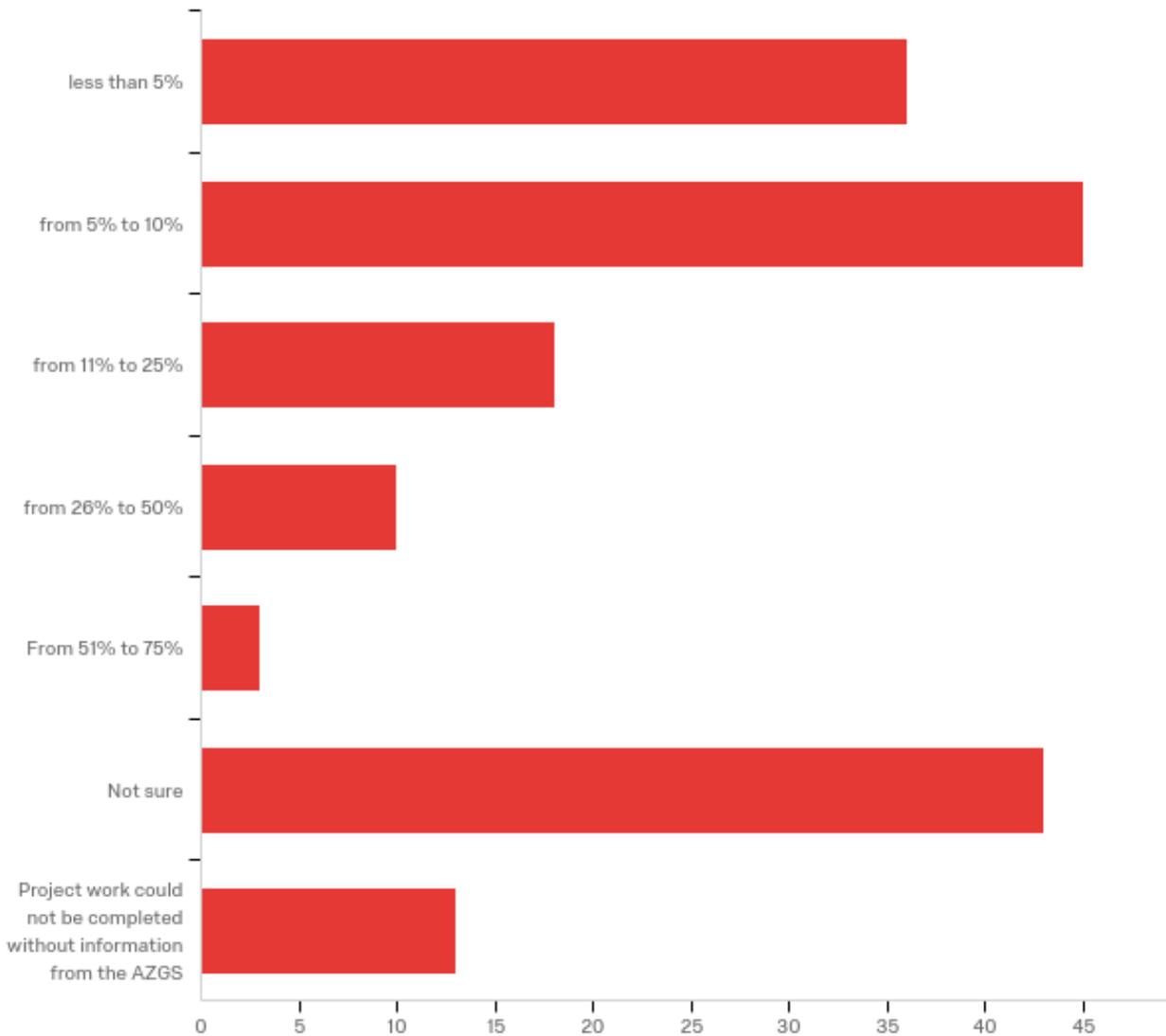
Q18 - What percent of the geologic quadrangle maps used in the past 2 years were published by the AZGS?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What percent of the geologic quadrangle maps used in the past 2 years were published by the AZGS?	4.00	8.00	5.44	1.40	1.96	162

#	Answer	%	Count
4	1-25%	36.42%	59
5	26-50%	21.60%	35
6	51-75%	14.81%	24
7	76-100%	16.05%	26
8	0%	11.11%	18
	Total	100%	162

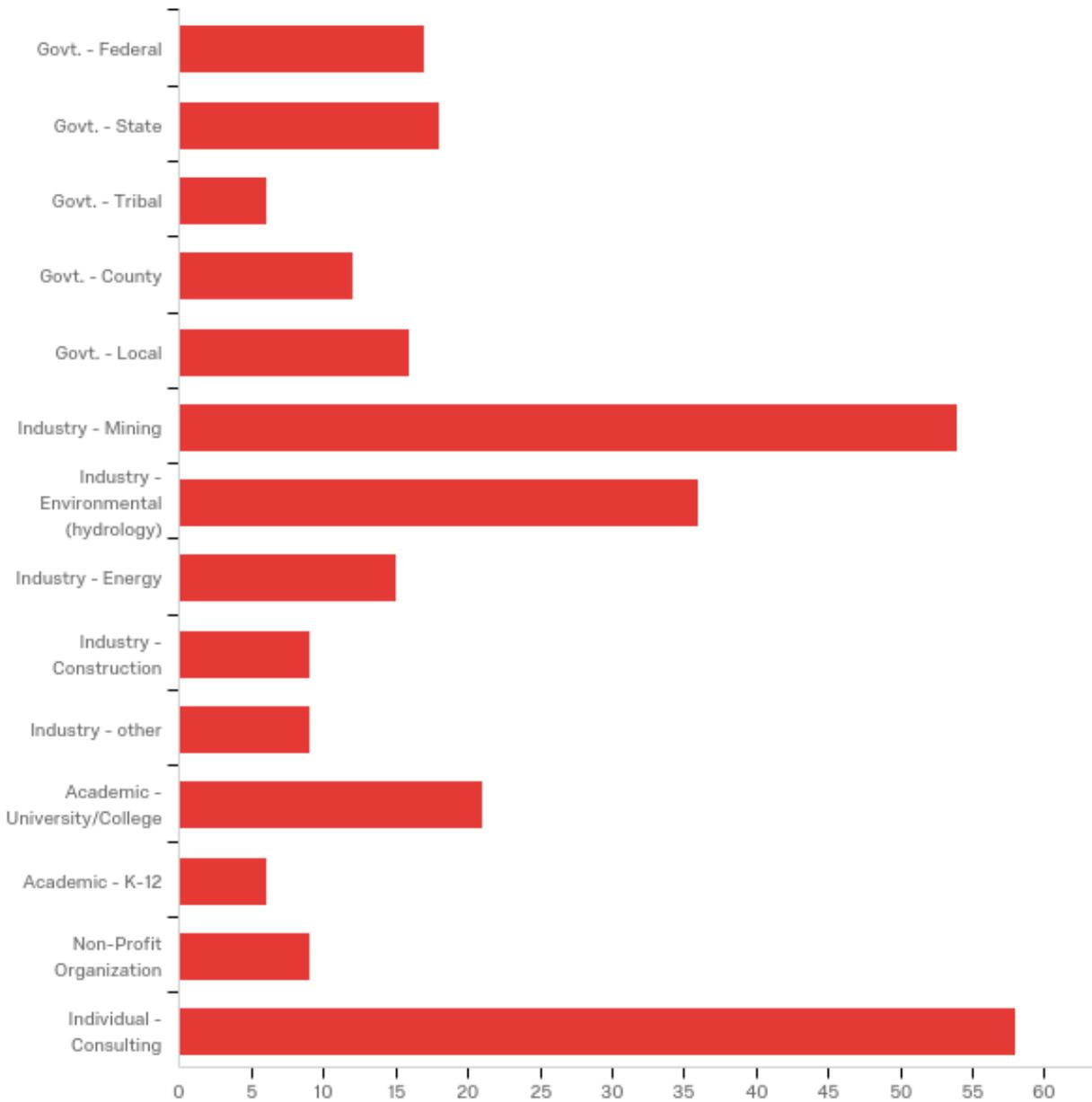
Q19 - On a typical project for which AZGS maps or reports were not available, what percent (%) of your project budget would be spent on obtaining the required geological information?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	On a typical project for which AZGS maps or reports were not available, what percent (%) of your project budget would be spent on obtaining the required geological information?	1.00	7.00	3.48	2.14	4.57	168

#	Answer	%	Count
1	less than 5%	21.43%	36
2	from 5% to 10%	26.79%	45
3	from 11% to 25%	10.71%	18
4	from 26% to 50%	5.95%	10
5	From 51% to 75%	1.79%	3
6	Not sure	25.60%	43
7	Project work could not be completed without information from the AZGS	7.74%	13
	Total	100%	168

Q21 - What type of organization(s) do you represent?

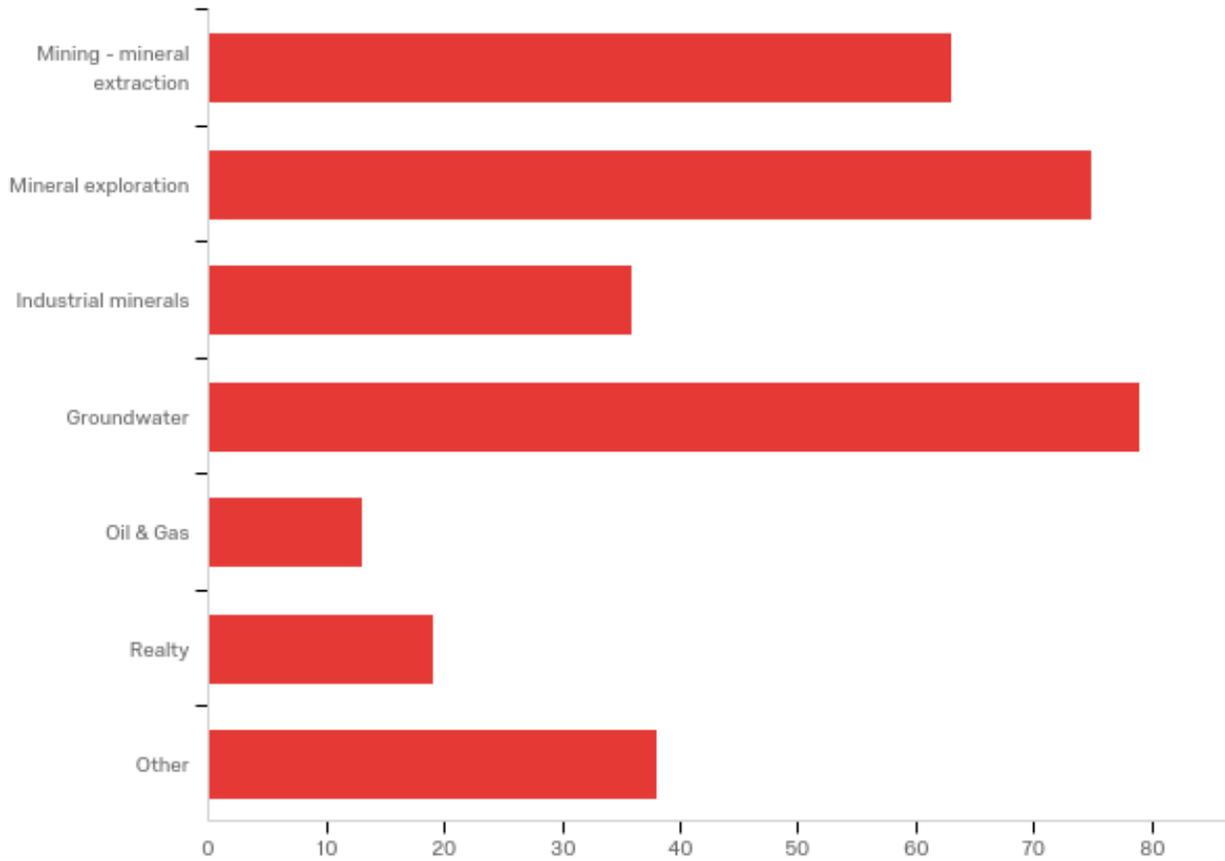


#	Answer	%	Count
1	Govt. - Federal	5.94%	17
2	Govt. - State	6.29%	18
3	Govt. - Tribal	2.10%	6
4	Govt. - County	4.20%	12
5	Govt. - Local	5.59%	16
6	Industry - Mining	18.88%	54

7	Industry - Environmental (hydrology)	12.59%	36
8	Industry - Energy	5.24%	15
9	Industry - Construction	3.15%	9
10	Industry - other	3.15%	9
11	Academic - University/College	7.34%	21
12	Academic - K-12	2.10%	6
13	Non-Profit Organization	3.15%	9
14	Individual - Consulting	20.28%	58
	Total	100%	286

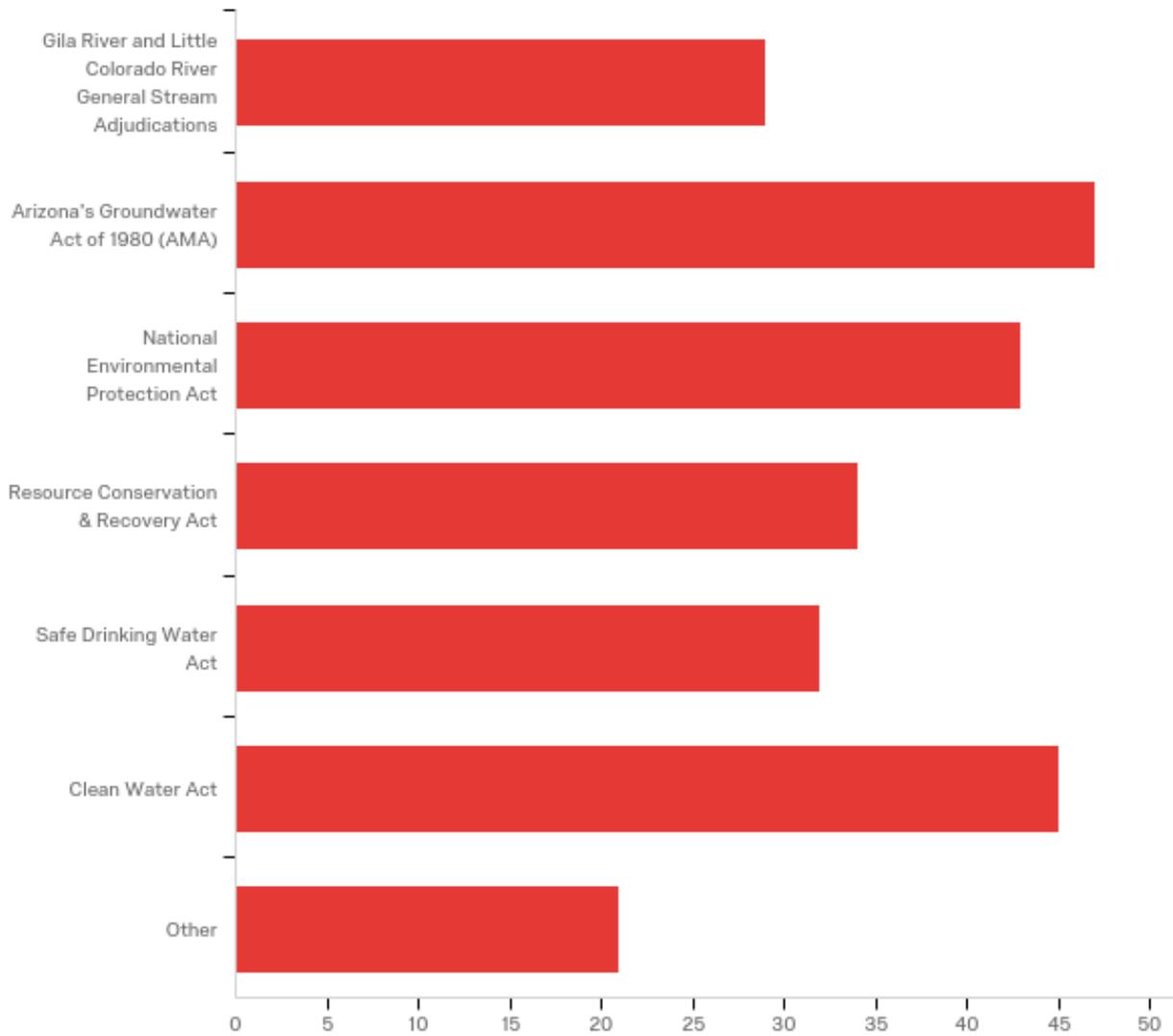
Q22. From the lists below, select those activities of your organization that require AZGS geologic products, information, or expertise. Please check all those that apply. (Eds. Note: Q22 refers to Q23, 24, 25, 26 and 27.

Q23 - For those in exploration & development



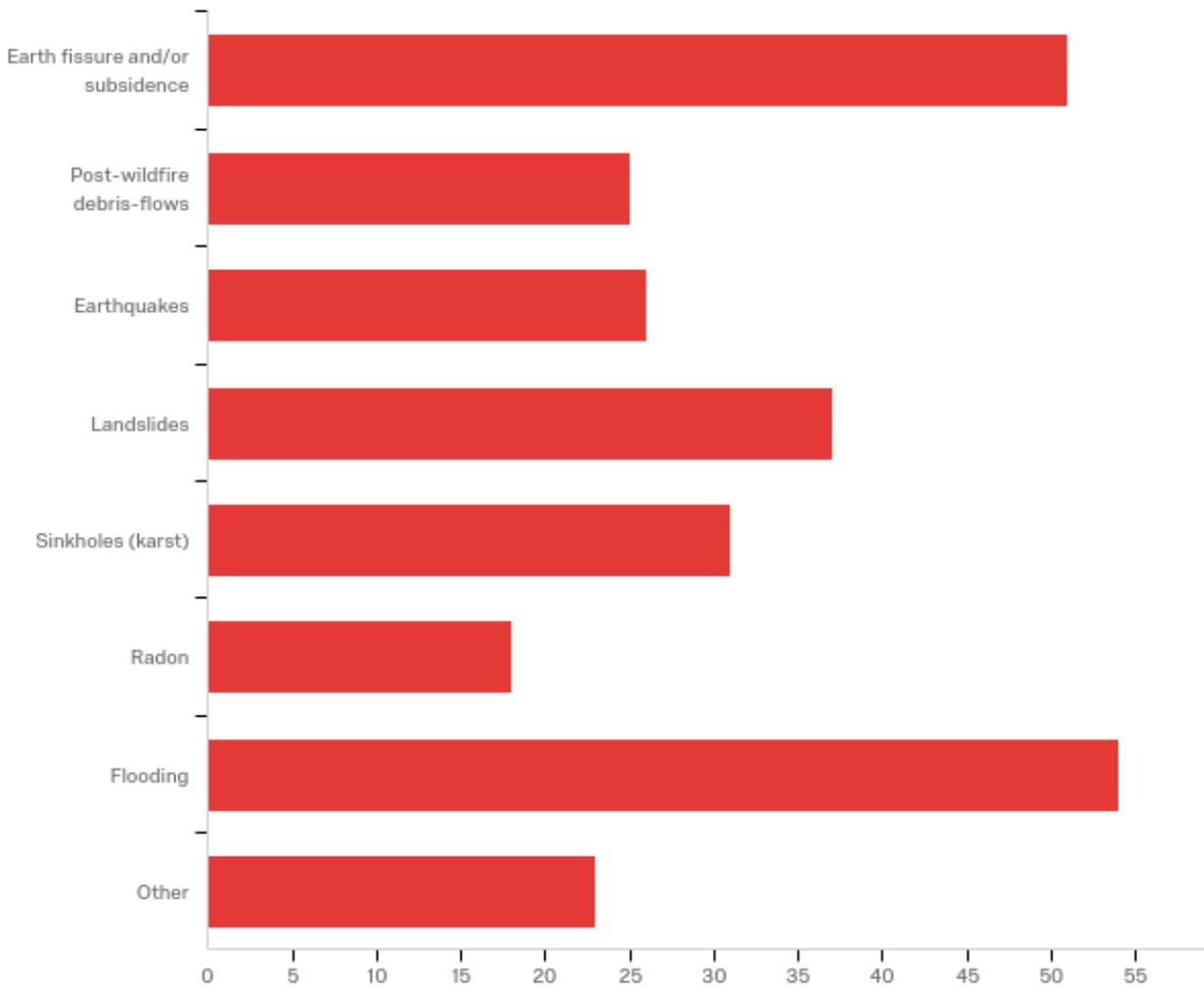
#	Answer	%	Count
1	Mining - mineral extraction	19.50%	63
2	Mineral exploration	23.22%	75
3	Industrial minerals	11.15%	36
4	Groundwater	24.46%	79
5	Oil & Gas	4.02%	13
6	Realty	5.88%	19
7	Other	11.76%	38
	Total	100%	323

Q24 - For those in the environmental/hydrologic consulting industry



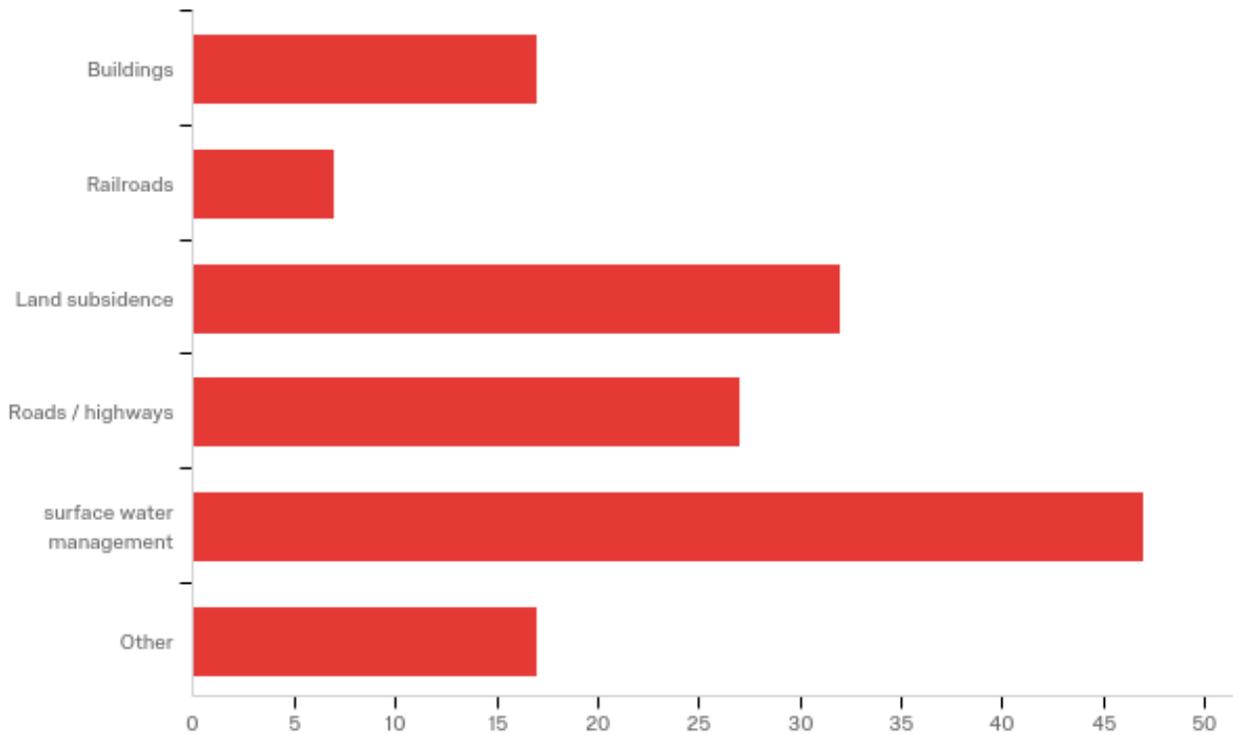
#	Answer	%	Count
7	Gila River and Little Colorado River General Stream Adjudications	11.55%	29
6	Arizona's Groundwater Act of 1980 (AMA)	18.73%	47
1	National Environmental Protection Act	17.13%	43
3	Resource Conservation & Recovery Act	13.55%	34
4	Safe Drinking Water Act	12.75%	32
2	Clean Water Act	17.93%	45
5	Other	8.37%	21
	Total	100%	251

Q25 - For those engaged in evaluating, assessing or communicating natural hazards, please select all applicable hazards.



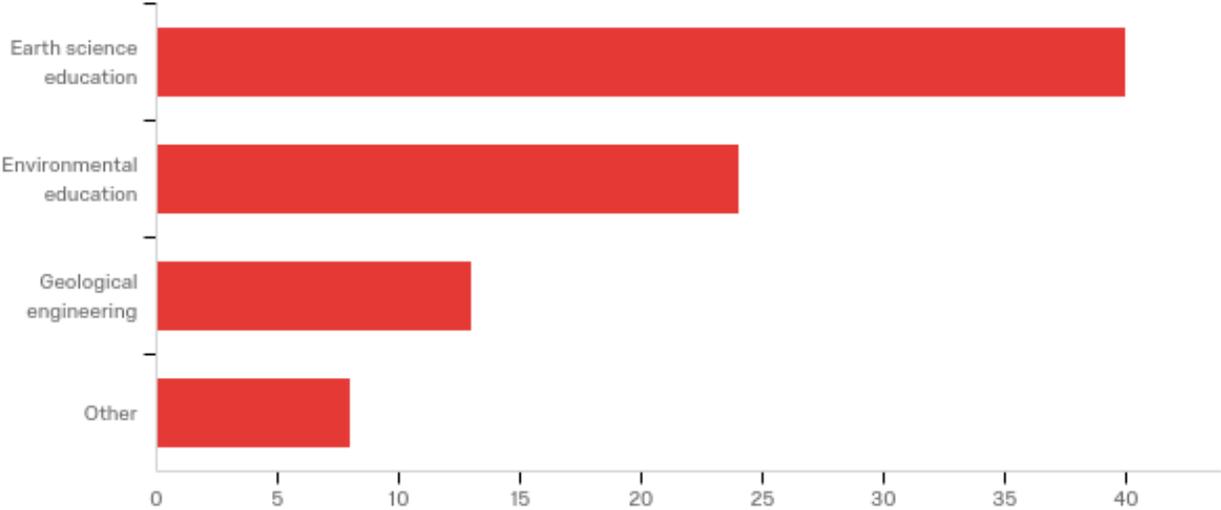
#	Answer	%	Count
1	Earth fissure and/or subsidence	19.25%	51
5	Post-wildfire debris-flows	9.43%	25
2	Earthquakes	9.81%	26
3	Landslides	13.96%	37
4	Sinkholes (karst)	11.70%	31
6	Radon	6.79%	18
8	Flooding	20.38%	54
7	Other	8.68%	23
	Total	100%	265

Q26 - For those engaged in engineering applications, please select all applicable activities



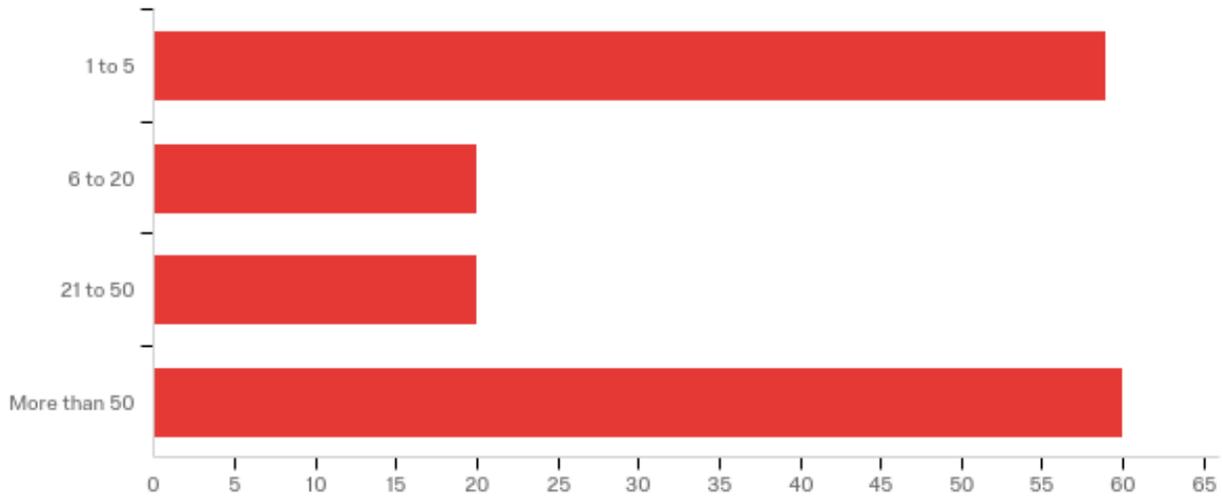
#	Answer	%	Count
1	Buildings	11.56%	17
3	Railroads	4.76%	7
4	Land subsidence	21.77%	32
2	Roads / highways	18.37%	27
5	surface water management	31.97%	47
6	Other	11.56%	17
	Total	100%	147

Q27 - For those engaged in Education



#	Answer	%	Count
1	Earth science education	47.06%	40
2	Environmental education	28.24%	24
3	Geological engineering	15.29%	13
4	Other	9.41%	8
	Total	100%	85

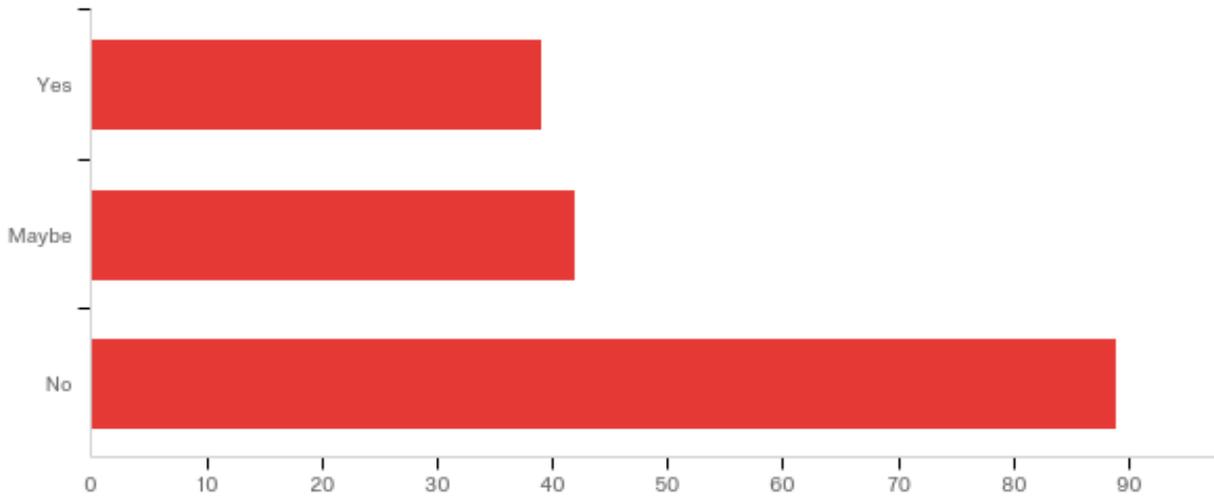
Q28 - Approximately how many Arizona-based employees work in your agency, company or organization? Please enter a number in the box below.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Approximately how many Arizona-based employees work in your agency, company or organization? Please enter a number in the box below.	4.00	7.00	5.51	1.32	1.75	159

#	Answer	%	Count
4	1 to 5	37.11%	59
5	6 to 20	12.58%	20
6	21 to 50	12.58%	20
7	More than 50	37.74%	60
	Total	100%	159

Q30 - Would you be willing to participate in either a roundtable discussion or one-on-one interview to further discuss your experiences using AZGS information?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you be willing to participate in either a roundtable discussion or one-on-one interview to further discuss your experiences using AZGS information?	1.00	3.00	2.29	0.82	0.67	170

#	Answer	%	Count
1	Yes	22.94%	39
2	Maybe	24.71%	42
3	No	52.35%	89
	Total	100%	170

Q31 - If you selected Yes or Maybe, please provide an e-mail address or phone number so we can contact you.

Seventy people responded by providing their e-mail address, or rarely a phone number.