Master of Business and Science Outcomes

The overarching goal of the MBS program is to create broadly educated and ethical life science industry professionals. The MBS program follows a "T" education philosophy, in that all students are required to obtain a broad knowledge of the science, business, ethics, and regulatory processes across the life science industries, but are also expected to obtain deeper knowledge in a specific area of interest.

A primary learning outcome of the MBS program is provide students with the knowledge, values, and professional skills to operate effectively in managerial roles in the biotech, pharmaceutical, and medical device and diagnostics industries. It also provides students with an understanding of the regulatory environment in which these industries operate. The program prides itself on the team-based projects that pervade the curriculum. A focus on communication and leadership skills, consistent with the learning outcomes for the program, is evident as the students are required to demonstrate both written and oral presentation skills throughout the program.

These aims have been formulated into seven distinct learning outcomes:

MBS Program Learning Outcomes

1. Students can communicate effectively in an industry environment composed of scientists, engineers, and business professionals.

2. Students can contribute productively on an interdisciplinary team tackling complex problems.

3. Students have the core business analysis and management knowledge needed for the bioscience industry.

4. Students understand the business, research, development, regulatory, production and marketing functions of the bioscience industry.

5. Students understand the translation of basic science and engineering discoveries into products and processes that benefit society.

6. Students are advocates for ethical principles in research, development and business in the biosciences.

Starting Semester	Initial Enrollment (Total)	Retained In Year 2	On Time Graduation Rate (Male)	On Time Graduation Rate (Female)	Total On Time Graduation Rate
Fall 2011	48	46	31/31	15/17	96%
Fall 2012	53	48	22/27	26/26	91%
Fall 2013	49	47	19/20	28/29	96%
Fall 2014	69	62	29/33	33/36	90%
Fall 2015	68	64	28/29	36/39	94%
Fall 2016	61	60	24/24	36/37	98%
Fall 2017	48	48	28/28	20/20	100%
Fall 2018	18	18	11/11	7/7	100%
Fall 2019	41	41	19/21	20/20	95%
Fall 2020	39				
				Nine Year Graduating Rate	95%

Table 1: MBS Program Enrollment and On-Time Graduation Rates

Diversity of the MBS Class of 2020
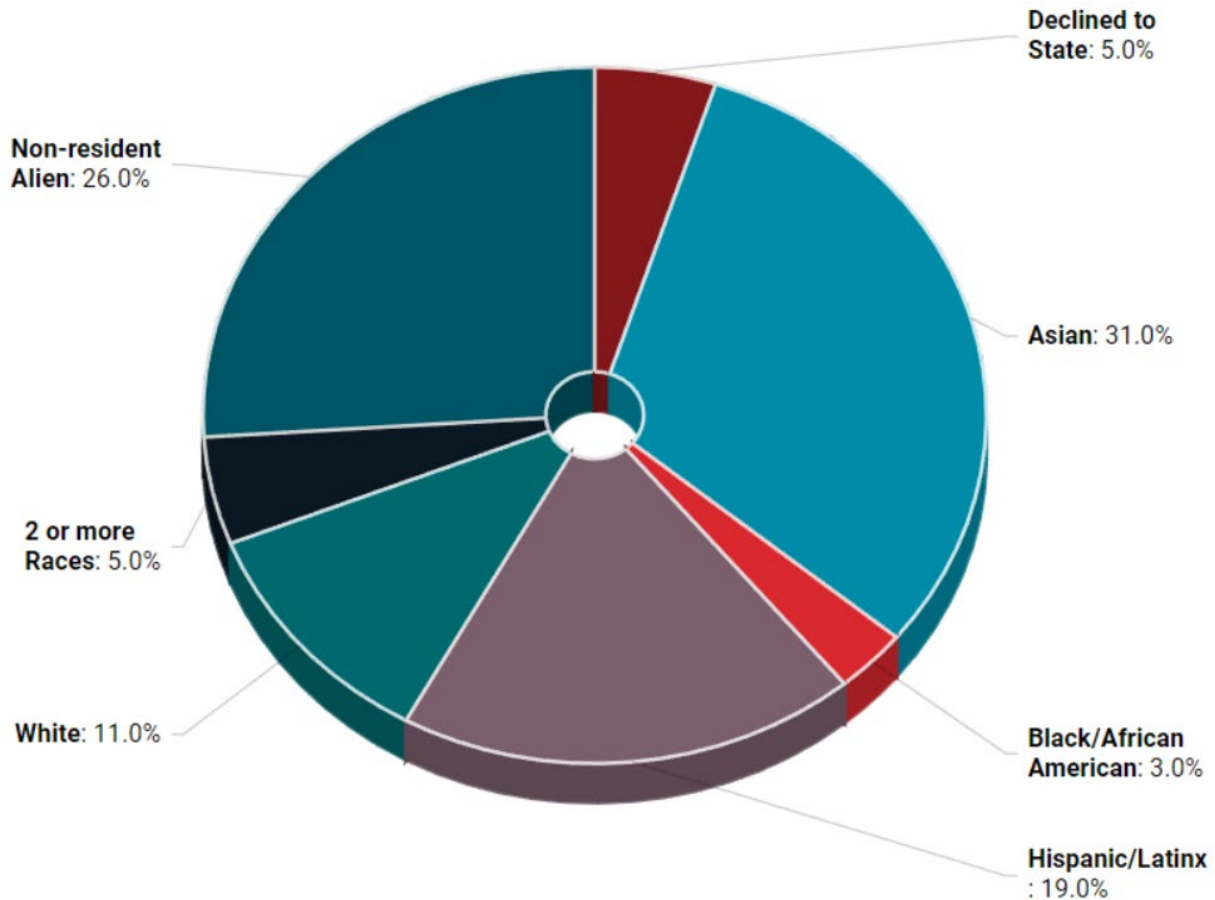
The MBS Program Assessment

KGI uses a variety of direct and indirect evidence to assess the effectiveness of the MBS curriculum in meeting program learning outcomes. The following presents examples of student learning on the MBS program. Figure 1 presents student achievement in their capstone Team Master's Project at the end of the second year, with the majority of students demonstrating exceptional performance or proficiency in the communication and technical aspects of the project.
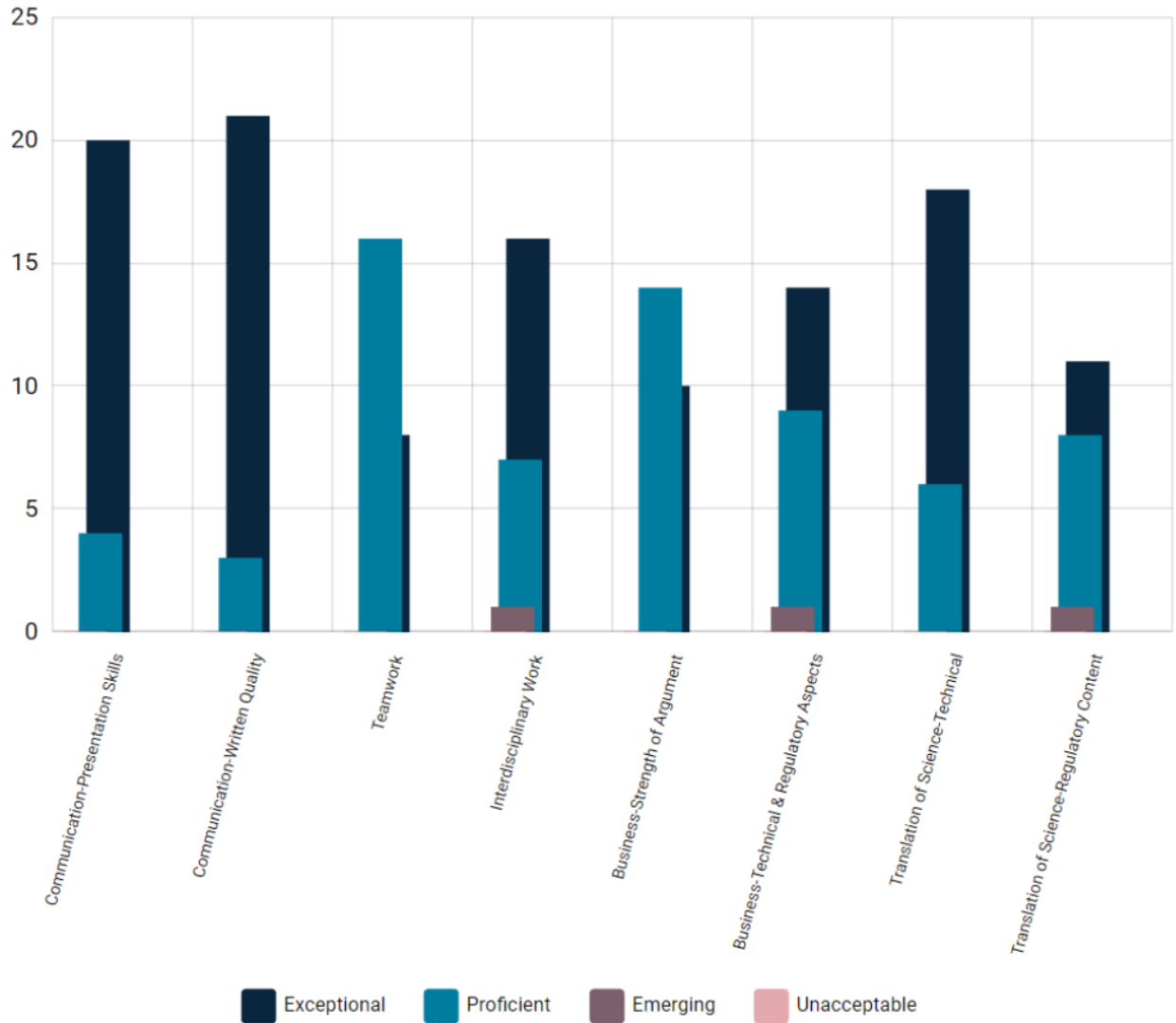
Figure 1: Summative Assessment of Learning Outcomes: Master of Business and Science, Class of 2020

All masters level programs within the Riggs School have a summative or capstone project. For each project, teams of faculty assess student outcomes with rubrics that have standards linked to that program's learning outcomes. The following tables present aggregate data from these rubrics on student learning within their program.

Table 2: Summative Assessment of Learning Outcomes: Masters of Business and Science, Class of 2020

Program Learning Outcome	Assessment Method	Number of Student Assessed	Exceptional		Proficient		Emerging		Unacceptable	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
1. Students can communicate effectively in an industry environment composed of scientists, engineers, and business professionals	Rubric (Presentation Delivery, Verbal Support of Slides, Energy and Connection with Audience)	24	20	83%	4	17%	0	0%	0	0%
	Rubric (Average Score: Slide Quality, Organization; Coverage of Essential topics)	24	21	86%	3	14%	0	0%	0	0%
2. Students can contribute productively on an interdisciplinary team tackling complex problems	Rubric (Overall score across 10 items focusing on quality of presentation, content, and critical thinking)	24	8	33%	16	67%	0	0%	0	0%
3. Students have the core business analysis and management knowledge needed for the bioscience industry and can assume leadership roles in realizing the goals of technical and business projects.	Rubric (Business content)	24	16	67%	7	29%	1	4%	0	0%
4. Students understand the business, research and development, regulatory, production, and marketing functions of the bioscience industry	Rubric (Strength of Argument)	24	10	42%	14	58%	0	0%	0	0%
	Rubric (avg of business, regulatory and technical content scores)	24	14	58%	9	38%	1	4%	0	0%
5. Students understand the translation of basic science and engineering discoveries into products and processes, which benefit society.	Rubric (Technical Content)	24	18	75%	6	25%	0	0%	0	0%
	Rubric (Regulatory Content)	20	11	55%	8	40%	1	5%	0	0%
6. Students adhere to ethical principles in research, development and business issues inherent in the bioscience industries.	Rubric (Ethical Content)	20	4	20%	14	70%	2	10%	0	0%

In addition, KGI collects a variety of indirect evidence, ranging from student satisfaction surveys to surveys of alumni. Information from alumni is particularly important, as it helps KGI understand whether the MBS curriculum is meeting its goal of preparing students for jobs in a variety of roles within the bioscience industries. Figure 3 presents data from a 2017 alumni survey asking about the first job obtained after graduating. This chart indicates that MBS graduates obtain jobs in a wide variety of job functions, ranging from research and development, to operations, to

consulting. This data is useful, in that it suggests that the degree is preparing students for careers in a variety of industry roles.

Through student satisfaction surveys, students also report a high degree of satisfaction in their academic experience and in meeting the goals of the program. Self-reported scores were high in collaborating in teams (average of 4.6 out of a 5.0 scale) and leading teams (average 4.5 on a 5 point scale)

Table 3: MBS, End of Year Survey, 2020

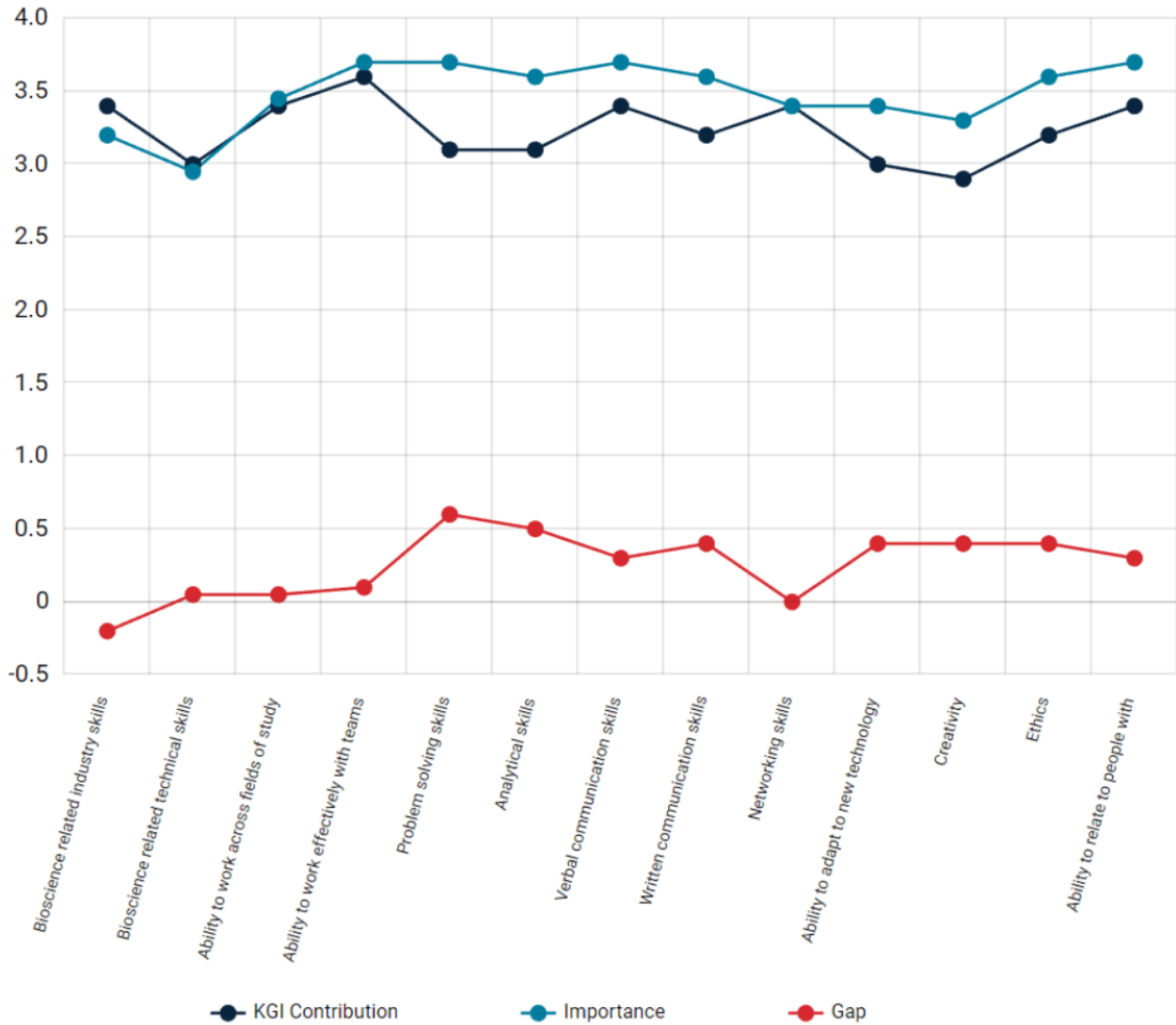|	Mean	Std Deviation	Variance	Count
Act ethically and in conformity with high standards of professionalism	4.20	1.25	1.56	20
Ability to use creativity and critical thinking for problem solving and innovation	4.35	0.79	0.63	20
Ability to lead teams	4.50	0.67	0.45	20
Ability to evaluate research findings	3.95	0.92	0.85	20
Ability to conduct research	3.80	1.03	1.06	20
Ability to communicate and interact effectively with others	4.45	0.80	0.65	20
Ability to collaborate in teams	4.60	0.80	0.64	20
Ability to apply what was taught in real-world settings	4.25	1.04	1.09	20
Ability to apply research findings	4.10	0.83	0.69	20

Figure 2: Alumni Survey Skill Gap Analysis. Source: KGI Spring 2019 Alumni Survey. Data is from 124 respondents across all Riggs School programs, with the majority or respondents holding the MBS degree.

KECK GRADUATE INSTITUTE

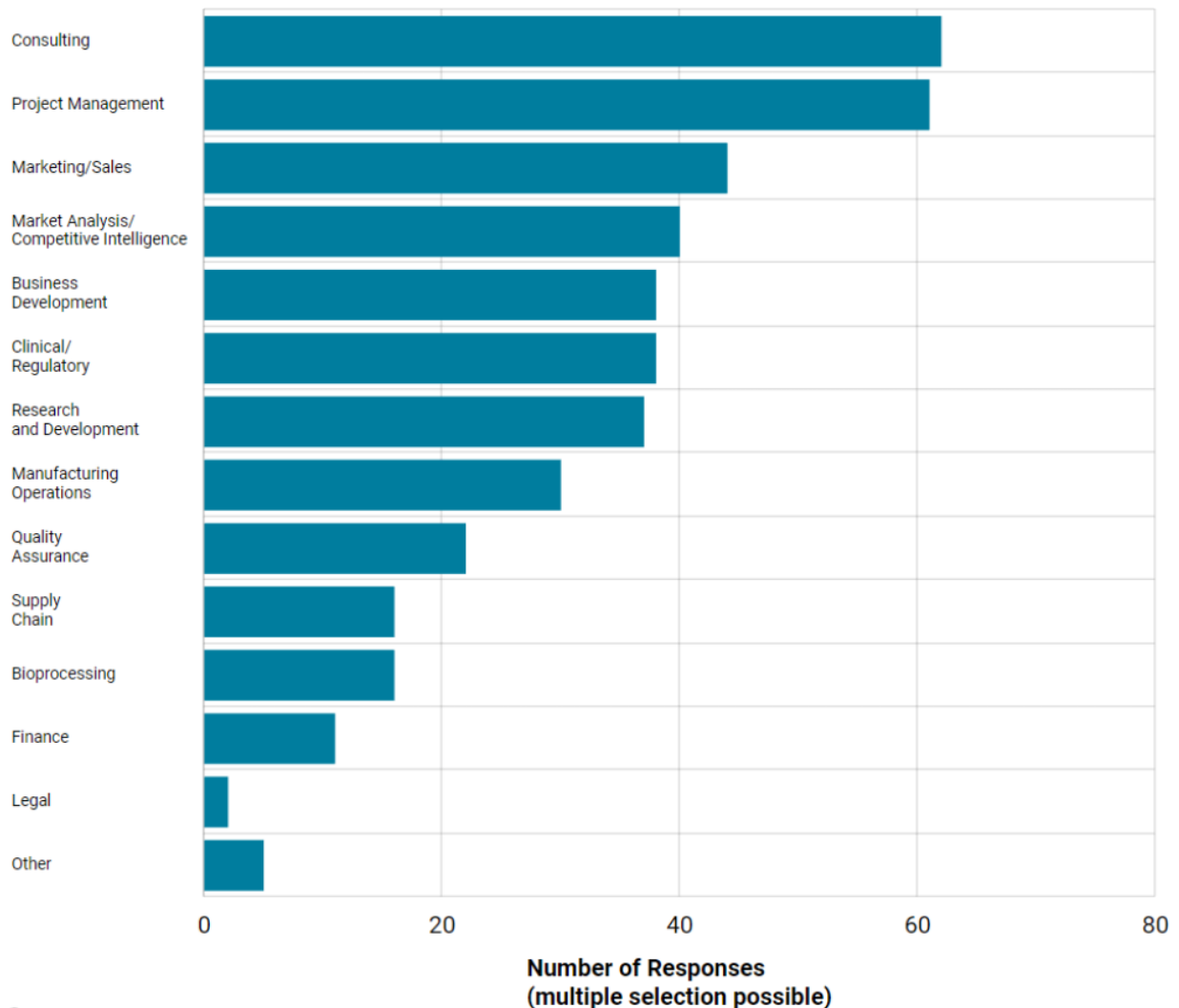**Functional Area of First Job After MBS Graduation**

Figure 3: Functional areas of students' first jobs after MBS graduation based on the 2017 alumni survey.

Figure 4 provides a second example of indirect evidence, this time focused on the assessment of KGI's extensive co-curricular program for MBS program. Drawing again from the 2017 alumni survey, this chart provides information on how KGI students obtained their first job. This data suggests that over 70% of students find their first job as part of a KGI program or contact.

Source of First Job After MBS Graduation

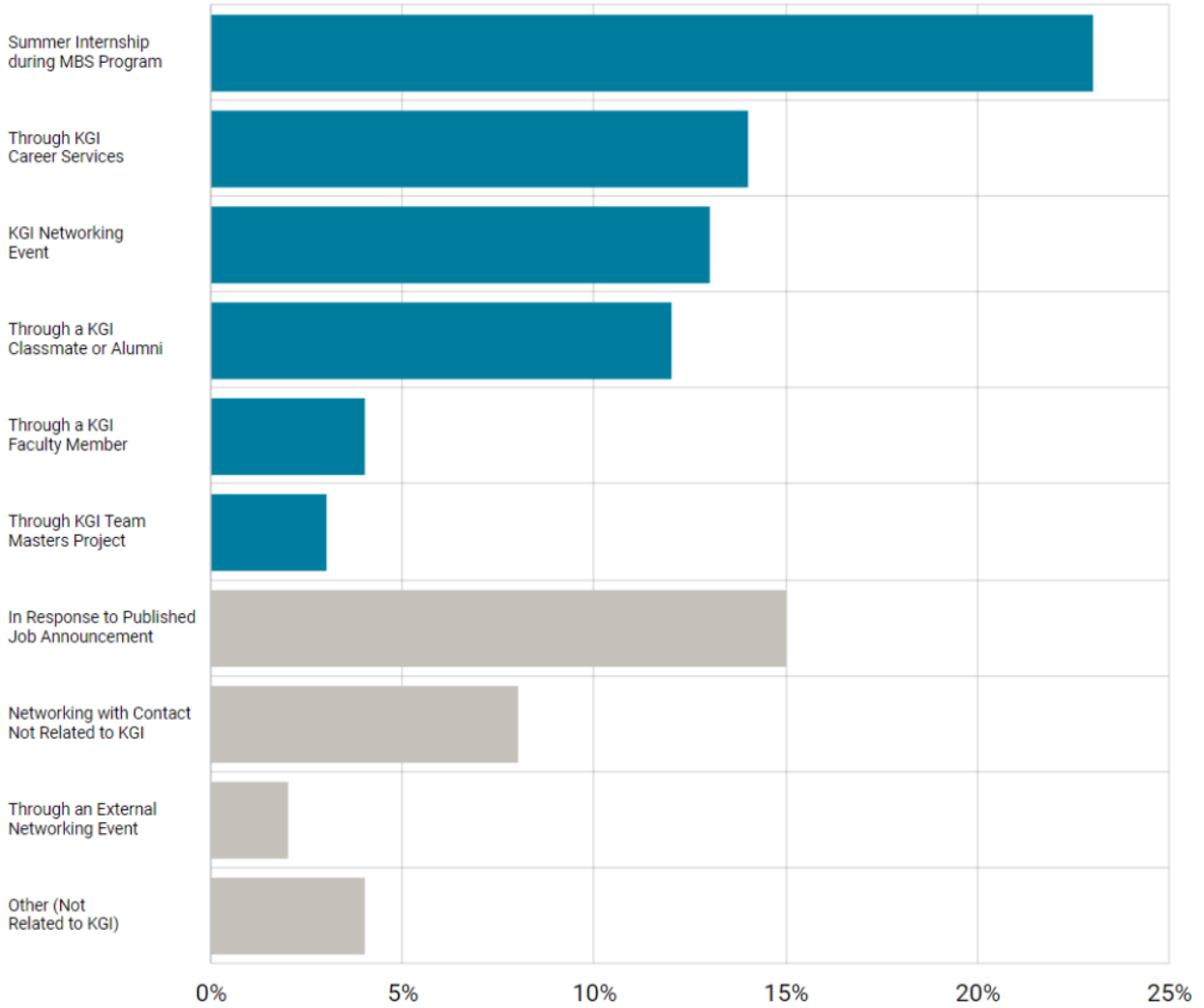| Category	Value
Summer Internship during MBS Program	~23%
Through KGI Career Services	~14%
KGI Networking Event	~13%
Through a KGI Classmate or Alumni	~12%
Through a KGI Faculty Member	~4%
Through KGI Team Masters Project	~3%
In Response to Published Job Announcement	~15%
Networking with Contact Not Related to KGI	~8%
Through an External Networking Event	~2%
Other (Not Related to KGI)	~4%

Chart 4: Source students' first jobs after graduating with the MBS degree based on the 2017 alumni survey.