

Aaron Glickman

Introduction

The online education team within the Department of Medical Ethics and Health Policy (MEHP) is establishing an “Innovation Resource Network.” The Network will include professionals in health care and related fields who will interact with students in the Masters of Health Care Innovation (MHCI) program as guest lecturers, teaching assistants, seminar speakers, and skills workshop instructors. The project timeline for standing up the network has been slightly modified and delayed due to COVID-19 as the team has shifted its focus to developing material related to the pandemic. Nevertheless, surveying of MHCI students is an essential first step for making sure the network maps to students’ goals.

Innovation Resource Network Goals

There are several goals of the Network. First, one of the challenges for graduate programs, and online programs for working professionals in particular, is to develop strong alumni connections. In addition to providing career networking opportunities for current students and graduates, these networks provide opportunities for learning across cohorts. The development of a dynamic alumni network remains a strategic initiative of the MHCI program, which is a relatively new program.

Second, as a new program, the MHCI program is iterative in its approach to program improvement. The Innovation Resource Network should be, in cooperation with students, developed to enhance the program’s capacity to meet the core competencies it seeks to instill in students. Specifically, the 11 competencies are:

1. Strategic learning – Find and evaluate scholarship and industry perspectives that foster innovative thinking about health care
2. Analytical thinking – Identify opportunities for, and obstacles to, innovation
3. Creativity and idea generation – Identify complex problems and review information to develop, implement, and evaluate options and solutions
4. Complex problem-solving – Embrace unexpected results or conditions
5. Innovation – Engage in iterative design to build evidence, test solutions, and develop answers to work-related problems
6. Communication ability – Present ideas in a clear and compelling way in speech, writing, and visuals
7. Persuasion – Persuade others to change minds and behaviors
8. Negotiation – Bring others together to reconcile differences
9. Networking – Identify and build a network of collaborators
10. Social influence – Foster collaboration and allow stakeholders to envision participation in transformation

11. Leadership – Drive vision and purpose, demonstrate a strategic mindset

Some of these competencies are very amenable to other to curricula development. Others require more outside of the box thinking. A goal of the Innovation Resource Network is to provide opportunities to improve along those competencies where classroom experience may be necessary, but not sufficient.

Network Members: Professional Development and MHCI Cohort Students

There are three immediate sources of members of the Innovation Resource Network. 1) Current and former MHCI degree program students, 2) professional development (PD) students 3) professionals not currently associated with MEHP, but who would get involved if contacted. The PD program is in the process of being launched, and it will allow working professionals to take smaller course loads (i.e. 4 courses) to get professional certificates. As the PD program will expand the alumni of MEHP courses in general, it can serve as a resource for guest content in the MHCI degree program. Identifying Innovation Resource Network participants not currently associated with Penn will require more legwork, so the department wants to make sure it targets guests who will make the best use of student time.

Survey Design and Goals

In order to learn what goals students had for the Innovation Resource Network, I designed, distributed, and analyzed a survey of MHCI degree program students. I also interviewed students who took the survey and were willing to discuss their goals in further detail. The survey included questions related to student's work sector, professional role, perspectives they would like to gain from the Innovation Resource Network, and skills/competencies they would like to improve on through the Network.

The goals of the survey were:

1. Identify the preferred setting for Innovation Resource Network programming
2. Identify sectors represented by MHCI students
3. Identify professional roles represented by MHCI students
4. Identify sectors MHCI students would like exposure to through the Innovation Resource Network
5. Identify skills/competencies MHCI students would like to develop through the Innovation Resource Network

A print out of the survey is available in Appendix A.

Survey Respondents – Sectors and Roles

The survey was distributed over email on March 16 to the MEHP program mailing list of 52 students in both cohorts (year 1 and year 2), as well as alumni (class of 2019). A follow-up reminder email was sent one week after the initial distribution. After 2 weeks (March 30), the survey closed. A total of 18 people completed the survey, a response rate of 34.6%. Given the fact that the survey was distributed during the beginning of COVID-19 lockdowns in the United States, the I am relatively satisfied with this response rate, which was in line with prior student engagements.

Survey Results: Respondents

The breakdown of survey respondents by cohort is in Table 1. Two thirds of respondents were first year students. No alumni responded to the survey. This is not an ideal distribution, as the hope was to have students with a longer perspective on the program. However, it is consistent with other surveys, as students who have been in the program for less time tend to be more engaged with initiatives to change/redesign it.

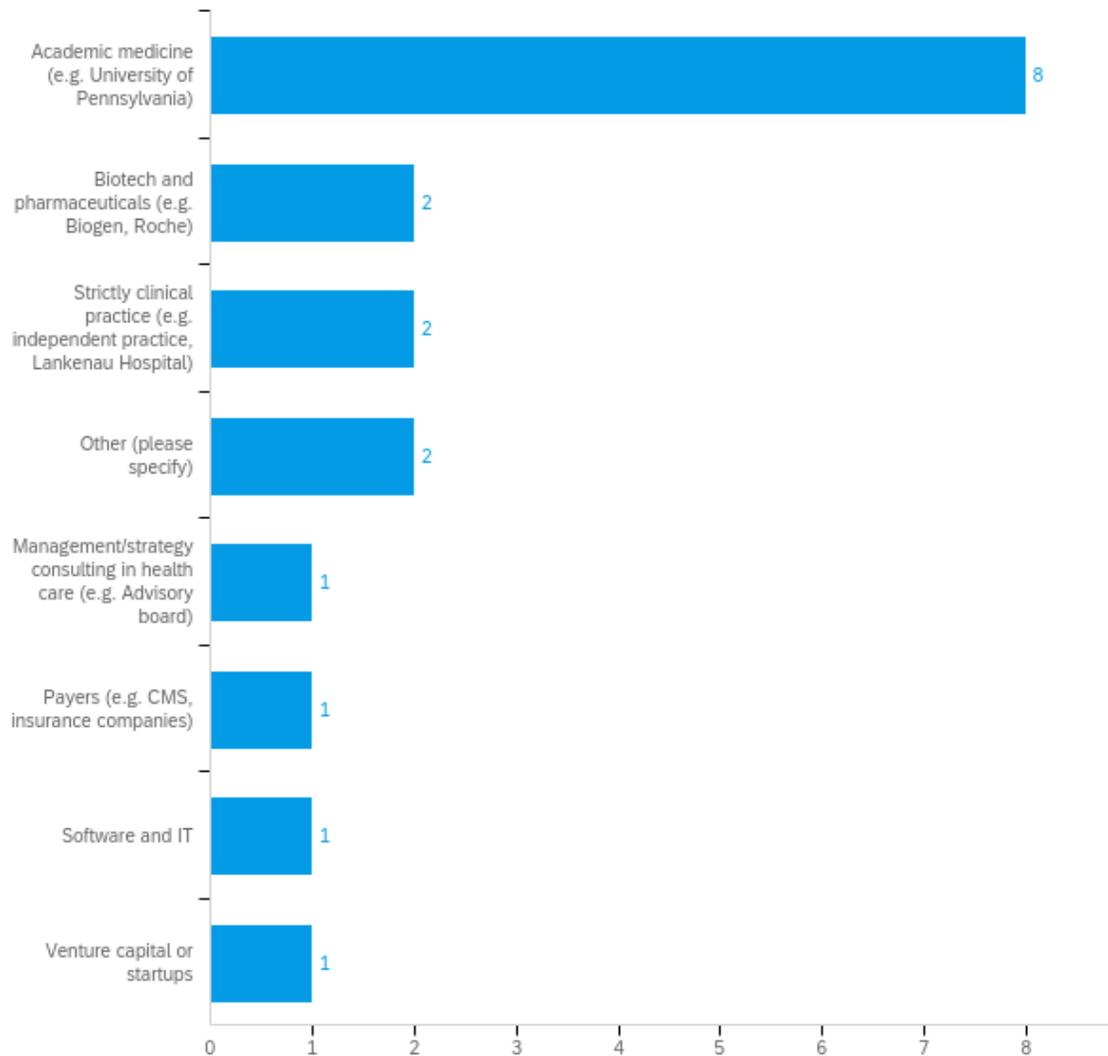
Table 1.

Cohort	%	Count
First year MHCI student	67%	12
Second year MHCI student	33%	6
Class of 2019	0%	0
Total	100%	18

In terms of employment setting, the survey reflects the cohort, which is disproportionately drawn from the Penn community. The largest employer type was academic medicine, which represented 44% of all respondents. A detailed breakdown of the self-identified sector of respondents is available in Figure 1.

Figure 1.

Academic medicine is over-represented in the sample

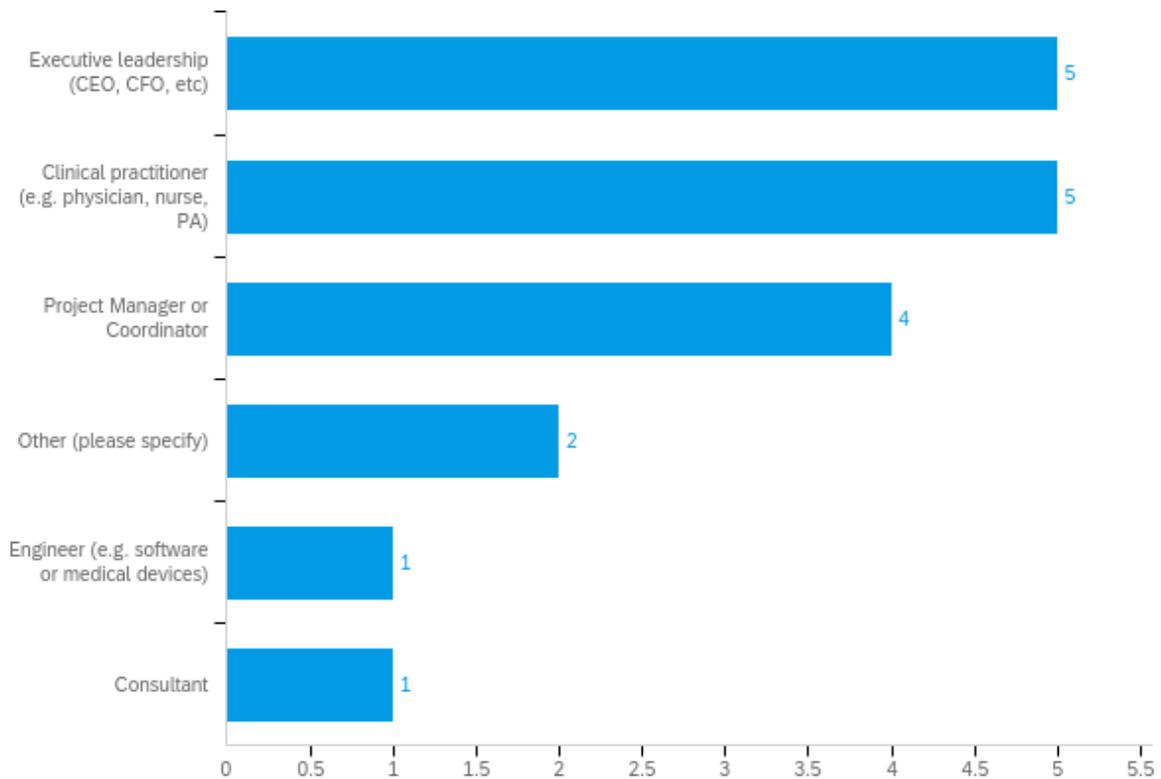


**Two specified as "other" were "mental health and wellness" and "non-academic non-profit medicine"*

In terms of professional roles represented, most students described themselves as either in executive leadership (28%), clinical practice (28%), or project managers/coordinators (22%). A full distribution of the professional roles represented in the survey is available in Figure 2.

Figure 2.

Respondents by role



* Two specified as “other” were, “Contract negotiator” and “Writer, Educator, Clinician, Consultant.”

Survey results: setting, perspectives, and skills

Under ideal circumstances, survey analysis could be run for each type of student, i.e. students in different sectors and roles. However, there are not enough responses for rigorous cross-tabulations of each response. That being said, it is useful to disaggregate results by work setting (academic medicine vs. non-academic medicine) and by major role groups (executive leadership, clinical practice, and project manager). The results below will be presented in both aggregated and disaggregated form, where those disaggregated results diverge in relevant ways.

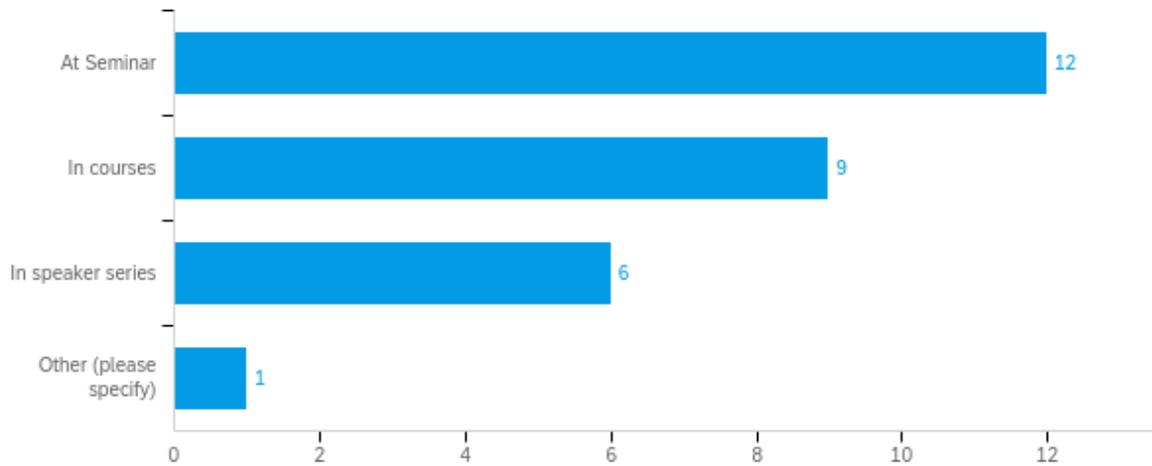
Preferred Setting for Innovation Resource Network: Aggregate Results

For practical and administrative purposes, the MEHP team wanted to learn what the preferred setting for Innovation Resource Network interaction was among students. The three options were at the biannual in-person “Seminar” weekend, during courses, and in independent speaker series. The survey allowed students

to pick up to two settings. Based on the results, Seminar should clearly have a reserved time for Innovation Resource Network programming, followed by within classes. We were surprised by the relatively lukewarm view of using a dedicated speaker series. Full results are in figure 3.

Figure 3.

Format for innovator network content



These results did not differ substantively across academic/non-academic setting or professional role. In all cases, students preferred to leverage the in-person Seminar time for these networking opportunities, followed by class time and supplemental speaker series. Interviews with students provided color for this response.

In particular, students felt that the in-person seminar could be improved, with an emphasis on skills and networking. The Innovation Resource Network, in their view, was mapped to skills, networking, and relationship development. As one student put it, “It would be good to break down barriers at Seminar...in person works better when possible...it would be best to avoid lectures” If the program was going to bring in guests for skills and relationship building, Seminar was the time to do it.

In contrast, students were generally happy with class content and didn’t see a reason to radically change it. The appetite for additional speaker series was less robust because of the extra time commitment.

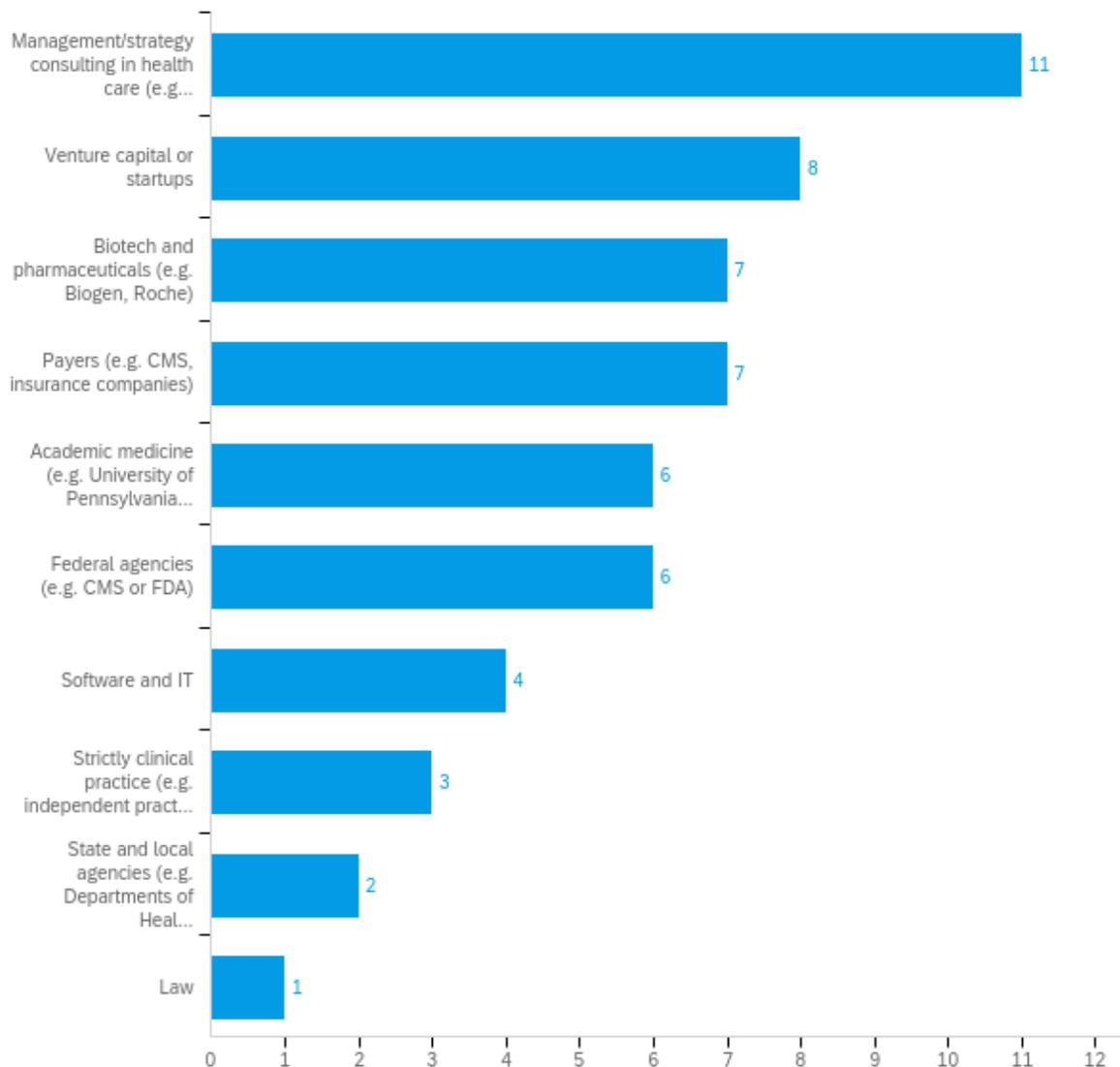
Desired Perspectives

In order to identify industries/sectors that would be of greatest interest to students, the survey asked respondents to pick up to four perspectives they would like to engage with through the Innovation Resource Network. The full results are available in Figure 4. Several perspectives clearly stood out: management/strategy consulting, venture capital/startups, biotech, and payers (i.e. insurers). These results ran somewhat contrary to MEHP staff assumptions, which were that there would be less interest in management

consulting and more desire to engage with local/federal policymakers. The focus on the private sector and innovation was a useful finding.

Figure 4

Perspectives desired by respondents



Interestingly, these results varied substantially for different types of students. Among students who worked in academic medicine settings (the largest cohort), academic medicine and payers (e.g. health insurers) were the perspectives of greatest interest. This was very distinct from non-academic medicine students, who were far more interested in learning from management/strategy consulting and venture capital/startups settings. Table 1 shows this divergence, with the most important differences highlighted.

Table 1.

Considering your own goals related to health care innovation, which of the following perspectives would you most want exposure to through the Innovation Resource Network? (Select between 1 and 4)

	Total	Academic medicine	Not academic medicine
Total Count	18	8	10
Academic medicine (e.g. University of Pennsylvania)	6	4	2
Biotech and pharmaceuticals (e.g. Biogen, Roche)	7	3	4
Federal agencies (e.g. CMS or FDA)	6	3	3
Law	1	1	0
Management/strategy consulting in health care (e.g. Advisory board)	11	4	7
Other (please specify)	0	0	0
Payers (e.g. CMS, insurance companies)	7	4	3
Software and IT	4	2	2
State and local agencies (e.g. Departments of Health)	2	1	1
Strictly clinical practice (e.g. independent practice)	3	1	2
Venture capital or startups	8	2	6

Column % (share of group that selected option)

Academic medicine (e.g. University of Pennsylvania)	33%	50%	20%
Biotech and pharmaceuticals (e.g. Biogen, Roche)	39%	38%	40%
Federal agencies (e.g. CMS or FDA)	33%	38%	30%
Law	6%	13%	0%
Management/strategy consulting in health care (e.g. Advisory board)	61%	50%	70%
Other (please specify)	0%	0%	0%
Payers (e.g. CMS, insurance companies)	39%	50%	30%
Software and IT	22%	25%	20%
State and local agencies (e.g. Departments of Health)	11%	13%	10%
Strictly clinical practice (e.g. independent practice)	17%	13%	20%
Venture capital or startups	44%	25%	60%

These results also varied slightly for the three most represented professional roles (clinical practice, project managers, and executive leadership). Because these are smaller groups, the only conclusions to draw are those in which the differences are overwhelming. The most salient trends were:

- **Project managers (4 students):** 100% of project managers showed interest in gaining perspectives from management/strategy consulting, compared to 50% of other students. Project managers were also more interested in biotech/pharmaceuticals (75% vs. 29%) and payers (75% vs 29%) compared to the rest of the cohort.
- **Executive leaders (5 students):** 100% of executive leaders showed interest in gaining perspective from management/strategy consulting, compared to 46% of non-executive leaders. Executive leaders also showed more interest in biotech and pharmaceuticals (60% vs 30%) and software/IT (40% vs 15%) compared to other students. This group of students had little to no interest in payer perspectives and academic medicine.
- **Clinical practice (5 students):** Students in clinical practice had a slight added interest in academic medicine (60% vs 23%) and software/IT (40% vs 15%). In stark contrast to many other students, students in clinical practice had no appetite for management consulting and venture capital/startup exposure.

Full results for each of these groups of students are available in Tables 3, 4, and 5.

Table 3. Project managers/coordinators

Considering your own goals related to health care innovation, which of the following perspectives would you most want exposure to through the Innovation Resource Network? (Select between 1 and 4)

	Total	Not project manager or coordinator	Project manager or coordinator
Total Count	18	14	4
Academic medicine (e.g. University of Pennsylvania)	6	4	2
Biotech and pharmaceuticals (e.g. Biogen, Roche)	7	4	3
Federal agencies (e.g. CMS or FDA)	6	6	0
Law	1	1	0
Management/strategy consulting in health care (e.g. Advisory board)	11	7	4
Other (please specify)	0	0	0
Payers (e.g. CMS, insurance companies)	7	4	3
Software and IT	4	4	0
State and local agencies (e.g. Departments of Health)	2	1	1
Strictly clinical practice (e.g. independent practice)	3	2	1
Venture capital or startups	8	6	2
Academic medicine (e.g. University of Pennsylvania)	33%	29%	50%
Biotech and pharmaceuticals (e.g. Biogen, Roche)	39%	29%	75%
Federal agencies (e.g. CMS or FDA)	33%	43%	0%
Law	6%	7%	0%
Management/strategy consulting in health care (e.g. Advisory board)	61%	50%	100%
Other (please specify)	0%	0%	0%
Payers (e.g. CMS, insurance companies)	39%	29%	75%
Software and IT	22%	29%	0%
State and local agencies (e.g. Departments of Health)	11%	7%	25%
Strictly clinical practice (e.g. independent practice)	17%	14%	25%
Venture capital or startups	44%	43%	50%

Table 4. Executive leadership

Considering your own goals related to health care innovation, which of the following perspectives would you most want exposure to through the Innovation Resource Network? (Select between 1 and 4)

	Total	Executive leadership	Not executive leadership
Total Count	18	5	13
Academic medicine (e.g. University of Pennsylvania)	6	0	6
Biotech and pharmaceuticals (e.g. Biogen, Roche)	7	3	4
Federal agencies (e.g. CMS or FDA)	6	1	5
Law	1	0	1
Management/strategy consulting in health care (e.g. Advisory board)	11	5	6
Other (please specify)	0	0	0
Payers (e.g. CMS, insurance companies)	7	1	6
Software and IT	4	2	2
State and local agencies (e.g. Departments of Health)	2	0	2
Strictly clinical practice (e.g. independent practice, Lankenau Hospital)	3	0	3
Venture capital or startups	8	3	5
Academic medicine (e.g. University of Pennsylvania)	33%	0%	46%
Biotech and pharmaceuticals (e.g. Biogen, Roche)	39%	60%	31%
Federal agencies (e.g. CMS or FDA)	33%	20%	38%
Law	6%	0%	8%
Management/strategy consulting in health care (e.g. Advisory board)	61%	100%	46%
Other (please specify)	0%	0%	0%
Payers (e.g. CMS, insurance companies)	39%	20%	46%
Software and IT	22%	40%	15%
State and local agencies (e.g. Departments of Health)	11%	0%	15%
Strictly clinical practice (e.g. independent practice, Lankenau Hospital)	17%	0%	23%
Venture capital or startups	44%	60%	38%

Table 5. Clinical practice

Considering your own goals related to health care innovation, which of the following perspectives would you most want exposure to through the Innovation Resource Network? (Select between 1 and 4)

	Total	Clinical practitioners	Not clinical practitioners
Total Count	18	5	13
Academic medicine (e.g. University of Pennsylvania)	6	3	3
Biotech and pharmaceuticals (e.g. Biogen, Roche)	7	1	6
Federal agencies (e.g. CMS or FDA)	6	3	3
Law	1	1	0
Management/strategy consulting in health care (e.g. Advisory board)	11	1	10
Other (please specify)	0	0	0
Payers (e.g. CMS, insurance companies)	7	2	5
Software and IT	4	2	2
State and local agencies (e.g. Departments of Health)	2	0	2
Strictly clinical practice (e.g. independent practice, Lankenau Hospital)	3	0	3
Venture capital or startups	8	0	8
Academic medicine (e.g. University of Pennsylvania)	33%	60%	23%
Biotech and pharmaceuticals (e.g. Biogen, Roche)	39%	20%	46%
Federal agencies (e.g. CMS or FDA)	33%	60%	23%
Law	6%	20%	0%
Management/strategy consulting in health care (e.g. Advisory board)	61%	20%	77%
Other (please specify)	0%	0%	0%
Payers (e.g. CMS, insurance companies)	39%	40%	38%
Software and IT	22%	40%	15%
State and local agencies (e.g. Departments of Health)	11%	0%	15%
Strictly clinical practice (e.g. independent practice)	17%	0%	23%
Venture capital or startups	44%	0%	62%

Skills and competencies

As noted, a key goal of the Innovation Resource Network is to build on the core skill sand competencies of the MEHP program. Therefore, the survey also asked students to consider their classroom experience so far and identify which core skills/competencies they wanted more exposure to. Each respondent was allowed to make up to 4 choices. The full results are in Table 6.

Table 6. Skills and competencies

Answer	%	Count
Analytical thinking: Identify opportunities for, and obstacles to, innovation	13%	7
Creativity: Identify complex problems, then develop, evaluate, and implement solutions	11%	6
Communication ability: Present ideas in a clear and compelling way through writing, speech, and visuals	5%	3
Complex problem-solving: Embrace unexpected results	4%	2
Innovation: Engage in iterative design to build evidence, test solutions, and develop answer to work-related problems	18%	10
Leadership: Drive vision and purpose, and demonstrate a strategic mindset	9%	5
Negotiation: Bring others together to reconcile differences	9%	5
Networking: Identify and build a network of collaborators in a vision for positive change	11%	6
Persuasion: Persuade others to change their minds or behavior	5%	3
Social influence: Foster collaboration and allow stakeholders to envision and participate in transformation	9%	5
Strategic learning: Find and evaluate scholarship, reports, and industry perspectives	5%	3
Total	100%	55

Although these results were not as lopsided as the desired perspectives question, it did yield the insight that students are most interested in developing innovation skills, followed by analytical thinking, creativity, and networking.

However, there was some variation in the particular skills/competencies students desired based on different settings and roles. Some key takeaways include:

- **Academic medicine (work setting):** students working in academic medical settings did not diverge substantially from those in other settings. However, in general they had greater interest in developing communication, networking, and strategic thinking skills.
- **Project managers/coordinators:** Project managers and coordinators were more interested in communication and networking skills compared to their peers. They showed much less interest in developing creativity and innovation.
- **Executive leaders:** Students in executive leadership positions showed substantially more interest in social influence and creativity skills. They were less interested in analytical skills than other students.
- **Clinical practice:** Students who were clinical practitioners did not differ substantially from the rest of the students, except they were much less interested in social influence skills. Otherwise, there was not much coherence among this group.

Key Takeaways and recommendations

While work remains to be done to set up the network, this project has yielded a few modest insights so that MEHP staff can be more efficient going forward. In particular:

1. For sectors to gain exposure to through alumni networking, students are most interested in management/consulting, venture capital/startups, biotech, academic medicine, and payers overall. However, there is a substantial divide in the student body.
 - a. Students in clinical or academic medicine settings had little interest in biotech, venture capital, and management consulting. They preferred to learn more from academic medicine and payers.
 - b. MEHP should be wary of only seeking out management consulting and venture capital/startup perspectives. While those were the most popular choices, such programming would alienate a sizable cohort of students. Networking programming should consider the interests of both cohorts of students (broadly speaking, academic/clinical medicine vs

project managers and executive leaders). For example, a Seminar series with two speakers should have one from management consulting and one from academic medicine or payers.

This will ensure every student finds at least one session interesting.

2. A clearly identifiable cohort (project managers/coordinators and executive leadership) has a strong interest in consulting. We should consider way to engage them specifically.
3. In-person seminar may require some restructuring, and students were most open to using that time for Innovation Resource Network programming
4. Students in executive leadership settings are especially interested in social influence and creativity skills, while students in project management rolls had a clear interest in communication. Those two strands of skills should be independently emphasized in Innovation Resource Network programming.

Innovator Network

Start of Block: Default Question Block

Q1 Penn's MEHP Online Education team is developing an Innovation Resource Network. The network will serve as a roster of frontline innovative thinkers and leaders whose experience will add another dimension to program offerings. They may engage, for example, as course guests or at Seminar. The goal of this survey is to assess your areas of interest to inform the structure and makeup of the Innovation Resource Network. It should take no more than 3 minutes to complete.

Page Break

Q2 Which of the following best describes your MHCI status:

- First year MHCI student (1)
 - Second year MHCI student (2)
 - Class of 2019 (3)
-



Q3 Which of the following best describes your primary industry or sector? (Select 1)

- Academic medicine (e.g. University of Pennsylvania) (1)
 - Biotech and pharmaceuticals (e.g. Biogen, Roche) (2)
 - Federal agencies (e.g. CMS or FDA) (3)
 - Law (4)
 - Management/strategy consulting in health care (e.g. Advisory board) (5)
 - Payers (e.g. CMS, insurance companies) (6)
 - Software and IT (7)
 - State and local agencies (e.g. Departments of Health) (8)
 - Strictly clinical practice (e.g. independent practice, Lankenau Hospital) (9)
 - Venture capital or startups (10)
 - Other (please specify) (11) _____
-

Q4 Which of the following best describes your primary professional role? (Select 1)

- Educator (1)
- Engineer (e.g. software or medical devices) (2)
- Executive leadership (CEO, CFO, etc) (3)
- Clinical practitioner (e.g. physician, nurse, PA) (4)
- Consultant (5)
- Policy advocate (6)
- Project Manager or Coordinator (7)
- Researcher (8)
- Statistical analyst (9)
- Other (please specify) (10) _____

Page Break



Q5 Considering your own goals related to health care innovation, which of the following perspectives would you most want exposure to through the Innovation Resource Network? (Select between 1 and 4)

- Academic medicine (e.g. University of Pennsylvania) (1)
- Biotech and pharmaceuticals (e.g. Biogen, Roche) (2)
- Federal agencies (e.g. CMS or FDA) (3)
- Law (4)
- Management/strategy consulting in health care (e.g. Advisory board) (5)
- Payers (e.g. CMS, insurance companies) (6)
- Software and IT (7)
- State and local agencies (e.g. Departments of Health) (8)
- Strictly clinical practice (e.g. independent practice, Lankenau Hospital) (9)
- Venture capital or startups (10)
- Other (please specify) (11) _____



Q6 Which type of guest content interests you most? (Select up to 2)

In courses (1)

In speaker series (2)

At Seminar (3)

Other (please specify) (4) _____

Page Break

Q7 In addition to gaining exposure to different industry perspectives, the Innovation Resource Network can be used to help current and former students develop skills within the core MHCI competencies. The following question relates to those competencies.



Q8 Considering your own experience in the MHCI program, which of the competencies do you want more exposure to? (Select between 1 and 4)

- Analytical thinking:** Identify opportunities for, and obstacles to, innovation (1)
- Creativity:** Identify complex problems, then develop, evaluate, and implement solutions (2)
- Communication ability:** Present ideas in a clear and compelling way through writing, speech, and visuals (3)
- Complex problem-solving:** Embrace unexpected results (4)
- Innovation:** Engage in iterative design to build evidence, test solutions, and develop answer to work-related problems (5)
- Leadership:** Drive vision and purpose, and demonstrate a strategic mindset (6)
- Negotiation:** Bring others together to reconcile differences (7)
- Networking:** Identify and build a network of collaborators in a vision for positive change (8)
- Persuasion:** Persuade others to change their minds or behavior (9)
- Social influence:** Foster collaboration and allow stakeholders to envision and participate in transformation (10)
- Strategic learning:** Find and evaluate scholarship, reports, and industry perspectives (11)

Q9 If you have any other comments, please include them here.

Q10 If you are willing to be included in the Innovation Resource Network in any capacity, please include your name and email below.

End of Block: Default Question Block
