

HSI Annual Report for 2022

July 1, 2021 to June 30, 2022

Letter from the Director

This is a unique time when health and healthcare continue to be central to management decisions, and the ability to collaborate with leaders in the field is finally returning. This year we blended our newly developed Zoom proficiency with our pre-pandemic normal of in-person meetings and classes. The hybrid model presented some new challenges to including all participants, both on camera and in the room. MIT's campus remained mostly closed with the exception of invited guests and current employees and students. We are hoping to host more in-person activities soon. Even then, we will carry over lessons learned. We now know that we can collaborate with people all over the world for classes, seminars, and research projects.



Despite the continuing pressures of the pandemic, we presented four seminars, co-sponsored the annual student-led healthcare conference, and held our Healthcare Certificate graduation in person as well as on Zoom. We are sponsoring eight research projects that are ongoing right now, three of which are new. Two other projects were completed: one on worker wellbeing, and one that designed a machine learning model to facilitate patient adherence to a long course of treatment.

In this report, we present a snapshot of our accomplishments for the past year. I hope you enjoy this look back and thank you – our researchers, advisors, donors, collaborators, students, and friends – for your support.

Dr. Anne Quaadgras

Director, MIT Sloan Health Systems Initiative

What's New

This past year we expanded our research capacity, adding [Mert Demirer](#), Assistant Professor of Applied Economics. HSI funded Prof. Demirer's project: Economies of Scope in Drug Development. Click [here](#) for our website announcement of this new project.

As COVID-19 precautions eased, especially in the second half of the year, we were able to hold some events in a hybrid model. We hosted four seminars, co-sponsored the annual Healthcare and Bioinnovations conference, and, for the first time since 2019, celebrated the healthcare certificate graduates in-person.

We implemented many of the changes that were detailed in last year's annual report. On the back of the success of those communications initiatives, we used that foundation to increase our reach and usefulness to both internal and external audiences.

On our website, we report regularly on new research results, events, and impact of our work, and continue to improve usability. We've connected to news from other parts of the Institute to increase the breadth of the material we present. These new relationships add value to our reporting on our researchers', students' and alumni's achievements. We add nuance to the wider-Institute's articles to accentuate the connection and collaboration between HSI and the larger MIT community.

Professors associated with HSI continue to receive accolades for both their research and their teaching. For example, Prof. Georgia Perakis was recently profiled in the book “Seven Essentials for Business Success: Lessons from Legendary Professors” by George Siedel. The author notes that she is the only person in MIT history who has won the Jamieson Prize for Excellence in Teaching, the Samuel M. Seegal Faculty Prize and the Teacher of the Year Award.

Research Accomplishments and Impact

Over four research grant cycles, we allocated a total of over \$1.2M across 13 research projects. For several of these, HSI supplied the “seed funding” for researchers to show proof of concept, which enables them to successfully apply for much larger grants from funders such as the NIH.

This year we funded three new research projects. New Sloan Applied Economics Prof. [Mert Demirer](#) is investigating economies of scope in drug development. Prof. [Joseph Doyle](#) is studying the return on investment resulting from healthcare IT implementation. The first part of this project is a massive review of the literature. MIT News reported on this work [here](#). The third project builds on previous research by the team ([David Rand](#), [Jónas Jónasson](#), [Erez Yoeli](#)) studying medication adherence. The new project focuses on providing differentiated care to TB patients. For this stage of the work Prof. David Rand has dropped off the team and Prof. Vivek Farias has joined.

Status of HSI Funded Projects

Project Title	Research Team (HSI Researchers in Bold)	First Funded	Status
Warehouse Work and Worker Well-being	Erin Kelly , Hazhir Rahmandad , Alex Kowalski, Kirsten Siebach	2020	completed
Combining machine learning and behavioral insights to provide differentiated digital adherence support	David Rand , Jónas Jónasson , Erez Yoeli	2020	completed
Geisinger's Fresh Food Farmacy: A Randomized Controlled Trial	Joseph Doyle , Marcella Alsan, and John Cawley	2019	Ongoing
Data Challenges, IT and Healthcare Challenges in Reporting Accurate Data in the COVID-19 Pandemic	Catherine Tucker , Yiqun Cao, Yifei Wang, Hong Yi Tu Ye, & 10 undergrads	2020	Ongoing
Causal Inference in Large-Scale Observational Omics Data	Vivek Farias	2021	Ongoing
Improving Hospital Operations through Predictive-Prescriptive Analytics and Behavioral Models	Georgia Perakis , Dessi Pachamanova, Maureen Canellas	2021	Ongoing
Understanding and Reducing Racial Inequity for COVID-19 Vaccination	David Rand , Charles Senteio	2021	Ongoing

Economies of Scope in Drug Development	Mert Demirer	2022	New
The Impact of Health Information and Communication Technology on Clinical Quality, Productivity, and Workers	Joseph Doyle , Ari Bronsoler and John Van Reenen	2022	New
Enabling Digital Differentiated Care Along the Tuberculosis Treatment Cascade	Jónas Jónasson , Erez Yoeli , Vivek Farias	2022	New

For more detail about our research, please see: [Our Work](#).

Our researchers are often quoted and highlighted in the popular press. Some examples:

- Dimitris Bertsimas: [Hartford HealthCare, MIT Professor Launch Startup Aimed at Reducing Hospital Stays](#)
- Joseph Doyle: [What Can We Do About the Hardest Patients?](#)
- Dean Eckles: [‘Mission Impossible’: With Boston’s Proof-of-vaccination Mandate Set to Begin, Businesses Worry](#)
- Vivek Farias: [Fixing the Patient Data Collection Process to Solve Bias in Precision Medicine](#)
- Erin Kelly: [Four Simple Indicators Your Employees Are Happy \(For Real\)](#)
- Andrew Lo: [How to Address Alzheimer's Disease and Support Healthier Ageing](#)
- Andrew Lo: Sabin Vaccine Institute Video - [Valuing Vaccines: Ensuring Economic Health and Security for All](#)
- Hazhir Rahmandad: [Human Behavior Is Key to Building a Better Long-term COVID Forecast](#)
- David Rand: [Fact Checking COVID-19 Posts Isn’t Working. There’s a Better Way](#)

Education

Healthcare Certificate and Healthcare Lab



Healthcare Certificate:

For the first time since 2019, the Healthcare Certificate Graduation Ceremony offered an in-person option (enthusiastically accepted by almost every grad!). The hybrid event on May 25th honored 36 graduates from across eight MIT programs. This year’s group is 20 percent larger than last year’s. This increase is one of many signs of the growing interest in healthcare at MIT.

Anne Quaadgras opened the event; Joseph Doyle and Jake Cohen also offered their congratulations and perspectives on healthcare challenges to the graduates. Special guest, Barry Stein, EMBA '17 and Chief Clinical Innovation officer at Hartford Healthcare, shared how his experience at Sloan in general and in Healthcare Lab specifically, proved useful in working on the frontlines of the COVID-19 pandemic.

Enrollment in the healthcare certificate program continues its upward trend. Forty-seven registrants are graduating in 2023 or later. We simplified the Certificate requirements and made them more flexible to better match the variety of student interests. There are now two required courses: Healthcare Lab, taught by Jónas Jónasson and Anne Quaadgras, and Healthcare Economics, taught by Joseph Doyle. We increased the elective requirement to two courses to maintain the overall course load for completing the Certificate

Healthcare Lab

This year 55 Healthcare Lab students formed teams to complete 15 projects. Some examples of their work are:

- Boston Medical Center and Lahey Hospital Emergency Department: [Healthcare Lab Teams Spend Time in the ED to Reduce Length of Stay](#)
- Biogen Health Equity: [Decreasing time to diagnosis of Alzheimer's disease in underrepresented populations](#)
- Continuus Pharmaceuticals: [Analyzing Distribution Channels for Pharmaceutical Manufacturing Startup](#)

On the last day of the class, we held a virtual poster fair for students to share their work and answer questions from their hosts and other attendees. We wrote about this event [here](#). Please click [here](#) to see a deck of posters from all the projects.

Seminars and Events

We hosted four hybrid seminars. All our presenters except one joined virtually from Chicago, Washington, and Colorado.

Our two events were also hybrid. Once again, we co-sponsored the MIT Sloan Healthcare and BioInnovations Conference. Our second event was our annual Healthcare Certificate Graduation Ceremony. Previously, COVID-19 protections meant all our seminars and events were solely virtual; we were excited to host some attendees in person this year.

This year we also took part in a kick-off meeting for a new Sloan group, the Sloan Physicians Alumni Forum. Following Anne Quaadgras' presentation, multiple alumni expressed interest in HSI, and inquired about leading a seminar, or hosting a Healthcare Lab team. We wrote about that meeting [here](#).

HSI Events FY22

<u>Date</u>	<u>Speaker</u>	<u>Topic</u>
February 24, 2022	Peter Eckart	Thriving Together: Health Equity and the Social Determinants of Health
March 17, 2022	Margo Edmunds	Reinventing Innovation: Strategic Models for the Common Good
April 1, 2022	Sloan Healthcare & Bioinnovations Conference	Transforming the Patient Journey by Leveraging Technology
April 21, 2022	Lauren Chava Rose	Beyond the Benefits Package: Tools for Cultivating a Trauma-Informed Workplace
April 28, 2022	Katie Stebbins , Executive Director of the Tufts Food & Nutrition Innovation Institute	Scaling the Economy of Nutrition Science Responsibly
May 25, 2022	MIT Sloan Healthcare Certificate Graduation	MIT Healthcare Certificate Recipients Are Enthusiastically Celebrated at First In-Person Ceremony Since 2019

Communications



Communication frequency and quality continue to benefit from donor funding. We’ve met and exceeded our communications goals for this year for the website, newsletter, social media and special projects.

Our website evolution continues. Using analytics and user feedback, we made changes so content is easier to find, and the latest news is more prominent.

We published six newsletters last year. We are focusing on topics and formats that have shown to be of interest to our 500+ recipients, which is evident from our rising open and click rates. We will be testing new formats to make the content easier to read and to better capture readers’ interest.

Our LinkedIn account is drawing more interaction. We had a soft launch of our Twitter account. Like our newsletter, we use social media to amplify our content. These accounts are already started to prove useful to HSI’s work and mission. A call to alumni on LinkedIn for possible Healthcare Lab hosts resulted in several potential leads and conversations.

We just created a new dynamic document, “HSI’s Top Research Studies”, to enable us to pinpoint articles on specific topics or impact. This document continues to evolve reflecting feedback from our Board Members.

HSI Lab on Employee Population Health

At MIT Sloan, we are uniquely positioned to build and test ways of improving employee health and wellbeing. Building on our expertise in health analytics, operations, and incentives, we should build on the School’s relationships with industry partners that want to attain ESG goals by improving employee health. This has the co-benefits of improving productivity and lowering healthcare costs, which will add

to the scalability of our findings. This is a promising idea and one that was delayed by the pandemic, but one that we want to see grow over the next two years.

This year we made good progress in the development of the HSI Lab on Employee Population Health. We signed up our second member, Quest Diagnostics in the Spring of 2022 and started research development conversations with MIT Medical, Quest, Ginger.io and Agilon, among others. We expect to begin projects with Quest and MIT Medical this coming year.

The HSI Convening to introduce the Lab to a broader audience also began to take shape, with a convening to take place in October, which will include for a Practitioner-Oriented panel and Research panel, delivered in a hybrid mode to maximize flexibility even as COVID does continue to make planning complicated. Our goal is to build on this progress by adding 2-3 firms to the Lab in order to increase funding and collaboration opportunities to discover ways of improving employee wellbeing.

Call to Action

We are always interested in introductions to others who may like to connect with us as subscribers, guest speakers, research collaborators, experts, and data providers. Contact us at healthsystems@mit.edu

We welcome you to join us for in-person, hybrid and Zoom events in FY23. [Subscribe to our newsletter](#) or see the [Events](#) section on our website for details.

Thank You

The HSI Advisory Board:

Our Advisory Board is comprised of MIT alumni and other leaders from the healthcare sector. We would like to thank them for their valuable time, advice, and introductions to others who may be interested in collaborating with HSI. They help us achieve both rigor and relevance in our work.



This year's donors to HSI:

Dana Attar MBA '18	Oree Michael Banks MBA '02	Roy O. Brady Jr. SM '72
Lyndon D. Braun SM '89	Roger J. Chiang MBA '02	Jaime H Contreras-Rojas MBA '11 & Maria Fraile MBA '10
Ignacio Diaz MBA '09	Macarena Dominguez MBA '02	Leah Catherine Fotis MBA '14
Ivy Head Family Foundation	Kathleen F. Kalell	Ms Maisy Ng Kostka SM '85
Phyllis Lantos '72, SM '74	Christopher K. McLeod SM '79	Charlotte Amanda Lucy Rocker MBA '11, SM '12
David A Weber SM '83	Ron SF '84 and Cynthia Williams	Elizabeth Zhou '21