

## HSI Annual Report for 2020

July 1, 2019 to June 30, 2020

### Letter from the Director

This past year has been one of enormous growth for HSI. We have introduced and continually updated our new website with numerous reports of innovative work from our growing cadre of researchers. We've focused energy behind our communications with our LinkedIn account and a new newsletter, and we have continued to offer seminars with key professionals from a variety of healthcare areas.



Our researchers rose to the challenges presented by the COVID-19 crisis. We featured their work in our coverage. The pandemic (among other pressing healthcare issues) motivated a huge increase in interest in our Healthcare Certificate and Healthcare Lab. Both programs saw new highs in participation.

And, of course, we had to change our way of working and presenting from face-to-face to online. We became creative and found silver linings. Our seminars and classes brought speakers from Hawaii, California, and elsewhere, resulting in discussions we could not have had otherwise. We had shorter meetings and more focused class sessions. We attracted larger audiences to our seminars without increasing travel or food costs. But we lost impromptu discussions and discovered Zoom is exhausting and creating new relationships takes more work. Perhaps a combination of in-person and online is how we will keep the best of both in the future.

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*

### About HSI

HSI is one of MIT Sloan's newest interdisciplinary Initiatives, founded in the fall of 2013. We are pleased to share this Annual Report for FY20.

Since December 2018, when Professor Joseph Doyle was named the sole Faculty Director, which followed Anne's Quaadgras's appointment as Director in 2016, we have built and introduced our new website, organized and focused our research into three major disciplines, and greatly increased faculty outreach, involvement and research funding awards. We are now also moving in a new research direction with a focus on employee population health.

We have devoted new resources and effort to communications, hiring Lisa Abrams as a parttime strategic communications consultant and content creator. Lisa Maloney, senior administrative assistant, rounds out our leadership team.

Our research team is 33 members strong. Each researcher is categorized under one or our three disciplines, and many collaborate with each other. (see [Our Researchers](#))

- 11 in Economics, Finance, and Behavioral Science
- 14 in Operations Research and Analytics
- 8 in Work and Organization Studies

## Accomplishments

### Research

We provided \$290,000 in faculty research funding in FY20, which supported four projects. We also funded three additional projects for FY21, totaling nearly \$400,000, making seven active projects total.



### Current Projects

Project Title	Research Team (HSI Researchers in Bold)	First Funded
Geisinger's Fresh Food Farmacy: A Randomized Controlled Trial	<b>Joseph Doyle</b> , Marcella Alsan, and John Cawley	2019
Developing Advanced Analytics to Develop a Liquid Biopsy to Detect Early-Stage Cancer	<b>Vivek Farias</b> , Jackie Baek, Tianyi Peng, Deeksha Shinha, Andrew Li	2019
Predictive-Prescriptive Analytics to Address the Substance Abuse Crisis	<b>Georgia Perakis</b> , Dessi Pachamanova, Omar Lami, Amine Bennouna	2019
Analytics-based Opioid Overdose Prediction	<b>Jonas Jonasson</b> , <b>Nikos Trichakis</b> , Neal Kaw, Deeksha Sinha	2019
Warehouse Work and Worker Well-being	<b>Erin Kelly</b> , <b>Hazhir Rahmandad</b> , Alex Kowalski, Kirsten Siebach	2020
Combining machine learning and behavioral insights to provide differentiated digital adherence support	<b>David Rand</b> , <b>Jónas Jónasson</b> , <b>Erez Yoeli</b>	2020
Data Challenges, IT and Healthcare Challenges in Reporting Accurate Data in the COVID-19 Pandemic	<b>Catherine Tucker</b> , Yiqun Cao, Yifei Wang, Hong Yi Tu Ye, & 10 undergrads	2020



Our researchers are also applying their methods and expertise to challenges presented by the COVID-19 pandemic. Newsletter articles and website posts about these projects are among the most popular with our readers.

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

## Impact

### Research

HSI is fulfilling its promise of cross-disciplinary research. We expect that projects with diverse perspectives may lead to more rich research and results than work done solely in a specific silo. Examples of cross-collaboration include both of our projects about Substance Use Disorder (SUD) and the project on digital medication adherence support.



Our research methods are precise and meticulous. Rigorous analyses provide strong evidence for scaling our recommendations and transforming healthcare. While scoping and initial findings may be available

within a few months, a full evaluation of impacts may take a year or more. However, as interventions suggest promising opportunities for impact, we will share them through our communications channels.

[Joe Doyle](#) and his team published a seminal peer-reviewed article on the high-profile Camden, NJ Hotspotting effort in the *New England Journal of Medicine*, [Health Care Hotspotting — A Randomized, Controlled Trial](#), finding, in essence, no significant direct impact on reducing utilization for a highly regarded program that focuses on the most complex patients and offers intensive case management addressing patients’ clinical and social needs. The project demonstrates the value of rigorously testing promising ideas and opened up several opportunities for developing other effective interventions. [Vivek Farias](#) and his team published an [article](#) in *Nature Communications* that built on his HSI-funded project that uses advanced analytics and to develop new cancer screening tools ("liquid biopsies").

We expect papers about the other projects in FY21. As the year progresses, we will report on additional impacts, including recommendations made to our collaborators and potential policy influencers.

### Healthcare Certificate and Healthcare Lab

Education is a key part of HSI’s mission. Our students have responded well to our offerings, underscoring their interest in health systems. We have funded several research assistantships, including one this fiscal year. Healthcare Lab saw a surge in enrollment for the Fall 2020 semester, almost doubling the number of students, 47, from the previous year’s 25. Healthcare Lab is a required course for the Healthcare Certificate. Approximately 40% of Healthcare Lab students go on to earn the certificate each year. (for details see: [Healthcare Certificate and Student Resources](#))

As might be expected, given the enduring healthcare crises, there is a significantly increased interest in the Healthcare Certificate. In FY20, 34 students were enrolled, and the program graduated 12 students from across MIT. In FY21, Certificate enrollment was at 85 students by the start of the Fall semester.



### Seminars

We presented five seminars in FY20, before we had to suspend them due to COVID-19.

Date	Speaker	Topic
Oct. 8, 2019	Erez Yoeli, MIT	Mobile Self-verification and Support for Successful Tuberculosis Treatment
Nov. 19, 2019	Bob Pozen, MIT	State reinsurance programs to reduce ACA premiums
Dec. 5, 2019	Matt Mullaney, C3	How Value-Based Care Could Save or Destroy the Foundation of Primary Care for Low Income Americans
Feb. 20, 2020	Stacy Chang, UT Austin	Designing a Modern Health System
Feb. 27, 2020	Steven Spear, MIT	Using advanced data sciences to empower clinical decision makers

### Communications

Starting in mid-FY20, we contracted with a communications consultant, Lisa Abrams, to help craft a communications strategy and to create content in varied forms to publicize HSI’s activities. The plan is based on the interplay among the website, the newsletter, LinkedIn and events. Rather than start with a

blank slate for each outlet, the goal is to reuse and repurpose original content according to the audience and channel.

## [HSI Website](#)

Development of our new website began in FY19. In FY20, we completed that process, introduced the new website to our audience and continue to populate it with new content. Since the launch, we've posted 14 new spotlights and three additional articles about our seminars, Healthcare Lab and the Healthcare Certificate (see [Student Resources](#) and [Our Work](#)). Our research has also been featured in Sloan's Ideas Made to Matter (see [News and Events](#)) Several articles started as newsletter pieces and were expanded for our website.

## Newsletter

We started publishing a newsletter in March 2020. Three more issues followed in May, August and October. We expect to publish every six to eight weeks. The newsletter circulation is now roughly 550, from a starting level of 300, and growing. On average, our open and click rates are significantly higher than our peers'.

## [LinkedIn](#)

LinkedIn is another channel where we publish our work and direct readers to our website. People can also sign up for our newsletter directly from LinkedIn. Our followers have increased by a factor of 10 since 2017 and have doubled in the past year. One-third come from the healthcare, research, pharmaceutical or biotechnology industries. We also have more than 600 connections. Our posts continue to garner impressive views. One of our articles about HSI's COVID-19 research has nearly 500 views. Our healthcare certificate post attracted the attention of 3,300.



## Going Forward

### New HSI Lab

The HSI Employee Population Health Lab is a new research initiative that we kicked off this year. The emergence of evidence that workplace health-focused programs need to perform better provides an opportunity to re-think employee population health to improve the lives of employees and their families, while lowering healthcare costs and raising productivity. The good news is that there is strong consensus among employers and other payers, employees, and providers to tackle these issues.



We have spoken to several employers who are interested in working with us to research this issue. Our measured, unbiased approach and collaborative thinking are attractive to these partners. Together we will focus on discovering and implementing solutions with the power to improve health and create a more sustainable health system.

## Communications

In the coming year, we plan to fine-tune our website and focus the content more toward HSI's activities and impact. To that end, we will move news and research articles to a more prominent place on our pages. We are also planning new sections for HSI news, researcher publications and an archive for newsletters

and spotlight articles. Continuing evaluation is also a part of this plan. We will track traffic and clicks compared to our earlier website version, so we can consistently evaluate and pivot quickly if something is not working.

We also plan to survey our newsletter audience about the types of content they would find most useful and pertinent. Finally, we plan to revisit the idea of adding an HSI Twitter channel at the end of FY21.

## Thank You and Call to Action

### Our Thanks To:

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.



Ron Williams, SM '84, Chair Former CEO, Aetna



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Chris McLeod, SM '79 Managing Partner, Elm Street Ventures



Steve Rusckowski, SM '84 CEO, Quest Diagnostics



Roy Schoenberg, MD President & CEO, Amwell



Peter Slavin, MD President, Massachusetts General Hospital



Mark Watson Managing Director, Fair Food Fund



Mike Wilkening Special Advisor on Innovation & Digital Services, Governor's Office, CA

### FY 2020 donors to HSI (*alphabetical by last name*)

Roy O. Brady Jr. SM '72	Ivy Head Family Foundation	Christopher K. McLeod SM '79
Sarah Shoaf Cabot SM '85	Yin-Fee Fanny Ho SM '77	Garth Geung Moon MBA '03 and Gye Won Park
Jennifer Levin Carter EMBA '19	Phyllis Fishman Lantos '72, SM '74	Steve Rusckowski SM '84
Thalia Chryssikou PhD '98	Mauricio Levitin MBA '03	Earle Yaffa SM '63
Craig Gregory Elliot MBA '07		

## 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. Please contact us at [healthsystems@mit.edu](mailto:healthsystems@mit.edu)

We welcome you to join us for zoom events in FY21. [Subscribe to our newsletter](#) or see the [Events](#) section on our website for details.

[Contact us!](#)