



# **Weill Cornell Medicine** Population Health Sciences

## **Master of Science Programs**





# ABOUT

The Master of Science programs at Weill Cornell Medicine prepare the next generation of healthcare researchers and practitioners in the study of effective healthcare delivery through data-driven innovations.

We offer three distinct Master of Science programs in Biostatistics and Data Science, Health Informatics, and Health Policy and Economics. Students have the opportunity to focus on a specific area of research and training while increasing their breadth and depth of understanding of the healthcare ecosystem as a whole.

As a leading clinical and medical research center, Weill Cornell Medicine's accomplished faculty and world-renowned facilities serve as essential teaching tools. Together, they provide students with unparalleled opportunities to learn and network with industry leaders. Additionally, our New York City location allows for close collaboration with experts at nearby institutions, such as NewYork-Presbyterian, Hospital for Special Surgery, and Memorial Sloan Kettering Cancer Center.

Our programs also incorporate a year-long capstone project that allows students to gain real-world experience by working with different healthcare

sector stakeholders. The opportunity to practice in a professional setting enables them to develop their contextual awareness, integrative management, and industry technical skills. This culminating project provides a deeper foundation that helps students advance to the next stages of their careers.

## Career Services

Career Services help MS students build professional development skills to continue career growth and professional success during and after their training at Weill Cornell Medicine. Resources include individual career coaching, career assessments, professional development course, career resource library, career development seminars, a bi-weekly career newsletter, and access to Handshake, an online recruiting system. Additionally, students and alumni can engage with employers at information sessions, networking events, career fairs, panel events, and coffee chats to establish industry knowledge and professional relationships.

# MS in Biostatistics and Data Science

The MS in Biostatistics and Data Science provides comprehensive and rigorous training in statistical concepts and programming essential to tackling challenges in today's data-driven world. This program is unique in its offerings in cutting-edge data mining and machine learning techniques while retaining the rigor of a traditional biostatistics program. Cohorts include students with backgrounds in statistics, mathematics, physics, computer science, engineering, biology, and healthcare.

## Capstone Project Examples

- Developing a Shiny interface for "Maplet" analysis pipelines
- Developing lipidomic signatures of the tumor microenvironment for breast cancer risk stratification
- Identifying social isolation in electronic health records (EHR) and social media data
- Understanding follow-up cardiology care patterns among cancer survivors hospitalized for heart failure

## Faculty Highlights

Our faculty are experts in research methodology, clinical trial infrastructure, cancer genomics, and big data analysis. They serve as key personnel and principal investigators on studies funded by the NIH, Department of Defense, the National Science Foundation, and private foundations. Additionally, they serve as members in national disease panels and committees, and they are biostatistical editors or reviewers for major journals, such as Nature Communications, Clinical Cancer Research, Journal of Experimental Medicine, and PNAS.

# PROGRAM BREAKDOWN

## Course Sequence (information is subject to change)

All students must complete 36 credits in order to be eligible for graduation.

FALL TERM 1 (COURSELOAD: 12 CREDITS)						
REQUIRED					RECOMMENDED ELECTIVE	OTHER POSSIBLE ELECTIVE
Biostatistics I with R Lab (4)	Study Design (1.5)	Categorical and Censored Data Analysis (1.5)	Data Science I (R and Python) (3)	Master's Project I & Professional Development (2)	Statistical Programming with SAS (3)	Introduction to Health Services Research (3)

SPRING TERM 1 (COURSELOAD: 12 OR 15 CREDITS)						
REQUIRED		RECOMMENDED ELECTIVES (CHOOSE 1 OR 2)			OTHER POSSIBLE ELECTIVES	
Biostatistics II – Regression Analysis (3)	Master's Project II (3)	Data Management (SQL) (3)	Big Data in Medicine (3)	Modern Methods for Causal Inference (3)	Artificial Intelligence in Medicine (3)	Health Data for Research (SAS) (3)

SUMMER TERM 1 (COURSELOAD: 3 CREDITS)	
REQUIRED	
Master's Project III (3)	

FALL TERM 2 (COURSELOAD: 6 OR 9 CREDITS)				
REQUIRED	RECOMMENDED ELECTIVES (CHOOSE 1 OR 2)			OTHER POSSIBLE ELECTIVE
Data Science II - Statistical Learning (3)	Design & Analysis of Biomedical Studies (3)	Pharmaceutical Statistics (3)	Hierarchical Modeling & Longitudinal Data Analysis (3)	Study Designs & Comparative Effectiveness (3)

# MS in Health Informatics

The MS in Health Informatics focuses on the use of information technology to transform healthcare. With the recent explosion of data and computational capability, the health informatics field has grown dramatically. This program enables its students to deliver critical insights through specialized training in health information systems, data science, human factors, and evaluation techniques. This program also has close ties to Cornell University, Cornell Tech, and NewYork-Presbyterian. Cohorts include students with backgrounds in information science and technology as well as medicine and related healthcare fields.

## Capstone Project Examples

- Detecting classes of heart failure from clinical notes using text-mining and machine learning
- Exploratory data analysis of antimicrobial resistance patterns in Escherichia coli clinical isolates using associative rule mining
- Ontology development in health literacy
- Super-high utilizer patients in an urban academic emergency department: characteristics, early identification and impact of strategic care management interventions

## Faculty Highlights

Our faculty are experts in information system management, computable phenotyping, data mining, natural language processing, and machine learning. They serve as principal investigators on numerous NIH R01 grants and hold influential positions throughout the health informatics field, from an elected fellow of the New York Academy of Medicine to a recipient of the Google Faculty Research Award and editorial memberships across numerous journals.

# PROGRAM BREAKDOWN

## Course Sequence (information is subject to change)

All students must complete 36 credits in order to be eligible for graduation.

### FALL TERM (COURSELOAD: 15 CREDITS)

REQUIRED				
Introduction to Biostatistics with Stata Lab (4) OR Biostatistics I with R Lab (4)	Introduction to Health Informatics (3)	Research Methods in Health Informatics (3)	Healthcare Organization & Delivery (3)	Master's Project I & Professional Development (2)

### SPRING TERM (COURSELOAD: 12 CREDITS)

REQUIRED		RECOMMENDED ELECTIVES (CHOOSE 1 OR 2)		
Health Information Standards and Interoperability (3)	Master's Project II (3)	Artificial Intelligence in Medicine (3)	Natural Language Processing (3)	Health Behavior and Consumer Informatics (3)

### SUMMER TERM (COURSELOAD: 9 CREDITS)

REQUIRED		
Data Management (SQL) (3)	Clinical Informatics (3)	Master's Project III (3)

# MS in Health Policy and Economics

The MS in Health Policy and Economics trains students to develop and evaluate approaches to financing and delivering healthcare. Combining advanced research methods with hands-on experience in SAS, Stata, and R, this program provides a strong foundation in healthcare organization and delivery, economic concepts, and current policy issues.

Cohorts include students with backgrounds in social and basic sciences, medicine, pharmacy, nursing, and healthcare administration.

## Capstone Project Examples

- COVID-19 and life-saving medications for opioid use disorder among Medicaid patients
- Health and Hope-Myanmar project
- Impact of short-term surgical quality measures on long-term outcomes for lobectomy patients
- Transfers among nursing homes: trends and patient characteristics

## Faculty Highlights

Our faculty are experts in health policy, health economics, informatics, epidemiology, biostatistics, and econometrics. They are principal investigators on grants from the NIH, National Cancer Institute, and The Physicians Foundation, and serve on numerous well-known federal grant review panels and committees.

# PROGRAM BREAKDOWN

## Course Sequence (information is subject to change)

All students must complete 36 credits in order to be eligible for graduation.

FALL TERM (COURSELOAD: 12 CREDITS)				
REQUIRED				POSSIBLE ELECTIVE
Introduction to US Healthcare Policy & Delivery (3)	Introduction to Biostatistics with Stata Lab (4) or Biostatistics I with R Lab (4)	Introduction to Health Services Research (3)	Master's Project I & Professional Development (2)	Healthcare in the US - Policymaking and Political Strategy (3)

SPRING TERM (COURSELOAD: 12 OR 15 CREDITS)				
REQUIRED			RECOMMENDED ELECTIVES (CHOOSE AT LEAST 1)	
Health Data for Research (SAS) (3)	Introduction to Applied Econometrics for Health Policy (3)	Master's Project II (3)	Incentives in the US Healthcare System (3)	Cost Effectiveness Analysis (3)

SUMMER TERM (COURSELOAD: 9 OR 12 CREDITS)			
REQUIRED		RECOMMENDED ELECTIVES (CHOOSE AT LEAST 1)	
Application in Econometrics and Data Analysis (3)	Master's Project III (3)	Study Designs and Comparative Effectiveness (3)	Survey Research Methods (3)

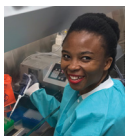


# ALUMNI OUTCOMES

Alumni from Weill Cornell Medicine's Master of Science programs hold critical roles in the healthcare field. They contribute to scientific discovery, educate future healthcare professionals, engage healthcare policymakers and leaders, consult on healthcare strategy and services, and develop powerful technological innovations. Our alumni also pursue PhD and MD programs after graduation, including studies in biomedical informatics, biostatistics, health economics, health services research, population health, and medicine.

## MS in Biostatistics and Data Science

The MS in Biostatistics and Data Science program's advanced academic training allows students to explore a diverse array of career paths to make meaningful contributions in the healthcare industry and beyond. This program has trained students to pursue roles in biostatistics, data science and analytics, machine learning, consulting, and implementation science. Alumni have gone on to hold positions such as biostatisticians, data scientists, data analysts, machine learning data scientists, consultants, project managers, and more.



**Alumni Spotlight** – Chiomah Ezeomah wants to dedicate her life's work to developing vaccines. Following graduation, she founded the Biosafety Management Company, a social enterprise that serves as a COVID-19 consultant to the Taraba State Government and Benue State Government of Nigeria. Chiomah, who plans to pursue an MD and PhD, is also starting the Chanan Biomedical Research Institute. The organization will provide statistical and healthcare consultancy, conduct biomedical research, and train African scientists.

## MS in Health Informatics

Students in the MS in Health Informatics program develop a range of skills to successfully obtain jobs that make important contributions to the healthcare industry. This program has trained students for careers in information science, healthcare IT system management, data analytics, implementation science, and government. Alumni have gone on to hold positions such as integration-interface analysts, manager of quality informatics, clinical data managers, data analysts, pharmacy informaticists, technical consultants, and more.



**Alumni Spotlight** – As a data analyst in the healthcare sector, Mallika Viswanath recognized the MS program as an opportunity to expand her knowledge on the digitization of the patient experience and healthcare system data storage and function. Working full time while enrolled in the program, she focused her research on the effects of the built environment on maternal mental health to guide clinical interventions and appropriate preventative measures to reduce the incidence of postpartum depression. Now, Mallika works as a healthcare data analyst at HealthVerity, where her focus is on exploring clinical data assets for clients to license for their research.

## MS in Health Policy and Economics

Students in the MS in Health Policy and Economics program receive rigorous training, preparing them to make significant industry contributions. This program has developed students to pursue careers in health economics, health policy, data analytics, policy evaluation, consulting, government, non-profits, and implementation science. Alumni have gone on to hold positions such as health economists, health policy researchers, policy analysts, healthcare consultants, data analysts, and research coordinators.



**Alumni Spotlight** – Soham Sinha has always aspired to become an academic health economist. As a research assistant, Soham worked on optimizing the delivery of genomic medicine, studying the comparative and cost-effectiveness of cancer prevention strategies. He also served as a teaching assistant in the Department of Population Health Sciences and has taught students in both the MS and Executive MBA/MS programs. He is now enrolled at the University of Chicago to pursue his PhD in health economics, focusing on improving health outcomes and informing policy in the area of opioid use disorders.



# ADMISSIONS REQUIREMENTS

Weill Cornell Medicine requires all graduate school applicants to have a baccalaureate degree from an accredited college or university. Individual programs also have specific and additional requirements for admission which are listed below.

## MS in Biostatistics and Data Science

Applicants should possess solid quantitative and programming backgrounds. An undergraduate major in one of the following fields would make a good candidate: statistics, mathematics, applied mathematics, physics, computer science, or engineering. Students from other majors are highly encouraged to apply. Still, they should have at least two college-level semesters of calculus, some linear algebra, and strong programming experience.

## MS in Health Informatics

Applicants must demonstrate strength in quantitative reasoning, computer programming, and healthcare or biomedical sciences. Undergraduate coursework in mathematics or statistics, computer programming, clinical healthcare, biomedical sciences, or public health is viewed very favorably.

## MS in Health Policy and Economics

Applicants must demonstrate a strong GPA, leadership skills, and excellent communication skills. Students typically come with previous programming experience in SAS, Stata, or R. Prior experience is not required and extensive training in these statistical programs is offered.

## Application Materials

- Online Application
- Resume/CV
- College Transcripts
- Personal Statement
- Three Letters of Recommendation
- GRE/GMAT Scores (optional)

## International Students

All international students who have not pursued a degree at an institution that teaches their curriculum in English are required to submit TOEFL/IELTS scores. Transcripts that are not in English or on a 4.0 scale must also be translated by World Education Service or Education Credential Evaluators.



# Weill Cornell Medicine

## Population Health Sciences

If you are interested in our programs, please contact us at [phs-admissions@med.cornell.edu](mailto:phs-admissions@med.cornell.edu).  
For more detailed information, please visit [phs.weill.cornell.edu/education](https://phs.weill.cornell.edu/education).