

MCS Selective From Insights to Impact: The Promise of Big Data in Decreasing Health Care Disparities

Short Description

Healthcare delivery is increasingly being shaped by the integration of big data.

This Selective will introduce medical students to big data analytics and how it is used to deliver healthcare services and improve the health of populations. It will prepare students to better understand the patient populations in Suffolk County as well as other communities where they will be expected to provide medical care during the clinical years.

By understanding and using the available data sources, students will be able to identify significant health issues and become the “Health Commissioners for a Day”, able to design strategies to address the health disparities that currently exist in Suffolk County. This video link provides an example of how medical students can address health disparities.

https://www.youtube.com/watch?v=wjBo5Q4eJAK&list=PLXAV1I8fetenIBEzq_jfgvNRNjRiHFIEa

Instructors



Cordia Beverley, MD

cordia.beverley@stonybrookmedicine.edu

Assistant Dean for Community Health Policy

Clinical Associate Professor Family, Population and Preventive Medicine

Renaissance School of Medicine, Stony Brook University



Mary Saltz, MD

Mary.saltz@stonybrookmedicine.edu

Clinical Associate Professor and Chief Medical Information Officer for the Stony Brook Cancer Center. In Association with the Department of Biomedical Informatics she has worked with data scientists to understand the Suffolk County population.

Detailed Description

Medical education is progressively focused on community engagement as a method of improving Population Health. Institutions are developing rigorous service learning models of care, and curriculums that prepare all levels of students to apply their clinical, biomedical and behavioral knowledge to understanding the community's needs. Academic Medical Centers across the Country, are making community engagement and population health improvement a core value, enabling these institutions to address the Social Determinants of Health and decrease health disparities. A new approach to achieving these goals is the effective uses of Biomedical Informatics data to improve Population Health.

The Evolution of Big Data in Healthcare

Historically, healthcare systems relied on limited data sets primarily derived from clinical trials and patient records. However, the advent of big data has broadened the scope and depth of available information. Big data encompasses vast volumes of structured and unstructured data from diverse sources such as electronic health records (EHRs), medical imaging, genomic sequencing, wearable devices, social media, and public health databases

The Interdisciplinary Field of Biomedical Informatics (BMI)

BMI is the healthcare field that studies and pursues the effective uses of biomedical data, information, and knowledge for scientific inquiry, problem solving and decision making, motivated by efforts to improve population health. In this Selective, students will use big data to better understand the populations in Suffolk County, where they live, who they are, where they seek medical care, what causes their hospitalization and what influences re-admissions for the same condition(s). By understanding the available data sources and how to analyze the insights, we can develop a robust view of the patients we treat and how to improve their health.

According to the 2021 American Community Survey, Suffolk County's total resident population is 1,526,344, with an average population density of 1675.6 people per square mile. 49.5% of the Suffolk County population identifies as male, and 50.5% identifies as female, which is similar to the gender distribution of the United States as a whole. With a median age of 41.8 years, Suffolk County is a slightly older community compared to New York State (median age 39.8 years) and the United States (median age 38.8 years). 16.5 % of Suffolk County residents were foreign-born and 59.5 % of them were naturalized U.S. citizens.

Understanding the use of these Data Tools will allow you to understand how Medicare, Insurance Companies and Health Systems make decisions about the allocation of health care services.

- Statewide Planning and Research Cooperative System (SPARCS)
- American Community Survey(ACS)
- Behavioral Risk Factor Surveillance System (BRFSS).
- HealthIntent - Cerner Health Population Tool.
- Suffolk County Community Health Assessment, 2022-2024
- The Governor's Cancer Research Initiative 2017

Educational Objectives:

At the end of this course, you will have the ability to:

- Understand how to interpret public data sources.
- Explain the health needs in the Suffolk County populations where you learn, work and serve.
- Explain the role of Biomedical Informatics in using big data sets to improve population health and decrease health disparities.
- Identify opportunities for medical students and faculty to develop health education outreach and promotions that address health disparities.

Requirements and Outline:

Week 1: Health Disparities

Health disparities include differences in health outcomes, such as life expectancy, mortality, health status, and prevalence of health conditions. Health care disparities include differences between groups in measures such as health insurance coverage, affordability, access to and use of care, and quality of care. Disparities occur across multiple factors including race and ethnicity, socioeconomic status, age, geography, language, gender, disability status, citizenship status, and sexual identity and orientation.

Dr. Mary Saltz will discuss the data sources that are available and how they can be used to identify health disparities and improve population health in Suffolk County.

Dr. Linda Mermelstein MD, MPH, formerly the Chief Deputy Commissioner for the Suffolk County Department of Health Services, will conduct an interactive session describing the challenges faced by the Health Commissioner in keeping our community safe.

Review:

The Suffolk County Community Health Assessment and Improvement Plan (2022-2024)

https://www.suffolkcountyny.gov/Portals/0/DocumentsForms/HealthServices/Community%20Health%20Assessment/Suffolk%20County%20CHA_CHIP%202022-24.pdf

Week 2: The NYS Governor's Cancer Research Initiative

Evaluating Population Health Disparities and Cancer Risks in Suffolk County.

This research initiative announced in 2017, examines cancer trends and potential causes of cancer in four regions of New York State.

In Suffolk County: Centereach, Farmingville and Selden were found to have elevated levels of the following cancers: Bladder, Lung, Leukemia and Thyroid. We will use big data sets to try to determine possible reasons for the increase in these cancers.

Zip Codes:

- Centereach 11720, 11779, 11784
- Farmingville 11738
- Selden 11784

Review:

http://www.health.ny.gov/diseases/cancer/cancer_research_initiative/

Week 3: Substance Use Disorders in Suffolk County

Costs of Substance Abuse in the United States:

The National Institute of Drug Abuse (NIDA) estimates that the abuse of tobacco, alcohol, and illicit drugs is costly to our Nation, however, “The concrete financial and physical costs of addiction aren’t all we have to worry about. Nearly 24 million people in the United States are addicted to alcohol and drugs.

The estimated cost for substance misuse to society is more than \$820 billion each year and is expected to continue increasing.”(Gateway Foundation).

Review:

https://www.health.ny.gov/statistics/opioid/data/pdf/nys_opioid_annual_report_2024.pdf

1. E Schoenfeld, G S Leibowitz, Y Wang, X Chen, W Hou, S Rashidian, **MM Saltz**, JH Saltz, F Wang. Geographic, Temporal, and Sociodemographic Differences in Opioid Poisoning. Am J Prev Med. 57(2). 153-164. 2019.
2. S Pandrekar, X Chen, G Gopalkrishna, A Srivastava, **MM Saltz**, JH Saltz, F Wang. Social Media Based Analysis of Opioid Epidemic Using Reddit American Medical Informatics Association Annual Symposium Annual Symp Proc. 867- 876. eCollection 2018. PMID: 30815129. PMCID: PMC637136. 2018.
3. X Chen, Y Wang, X Yu, E Schoenfeld, **MM Saltz**, JH Saltz, F Wang. Large-scale Analysis of Opioid Poisoning Related Hospital Visits in New York State. American Medical Informatics Association Annual Symposium Annual Symp Proc. 545-554. eCollection 2017. PMID: 29854119 PMCID: PMC5977648. 2018.

Week 4: Addressing Racial and Ethnic Disparities in Health and Health Care for individuals with chronic medical conditions in Suffolk County

Review:

- 1.The Suffolk County Community Health Assessment and Improvement Plan (2022-2024)

https://www.suffolkcountyny.gov/Portals/0/DocumentsForms/HealthServices/Community%20Health%20Assessment/Suffolk%20County%20CHA_CHIP%202022-24.pdf

2. Cardiovascular Diseases in African Americans: Fostering Community Partnerships to Stem the Tide Am J Kidney Dis. 2018 Nov;72(5 Suppl 1):S37–S42. doi: [10.1053/j.ajkd.2018.06.026](https://doi.org/10.1053/j.ajkd.2018.06.026)

Evaluation and/or criteria for completion

Evaluation: Participation and attendance at all sessions is required. Grading is Pass/Fail.

To pass this selective, students will be required to:

- 1.Participate in group activities
2. Review assigned readings and media for every session.
3. Actively participate in all the sessions.
4. Recognize this Selective as a safe space, which allows all participants to respectfully explore and express their views.
5. Keep a reflection journal for all four weeks.

Class Size

Minimum 6 / Maximum 12