HPM 441: Health Analytics: Identifying, Collecting, and Analyzing Big Data in Healthcare
Spring 2017
Tuesday-Thursday 8-9:50 AM
Room: Young Hall, Room 4216
TAs: Michelle Chen (michelleschen@ucla.edu)
Alma Jusufagic (ajusufa@ucla.edu)

Primary Instructor
Brennan Spiegel, MD, MSHS (310) 423-6467 (brennan.spiegel@cshs.org)
Administrative Assistant: Kathy Oka (310) 423-6784 (Kathy.Oka@cshs.org)

Required Textbooks
- Trevor Strome, Healthcare Analytics for Quality and Performance Improvement, Hoboken: John Wiley & Sons, Inc., 2013. Students have access to this text online through the UCLA Library catalog (http://www.library.ucla.edu/).

For Reference

Students will be expected to read all assigned material before the class session in which it will be discussed. Readings supplementing the text will be placed on the class website. The reference readings are optional supplementary material to further enhance class discussion and provide more theory behind the topics we will discuss.

Prerequisites: None

Learning Objectives and Competencies:

<table>
<thead>
<tr>
<th>Learning Objectives</th>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Learn how health analytics can help support a more efficient, more effective, and less expensive healthcare system.</td>
<td>A5,A8,A10, D1,D7; E8; K1.1; K2.3,K2.4,K2.5,K2.8,K2.11; K3.3,K3.4,K3.5,K3.6,K3.7; L2.2,L2.5; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>2. Recognize how “big data” principles – volume, velocity, and variety – can support healthcare analytics.</td>
<td>A5,A8,A10; D1,D7; F6 K1.1; K3.3,K3.4,K3.5,K3.6,K3.7; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>3. Evaluate models of how to converge disparate data to support healthcare delivery and outcomes.</td>
<td>F6; K1.1; K2.5; K3.3,K3.4,K3.5,K3.6,K3.7; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>4. Explore the role of social media as a powerful “big data” source for healthcare analytics.</td>
<td>D7,D8; K2.5,K3.3,K3.4,K3.5,K3.6,K3.7; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>5. Study how text processing techniques can be used to gain insights from unstructured data formats.</td>
<td>F6; K2.5; K3.3,K3.4,K3.5,K3.6,K3.7; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>6. Learn how to select the optimal data display to present health analytic data; appreciate the art and science of data visualization.</td>
<td>E6,E7; F6; K1.1; K2.3,K2.8; K3.3,K3.4,K3.5,K3.6,K3.7; L2.2; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>7. Recognize the role of wireless health and the “quantified self” movements in driving health care delivery and analytics</td>
<td>F4; K2.3,K2.8; K3.3,K3.4,K3.5,K3.6,K3.7; L2.2; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>8. Evaluate the role of “patient-provider-portals” and mHealth apps as engines for health analytics, patient access to data, and clinical care.</td>
<td>E8; F4,F6; K2.3,K2.8; K3.3,K3.4,K3.5,K3.6,K3.7; L2.2; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>9. Develop skills in manipulating and analyzing datasets using Microsoft Excel.</td>
<td>E6,E7; F4,F6; K2.3,K2.8; K3.3,K3.4,K3.5,K3.6,K3.7; L2.2; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
<tr>
<td>10. Learn basic principles of health surveys, patient reported outcomes (PRO) analytics, and the importance of “thick data”.</td>
<td>E6,E7; F4,F6; K2.3,K2.8; K3.3,K3.4,K3.5,K3.6,K3.7; L2.2; L3.4,L3.6,L3.7,L3.8,L3.9,L3.10</td>
</tr>
</tbody>
</table>

¹ See page 6 for the text of these competencies.
**Course Description**

American healthcare delivery is in the midst of a transformation. Buoyed by an explosion of information and computing technologies, healthcare delivery is rapidly evolving from an imprecise, population-based approach into a targeted system that responds to the unique biological, psychological, and social profile of individual patients. Technological advances now permit inexpensive and seamless data collection and processing, allowing previously unimaginable delivery of meaningful data from patients to healthcare providers, administrators, and analysts. Put simply: modern technologies have potential to dramatically transform healthcare for the better.

Healthcare analysts must become facile with managing the volume, velocity, and variety of “big data” sources now available to inform healthcare delivery. In this course, we will begin by introducing the evolving concepts of big data and study how networks of data inform healthcare analytics in ways never previously possible. We will then review sources of big data in healthcare, including enterprise data warehouses, social media databases, mobile health (mHealth) applications, wearable biosensors, and patient-provider-portal data. For each of these data sources, we will review associated analytic techniques, including data acquisition and management from data warehouses, data manipulation in Excel, free text processing of medical records and social media data, networking for wearable biosensors, and techniques to visualize data to tell a narrative and generate insights. We will study examples of data convergence, consider vignettes where healthcare analytics made a difference, recognize the important limitations of health analytics, and think creatively about how to parlay analytic techniques to transcend how things are usually done, and instead build a future for how healthcare should be optimally analyzed and delivered. These topics will be supported by readings from the assigned textbooks, along with related articles and chapters posted on the class website.

The overarching goal of this class is for participants to gain familiarity with modern health analytic techniques. For some of these techniques the objective will be to develop mere familiarity and knowledge about how the technique is used, what questions it can answer, and who to talk to if you ever want to employ the technique – i.e. natural language processing (NLP), ATLAS.ti coding of text data, and conjoint analysis. For other techniques, the objective will be to acquire hands-on skills – i.e. data importing, analysis, visualization and reporting using Microsoft Excel and its add ons. In all cases, we will think critically about how to use these techniques to build a more efficient, more effective, and less expensive healthcare system.

To achieve these goals, the class is designed to showcase examples from health analytic practitioners in the field. We will learn from physicians, computer scientists, statisticians, hospital administrators and executive leaders. We will evaluate how multi-disciplinary approaches to health analytics provide new opportunities for designing healthcare systems for the future, starting today.
Evaluation Criteria

The final grade will be based on in-class participation and performance on individual and group assignments, as described below. There will be no final examination. Instead, we will assign problems and group assignments over the quarter. We hope this approach will allow students to focus more on the course material without culminating towards a singular examination.

In Class Participation (10% of grade)

Please make every effort to come to class. In class participation will be evaluated using periodic short open-ended questions that each student will submit during the lecture. We will distribute 4x6 flashcards during selected classes and will ask students to respond to a short “thought” question. For example, we might show a data graph and ask students to briefly explain the significance of the data. Or, we might ask students to think of an example in their life where a certain analytic technique was used, and simply report the use case example. In all cases the questions will be short, straightforward, and simply designed to evaluate basic thought processes while simultaneously confirming class attendance and understanding of reading assignments. Each in-class question will be graded with one of three scores, as follows: (1) Zero points: if the student is absent or fails to submit a card; (2) Five points: if the student submits a response that is partly correct; (3) Ten points: if the student submits a response that is fully correct. In many cases, there will be more than one “correct” answer, as we will focus more on thought process than settling on a singular “best” response. The final in-class participation score will constitute the average of all questions, and will comprise 10% of the final grade. Because students sometimes have important reasons to miss a class, we will allow one “free” class absence during the quarter, although we strongly encourage attendance at all classes. Please let us know, in advance, if you plan to miss a class. If a student expects to miss more than one class, please inform Dr. Spiegel and the TAs with the rationale and we will try to accommodate requests.

Take Home Questions (50% of grade)

In lieu of a one-time final examination, we will use a “continuous” running assessment with intermittent stand-alone questions throughout the quarter. These questions will be based on the lectures and readings, and will be open-ended thought pieces. For example, a question might involve preparing a short (e.g. 2 page) report for how to use a data analytic technique to address a problem in a hypothetical healthcare facility. Or, a question might ask students to download a data set in Excel and prepare data visualizations. In all cases, the questions will be short-answer and designed to emphasize thought process rather than a singular best answer. We will assign three questions over the course of the quarter. Assignment #1 will be distributed April 13 and due April 20; assignment #2 will be distributed May 4 and due May 11; and assignment #3 will be distributed May 25 and due June 6. We will post specific grading criteria for each assignment to help students prepare responses in accordance with expectations.

Group Assignment (40% of grade)

Because health analytics is generally performed in groups, we will assign students to groups of 4-5 students each
to complete a teamwork assignment. Groups will be created by a random number generator and will be pre-assigned – please do not make requests to work with specific students. We will announce the groups prior to posting the initial assignment. The group assignment will involve downloading and manipulating a dataset that will be made available on the course website. Each group will load the data into a spreadsheet program, organize and code the variables, clean the data, run analyses, select data displays, and prepare a written report. This assignment will be divided into two parts: (1) analysis and data display, and (2) interpretation and final reporting. **Part I will be due by 12AM on Thursday, June 1.** Groups will then present their results in class on June 1. Each group will present a succinct five-minute slide presentation of how they analyzed and visualized the data. For this exercise, imagine that you have only five minutes to present your results members of leadership in your healthcare organization, so you must be succinct and sharp. This exercise will allow each group to learn from the others and recognize the different ways to analyze the same data set, while also recognizing how to maximize a short period of time to present data and insights. Grades will be based solely on the written reports and slide decks submitted in advance by midnight of June 1. We will spend the group presentation session reviewing strategies different groups employed to manipulate, analyze, and visualize the data. **Part II of the assignment will involve creating a report for a hypothetical supervisor in a healthcare organization; it will present final data analysis, interpretation, and recommendations for an action plan for leadership. There will be several sections to Part II that will be distributed following completion of Part I of the assignment. Part II will be due on Friday, June 16.**

The best way to succeed in this class will be to attend all the lectures, interact with the content actively, play a proactive role in the group assignments, and do the readings.

**Some Tips on Succeeding in this Class**

- **Our goal is for everyone to do well in this class!**
- Enjoy the class, first and foremost.
- Class starts early at 8AM. We know it’s not an optimal time, but you can make it if you plan ahead.
- You will learn more from this class if you try and do the readings; they are found on the class CCLE website.
- Most of the questions in this class do not really have a “best answer.” There is a lot of uncertainty in this field, so it’s most important to justify your answer to at least get partial credit.
- When you answer the take-home questions, it will help if you draw from the readings.
- In the group assignments, challenge each other, ask each other lots of questions, and get deep into the problem. Try not to wait until the end or you won’t get as much out of the problem.
- You might find some of the lectures to be very conceptual without much text on the slides or “meat” to study or memorize. That’s by design. This course is meant to help you think critically about the field, understand the challenges you will face, and guide you through diverse case studies. The textbook and readings are for note taking; you may find that you don’t take many notes during some classes, and that’s okay.
- Ask questions during class. Your instructors look forward to discussion and dialogue. If you have a question, then someone else probably has the same question.
<table>
<thead>
<tr>
<th>Session</th>
<th>Instructor</th>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B. Spiegel</td>
<td>4/4</td>
<td>Volume, Velocity, and Variety: Introduction to Big Data Principles and Their Application to Healthcare</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>B. Spiegel</td>
<td>4/6</td>
<td>The Art and Science of Data Visualization: Selecting the Right Graph, Control Chart, or Dashboard to Display Results</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>N. Afsarmanesh</td>
<td>4/11</td>
<td>Leveraging Analytics in Quality Improvement: Review of QI Frameworks and Methodologies</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>J. Black</td>
<td>4/13</td>
<td>Dealing with Data in the Age of Big Data: Part I</td>
<td>#1 Distributed</td>
</tr>
<tr>
<td>5</td>
<td>N. Haria</td>
<td>4/18</td>
<td>Working with Data to Inform Clinical Operations: Use Cases and Lessons Learned from the Field (Part I)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>B. Spiegel</td>
<td>4/20</td>
<td>Social Media as a Big Data Resource for Health Analytics</td>
<td>#1 Due</td>
</tr>
<tr>
<td>7</td>
<td>J. Black</td>
<td>4/25</td>
<td>Working with Data to Inform Clinical Operations: More Use Cases and Lessons Learned from the Field (Part II)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>S. Weingarten</td>
<td>4/27</td>
<td>Preparing to Succeed in the Future of Health Care</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>C. Arnold</td>
<td>5/2</td>
<td>Discovering Hidden Themes in Unstructured Biomedical Data: Introduction to Text Processing, Information Retrieval, and Predictive Modeling</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>B. Spiegel</td>
<td>5/4</td>
<td>Health Surveys and Patient Reported Outcome (PRO) Analytics</td>
<td>#2 Distributed</td>
</tr>
<tr>
<td>11</td>
<td>O. Kulkarni</td>
<td>5/9</td>
<td>Dealing with Data in the Age of Big Data: Part II</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>C. Almario</td>
<td>5/11</td>
<td>Excelling with Excel Part I: Importing and Manipulating Data</td>
<td>#2 Due</td>
</tr>
<tr>
<td>13</td>
<td>C. Almario</td>
<td>5/16</td>
<td>Excelling with Excel Part II: Coding Data and Writing Formulas</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>C. Almario</td>
<td>5/18</td>
<td>Excelling with Excel Part III: Using Excel as a Database</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>C. Almario</td>
<td>5/23</td>
<td>Excelling with Excel Part IV: Data Aggregation and Analysis</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>C. Almario</td>
<td>5/25</td>
<td>Excelling with Excel Part V: Data Visualization</td>
<td>#3 Distributed</td>
</tr>
<tr>
<td>17</td>
<td>B. Spiegel</td>
<td>5/30</td>
<td>Digital Health Part I: Wearable Biosensors and the Quantified Self Movement</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>B. Croft; O. Kulkarni; C. Almario; B Spiegel</td>
<td>6/1</td>
<td>Class Discussion: Group Presentations from Database Analysis Exercise</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>C. Almario</td>
<td>6/6</td>
<td>Digital Health Part II: Consumer Health Informatics and Patient-Provider Portals</td>
<td>#3 Due</td>
</tr>
<tr>
<td>20</td>
<td>B. Croft</td>
<td>6/8</td>
<td>Why Data Matters: A Perspective from Hospital Leadership</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6/16</td>
<td>Group Projects (Part II) Due</td>
<td></td>
</tr>
</tbody>
</table>
CORE MPH COMPETENCIES

BIOSTATISTICS
A5. Apply descriptive techniques commonly used to summarize public health data.
A8. Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.
A10. Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.

EPIDEMIOLOGY
D1. Identify key sources of data for epidemiologic purposes.
D7. Calculate basic epidemiology measures.
D8. Communicate epidemiologic information to lay and professional audiences.
D9. Draw appropriate inferences from epidemiologic data.

HEALTH POLICY & MANAGEMENT
E6. Apply principles of strategic planning and marketing to public health.
E7. Apply quality and performance improvement concepts to address organizational performance issues.
E8. Apply "systems thinking" for resolving organizational problems.

CROSS CUTTING
F4. Collaborate with communication and informatics specialists in the process of design, implementation and evaluation of public health programs.
F6. Use information technology to access, evaluate and interpret public health data.

DISCIPLINE SPECIFIC COMPETENCIES FOR HPM-MANAGEMENT

HEALTH SYSTEM SKILLS

MANAGEMENT SKILLS
K2.3. Organizational Design, Structural Analysis, and Process Management: Identifies the structure, processes and relationships in an organization and organizes them to achieve the organization’s strategic initiatives.
K2.5. Information Management: Understands the use of electronic clinical and management information systems and decision support tools.
K2.8. Systems Thinking: Recognizes system level properties that result from dynamic interactions among individuals, groups, organizations, communities, and environments.
K2.11. Quality and Performance Management: Understands and uses methodologies to assess, improve and monitor organizational quality and performance on diverse indicators; analyzes and designs or improves an organizational process, incorporating principles of quality measurement and customer satisfaction.

ANALYTICAL SKILLS
K3.3. Applies appropriate statistical tools, techniques and procedures to health management and policy.
K3.4. Achieves familiarity with use of data to conduct needs analysis, market assessment, outcome and process evaluation, forecasting, and quality improvement activities.
K3.5. Comprehends qualitative and quantitative data collection strategies.
K3.6. Interprets substantive results of statistical analyses in public health, management, and health policy studies.
K3.7. Finds, consults, and evaluates available sources (including research, expert advice, and existing data) to develop evidence-based plans of action.

DISCIPLINE SPECIFIC COMPETENCIES FOR HPM-POLICY

MANAGEMENT SKILLS
L2.2. Systems Thinking: Recognizes system level properties that result from dynamic interactions among individuals, groups, organizations, communities, and environments.
L2.5. Quality and Performance Management: Understands and uses methodologies to assess, improve and monitor organizational quality and performance on diverse indicators; analyzes and designs or improves an organizational process, incorporating principles of quality measurement and customer satisfaction.

ANALYTICAL SKILLS
L3.4. Becomes an educated consumer of more complex analytical methods
L3.6. Applies appropriate statistical tools, techniques and procedures to health management and policy.
L3.7. Achieves familiarity with use of data to conduct needs analysis, market assessment, outcome and process evaluation, forecasting, and quality improvement activities.
L3.9. Interprets substantive results of statistical analyses in public health, management, and health policy studies.
L3.10. Finds, consults, and evaluates available sources (including research, expert advice, and existing data) to develop evidence-based plans of action.
About the Faculty

Brennan Spiegel, MD, MSHS

Brennan Spiegel, MD, MSHS, is Director of Health Services Research for Cedars-Sinai Health System.

Dr. Spiegel studies how digital innovations can improve the value of healthcare by strengthening patient-doctor bonds and bringing greater efficiency to the delivery of clinical services. His team of investigators at the Cedars-Sinai Center for Outcomes Research and Education (CS-CORE) seeks to transform the way patients, doctors and hospitals communicate through wearable biosensors that track patients’ vital signs and activities both in the hospital and at home, transmitting data to electronic medical records. His team develops computer programs and mobile health applications that allow patients to explain their medical histories online at home, saving time and providing up-to-date information for doctors. The team also explores social media and telemedicine as clinical communication tools.

After earning his bachelor's degree in Philosophy from Tufts University, Dr. Spiegel obtained his medical degree from New York Medical College. He completed his residency at Cedars-Sinai's Department of Medicine and was a fellow of the UCLA Training Program in Digestive Diseases. He completed his master's degree in Health Services at UCLA, and he teaches cost-effectiveness analysis and health analytics in the UCLA Fielding School of Public Health. Clinically, Dr. Spiegel has expertise in gastroenterology, with a focus on irritable bowel syndrome, acid reflux disease, dyspepsia, and functional gastrointestinal disorders.

In addition to authoring three medical textbooks, Dr. Spiegel has published numerous book chapters, abstracts, editorials and more than 160 articles in peer-reviewed journals. He serves on the Advisory Board of Editors for Clinical Gastroenterology and Hepatology and the Editorial Board for Alimentary Pharmacology & Therapeutics, and he is Editor-in-Chief for the American Journal of Gastroenterology.

Dr. Spiegel is a member of several professional organizations and is a fellow of the American College of Gastroenterology, the American Gastroenterological Association and the Rome Foundation.

Christopher V. Almario, MD

Dr. Christopher V. Almario is an Assistant Professor of Medicine and Health Services Research Scientist in the Divisions of Digestive and Liver Diseases and Health Services Research at Cedars-Sinai Medical Center. He is originally from San Diego, CA, and obtained his undergraduate degree in Bioengineering at the University of California, Berkeley, in 2004. He then moved to Philadelphia, PA, and earned his MD at Jefferson Medical College and then completed his Internal Medicine training at the Hospital of the University of Pennsylvania. He returned to California in 2012 and completed his Gastroenterology training at UCLA. While at UCLA, he also earned his MS in Health Policy and Management through the UCLA Fielding School of Public Health. In July 2015, Dr. Almario joined the Cedars-Sinai academic faculty, and through generous support from an American College of Gastroenterology career development award, he is able to pursue his research interests in clinical informatics, patient-provider portals, and health services research.

Nasim Afsar-manesh, MD

Nasim Afsar-manesh, MD, SFHM, is an Associate Clinical Professor in the Departments of Medicine and Neurosurgery and the Chief Quality Officer for the UCLA Department of Medicine. Her current focus is on population health management, readmissions and mortality. Previously, she served as the Associate Chief Medical Officer of UCLA Health. She has successfully implemented initiatives in quality, safety, patient satisfaction, utilization and efficiency and cost. She developed the “ABCs of Hospitalized Patients”, a multidisciplinary checklist to reduce the risk of hospital-acquired conditions. In 2009, she implemented a Health system wide quality improvement (QI) curriculum for all the residency
and fellowship training programs at UCLA Medical Center. She also instituted the UCLA Health System Quality Forum, providing an opportunity to share successful quality initiatives and collaborate with colleagues. Dr. Afsar-manesh and her colleagues from the four other UC Medical Centers have received three innovations grants from the UC Office of the President for quality improvement. Dr. Afsar-manesh is currently a Board Member and Treasurer for the Society of Hospital Medicine (SHM)

Corey Arnold, PhD

Dr. Corey Arnold is an Assistant Professor in the UCLA Departments of Radiological Sciences and Pathology and Laboratory Medicine and is the Director of the UCLA Computational Integrated Diagnostics Program. Dr. Arnold’s main interests are in medical image analysis, clinical information retrieval, and disease modeling with observational data. More recently he has been using social media as an avenue for obtaining health information. He has expertise in machine learning and natural language processing (NLP) techniques to gain insights from unstructured data sets like medical records, social media, and other “big data” sources.

Dr. Arnold received a Bachelor’s Degree in Biomedical Engineering and Computer Science from the University of Wisconsin before earning his Master’s in Biomedical Engineering and his PhD in Information Studies, both at UCLA.

He is currently the Principal Investigator for an exploratory research grant in statistical modeling in the Department of Radiological Sciences at UCLA. Dr. Arnold is also Co-Investigator on a various number of projects, including creation of an observational acute stroke decision-making model, and a patient portal enabling patients to retrieve health information.

Jeanne Black, PhD

Jeanne Black is Manager of Health Policy and Program Evaluation at Cedars-Sinai Health System. Her current responsibilities include designing and conducting evaluations of clinical program and patient engagement initiatives; coordinating system-wide responses to health plan or employer requests for quality and utilization data; and monitoring and assessing the impact of legislative, regulatory and other policy initiatives related to quality and efficiency reporting. She is the Site Principal Investigator for the AHRQ-funded study, Better Effectiveness After Transition – Heart Failure (BEAT-HF), a remote monitoring and telephone nurse coaching intervention to reduce readmissions among patients with heart failure. Other areas of interest include super-utilizers, and racial/ethnic differences in use of health services and outcomes.

Dr. Black has more than 35 years’ experience in health services policy, management, and research. She is a graduate of Brown University and received an M.B.A. in Hospital and Health Services Management from the Kellogg School at Northwestern University. Her background includes serving as Vice President for a community hospital, strategic planning consultant, and Director of Planning and Marketing for the University of Pittsburgh Medical Center. She also was Associate Director of the Health Policy Institute at the University of Pittsburgh Graduate School of Public Health. In Pittsburgh, she was an active participant in community health planning, taught a graduate seminar in integrated delivery systems, and made presentations to many audiences about the changing health care system.

Dr. Black received a Ph.D. in health services research from UCLA in 2007. She participated in development of the initial California Health Interview Survey conducted by the UCLA Center for Health Policy Research and was awarded a state grant to examine the role of race, ethnicity and language in accessing basic health care for Californians. Dr. Black has published articles and authored reports on topics relating to Medicare reform, health insurance, health-related quality of life, and racial and ethnic health disparities. Prior to joining Cedars-Sinai, she worked in health economics and outcomes research for industry leaders Amgen and Boston Scientific.
Bryan Croft

Bryan Croft joined Cedars-Sinai Medical Center in June of 2010 as the Vice President of Service Line Operations. In that role Bryan oversees the academic and operational aspects of the Departments of Surgery, Cardiology, Neurosurgery, Neurology, Psychiatry, Anesthesia and Imaging.

Prior to joining Cedars-Sinai, Bryan served as the Vice President of Operations at The Methodist Hospital in Houston. In that role he was responsible for the operational and strategic oversight of Heart and Vascular Services, Surgical Services and the Methodist Multi-Organ Transplant Center. Furthermore, Bryan served as the Vice President of Patient Care at The Queen’s Medical Center in Honolulu, Hawaii and as the Administrative Director of Surgical Services at Parkland Health & Hospital System in Dallas.

Mr. Croft earned his Bachelors in Business Administration from Texas Tech University in Lubbock and a Masters in Health Care Administration from Trinity University in San Antonio. Bryan is a Fellow in the American College of Healthcare Executives and has served as a Board Member for the American College of Healthcare Executives – Greater Houston Chapter and on the Regent’s Advisory Council in Honolulu and Southern California. Bryan recently served as a Board Member for the Alumni Association of the Trinity University Department of Health Care Administration.

Bryan and his wife Jennifer have two sons, Cayden and Grayson.

Neema Haria, MPH

Neema Haria is the Manager of Performance Improvement - System Services Cedars-Sinai Health System. In her role, Neema manages the facilitation of health system-wide improvement efforts focused on improving clinical quality, operational efficiencies, and driving Cedars-Sinai’s value agenda. Neema is an ASQ Certified Lean/Six Sigma Green Belt and trained in Design Thinking principles and utilizes these methodologies to drive change at Cedars-Sinai Health System.

Prior to joining Cedars-Sinai, Neema managed numerous projects at Johns Hopkins Medicine related to hospital operations and throughput, hospital acquisitions, regulatory readiness, Epic implementation, business development, and design and construction.

Neema has a Masters in Health Services Administration from The George Washington University and a Bachelors of Arts in Psychology from Boston University.

Omkar Kulkarni, MPH

Omkar Kulkarni is the Director of the Healthcare Innovation Accelerator at Cedars-Sinai Health System in Los Angeles, California. In his role, Omkar is responsible for the success of the startup accelerator run by Techstars and Cedars-Sinai. He supports company recruitment & selection, mentor identification and engagement and is responsible for day-to-day operations of the Accelerator.

In his previous role at Cedars-Sinai, Omkar managed the facilitation of health system-wide improvement efforts focused on improving clinical quality. His team is focused on reducing all-cause 30-day readmissions amongst high-risk patients, preventing hospital-acquired infections, reducing patient falls, improving pain management and reducing avoidable C-Sections amongst low-risk women. Omkar is a Lean/Six Sigma Black Belt and trained in Design Thinking principles and utilizes these methodologies to drive change at Cedars-Sinai Health System.

Omkar has his Master’s in Public Health, with an emphasis on healthcare management, from Columbia University and his
bachelor's degree in Business Administration from George Washington University.

**Scott Weingarten, MD, MPH**

Scott Weingarten, MD, MPH, is senior vice president and chief clinical transformation officer at Cedars-Sinai.

Board certified in internal medicine and a fellow of the American College of Physicians, Dr. Weingarten has published approximately 100 articles and editorials on healthcare quality improvement and related topics, and has authored numerous chapters on improving the quality of patient care in some of the leading internal medicine textbooks. He has given more than 300 presentations on clinical decision support and related topics throughout the United States and internationally.

Dr. Weingarten has held positions on myriad national committees dedicated to improving patient outcomes, including those of the Institute for Medical Quality, the American Heart Association’s "Get With The Guidelines" program, and the quality improvement committee of the board of directors of St. Joseph’s Health System. He served as a member of the Disease Management Advisory Committee of the National Committee for Quality Assurance, and was part of the Certification Process Advisory Group for the Certification Commission for Healthcare Information Technology.

At Cedars-Sinai, he has been awarded both the President’s Award and the Golden Apple Teaching Award, and was Alumnus of the Year for 2009. Additionally, he is a clinical professor at the David Geffen School of Medicine at the University of California, Los Angeles.

Dr. Weingarten was the co-founder, president and chief executive officer of Zynx Health, which is now the market share leader for order sets and care plans. He is a co-inventor of three software patents granted by the United States Patent and Trademark Office.

After graduating from UCLA’s medical school, Dr. Weingarten completed his internship, residency and fellowship in internal medicine at Cedars-Sinai. He later participated in a National Center for Health Services Research Fellowship at the RAND/UCLA Center for Health Policy Study. During the fellowship, he also earned a master’s of Public Health degree at the UCLA Fielding School of Public Health.

Dr. Weingarten has also worked as a primary care physician at Kaiser Permanente and was awarded partnership status at Southern California Permanente Medical Group.

**HPM 441 Teaching Assistants**

**Michelle Chen**

Michelle Chen is a second-year MPH student in the Department of Health Policy and Management at the UCLA Fielding School of Public Health. She is currently working in the Center of Outcomes Research and Education at Cedars-Sinai, collaborating on a three-phase project to understand decision-making in patients with inflammatory bowel disease and create a decision tool to help them make informed, value-concordant medication choices. She received her Bachelor of Science degree from UCLA in 2015, with a major in Microbiology, Immunology, and Molecular Genetics and minor in Cognitive Science.

**Alma Jusufagic**

Alma Jusufagic is a second-year MPH student on the management track in the Department of Health Policy and Management at the UCLA Fielding School of Public Health. She is currently working as a research intern with Dr. Spiegel’s team at the Cedars-Sinai Center for Outcomes Research and Education (CS-CORE). Her primary research project
aims to discern patient and provider preferences for pain management treatments, particularly opioid medications. She also serves as the Co-Vice President of Professional Development for the Health Policy and Management Student Association (HPMSA) where she is responsible for organizing mentorships for HPM students and creating, coordinating, and engaging them in professional development events. Previously, she volunteered as an intern coordinator at the UCLA Ronald Reagan Medical Center for Measuring to Achieve Patient Safety (MAPS), a student volunteer program designed to improve the quality of care by reducing nosocomial infections and staff errors throughout the UCLA Health System. She received her Bachelor of Science from UCLA in Neuroscience with a minor in Spanish.