**EMERGENCY CONTACTS**

**Emergency response:** Dial **911** from any phone (on or off campus) to report an imminent threat to life or property.

**From a cell phone,** dial direct for faster emergency response:
- UC Berkeley Police: **(510) 642-3333**
- City of Berkeley Police/Fire: **(510) 981-5911**
- Alameda County Sheriff: **(510) 667-7721**

**Emergency information**

Campus emergency information line: **(800) 705-9998**

During an emergency, this recorded message will be updated with the latest information.

Campus radio station: **KALX (90.7 FM)**

City of Berkeley emergency broadcast station: **1610 AM**

**Non-emergency contact numbers**
- UC Berkeley Police: **(510) 642-3333**
- City of Berkeley Police: **(510) 981-5900**

### STUDENTS

<table>
<thead>
<tr>
<th>Life threatening emergency</th>
<th>Go to the nearest hospital emergency department or call 911 (on-campus or off-campus) if an ambulance is needed. The closest hospital emergency room to campus is Alta Bates Hospital, 2450 Ashby Ave, just east of Telegraph Ave.</th>
</tr>
</thead>
</table>
| Urgent: Medical Problem   | **When Tang is Open:**
|                           | Come directly to Urgent Care at the Tang Center. Urgent Care parking and entrance is located on Durant Avenue between Fulton and Ellsworth Streets. Tang is open
|                           | **When Tang is Closed:**
|                           | If you have an urgent medical problem that cannot wait until the Tang Center is open:
|                           | - Call our After Hours Assistance Line at (510) 643-7197 for immediate assistance. If you need to speak with a counselor urgently, call the 24/7 counseling line at (855) 817-5667. SHIP members may contact the Aetna 24/7 nurse line at (800) 681-4065.
|                           | - Find a local Urgent Care Center with extended hours
|                           | - See After Hours Assistance for information on emergency contraception, dental emergency, pharmacy refills, more.
|                           | - Find a local emergency room (The closest hospital emergency room to campus is Alta Bates Hospital, 2450 Ashby Ave, just east of Telegraph Ave.)
|                           | Please note: care may be at your own expense; emergency room care typically cost significantly more than urgent care centers. |
| Urgent: Mental Health Concerns | Although, CPS and Social Services operate on an appointment basis, a student may face an urgent concern or crisis that feels too overwhelming to wait for a scheduled appointment.
|                           | **During Business Hours Counseling and Psychological Services**
|                           | Come to Counseling and Psychological Services on the 3rd floor of the Tang, for in-person crisis assessment and intervention. Please inform a staff member at the reception desk that you have an urgent concern. Wait-times vary depending on the time of the day, but CPS counselors will see all students in crisis on the same day they come in. You can call CPS at (510) 642-9494.
|                           | **Social Services**
|                           | For urgent concerns related to sexual assault, IPV, pregnancy, disordered eating, or alcohol and other drugs contact Social Services at (510) 642-6074 for in-person crisis assessment and intervention. Please inform a staff member at the reception desk that you have an urgent concern.
|                           | **When Tang is Closed:**
|                           | Call our After Hours Support line at (855) 817-5667. |
| Sexual Assault | - In the event that you or someone you know is sexually assaulted, please do the following:
|               | - Get to a safe place first.
|               | - Do not shower or change your clothes.
|               | - Call someone you would like to have with you.
|               | - Call the police if you decide to report the assault and they will accompany you to the hospital for medical care.
|               | - If you are not ready to speak to the police, call the UHS Advice Nurse (510) 643-7197 to determine the best plan for taking care of yourself. (When Tang is closed, call Bay Area Women Against Rape: (510) 845-7273.)
|               | - Contact Social Services at UHS for follow-up counseling or other assistance, (510) 642-6074 |
| Interpersonal Violence (Domestic Violence) | - When Tang is Open: Get immediate medical attention. Come to Urgent Care at Tang. Urgent Care parking and entrance is located on Durant Avenue between Fulton and Ellsworth Streets.
|               | - When Tang is Closed: Get immediate medical attention. Call campus police at (510) 642-3333 or your local police for assistance. For referrals to local resources call the After Hours Assistance line at (510) 643-7197.
Dear Interdisciplinary MPH Class of 2021:

Congratulations again on your acceptance to the Interdisciplinary MPH program at the School of Public Health, UC Berkeley. We are looking forward to a productive year of learning with you!

No better time to become a public health leader than in 2020! This will be a year full of challenges and new realities for all of us. We will start with online classes through the summer into the fall, and hope for increasing options to gather again on campus as the country, California and the Bay Area is fighting the COVID-19 epidemic.

We are all working hard to transforming our courses into productive online formats to ensure that all students continue to thrive in an abundant academic environment not only within the School of Public Health, but also the larger UC Berkeley campus. The richness of the UC Berkeley community lies not only in its courses and faculty, but you will find that some of the most important educational lessons and connections will come from your many talented classmates. The Black Lives Matter movement inspires all of us, and the school is looking forward to continue its advocacy and integrate anti-racism training into the school-wide curriculum.

The Interdisciplinary Program core faculty are looking forward to getting to know each of you soon, and we are committed to your success both during the year at UCB and after you graduate. Feel free to reach out to us with any questions to ipmph@berkeley.edu or ahemmerling@berkeley.edu

Best wishes,

Anke Hemmerling, MD, PhD MPH
Director, Interdisciplinary MPH Program, UC Berkeley School of Public Health
UCSF Bixby Center for Global Reproductive Health
Email: ahemmerling@berkeley.edu
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# 2020-21 BERKELEY ACADEMIC CALENDAR

## 2020 Fall Semester

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Semester Begins</td>
<td>Wednesday, August 19, 2020</td>
</tr>
<tr>
<td>Convocation</td>
<td>To Be Determined</td>
</tr>
<tr>
<td>Instruction Begins</td>
<td>Wednesday, August 26, 2020</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Monday, September 7, 2020</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Wednesday, November 11, 2020</td>
</tr>
<tr>
<td>Non-Instructional Day</td>
<td>Wednesday, November 25, 2020</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Thursday, November 26 &amp; Friday, November 27, 2020</td>
</tr>
<tr>
<td>Formal Classes End</td>
<td>Friday, December 4, 2020</td>
</tr>
<tr>
<td>Reading/Review/Recitation Week</td>
<td>Monday, December 7–Friday, December 11, 2020</td>
</tr>
<tr>
<td>Last Day of Instruction</td>
<td>Friday, December 11, 2020</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>Monday, December 14–Friday, December 18, 2020</td>
</tr>
<tr>
<td>Fall Semester Ends</td>
<td>Friday, December 18, 2020</td>
</tr>
<tr>
<td>Winter Commencement</td>
<td>To Be Determined, commencement.berkeley.edu</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Thursday, December 24 &amp; Friday, December 25, 2020</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Thursday, December 31, 2020 &amp; Friday, January 1, 2021</td>
</tr>
</tbody>
</table>

## 2021 Spring Semester

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Semester Begins</td>
<td>Tuesday, January 12, 2021</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Monday, January 18, 2021</td>
</tr>
<tr>
<td>Instruction Begins</td>
<td>Tuesday, January 19, 2021</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Monday, February 15, 2021</td>
</tr>
<tr>
<td>Spring Recess</td>
<td>Monday, March 22–Friday, March 26, 2021</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Friday, March 26, 2021</td>
</tr>
<tr>
<td>Cal Day</td>
<td>To Be Determined, calday.berkeley.edu</td>
</tr>
<tr>
<td>Formal Classes End</td>
<td>Friday, April 30, 2021</td>
</tr>
<tr>
<td>Reading/Review/Recitation Week</td>
<td>Monday, May 3–Friday, May 7, 2021</td>
</tr>
<tr>
<td>Last Day of Instruction</td>
<td>Friday, May 7, 2021</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>Monday, May 10–Friday, May 14, 2021</td>
</tr>
<tr>
<td>Spring Semester Ends</td>
<td>Friday, May 14, 2021</td>
</tr>
<tr>
<td>Commencement</td>
<td>Saturday, May 15, 2021</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Monday, May 31, 2021</td>
</tr>
</tbody>
</table>

## 2021 Summer Sessions

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Six-Week Session Begins</td>
<td>Monday, May 24, 2021</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Monday, May 31, 2021</td>
</tr>
<tr>
<td>Ten-Week Session Begins</td>
<td>Monday, June 7, 2021</td>
</tr>
<tr>
<td>Eight-Week Session Begins</td>
<td>Monday, June 21, 2021</td>
</tr>
<tr>
<td>First Six-Week Session Ends</td>
<td>Friday, July 2, 2021</td>
</tr>
<tr>
<td>Academic and Administrative Holiday</td>
<td>Monday, July 5, 2021</td>
</tr>
<tr>
<td>Second Six-Week Session Begins</td>
<td>Tuesday, July 6, 2021</td>
</tr>
<tr>
<td>Three-Week Session Begins</td>
<td>Monday, July 26, 2021</td>
</tr>
<tr>
<td>Three-Week Session Ends</td>
<td>Friday, August 13, 2021</td>
</tr>
<tr>
<td>Second Six-Week Session Ends</td>
<td>Friday, August 13, 2021</td>
</tr>
<tr>
<td>Eight-Week Session Ends</td>
<td>Friday, August 13, 2021</td>
</tr>
<tr>
<td>Ten-Week Session Ends</td>
<td>Friday, August 13, 2021</td>
</tr>
</tbody>
</table>
PROGRAM DESCRIPTION
UC Berkeley School of Public Health
Interdisciplinary MPH Program

OVERVIEW

The Interdisciplinary MPH is an accelerated, 11-month program designed to meet the needs of mature scholars with diverse cultural and professional backgrounds who have specific public health career goals in mind. The program focuses on an interdisciplinary understanding of complex issues and the leadership challenges of successful interventions in public health. Graduates leave as well-rounded public health professionals with a heightened understanding of the importance of a multidisciplinary approach to public health practice.

The class size ranges between 20 and 30. Originally dominated by mid-career physicians, the program now accepts senior medical students, residents, and fellows. In addition, we also actively recruit applicants with a range of professional background who hold a master’s degree or the equivalent, and who have significant health care experience or interest in public health. Applicants from the fields of journalism, business, social work, anthropology, economics, law, and others are encouraged if their future career paths include public health activities and/or significant interaction with public health systems.

The Interdisciplinary Program’s curricular flexibility allows successful applicants, in consultation with their faculty advisers, to develop an individualized course of study tailored to meet their needs. In addition to the required courses at the School of Public Health, elective courses may be chosen from any of the academic offerings across the Berkeley campus. A mentored MPH project, to be conducted throughout the year, is required for completion of the program.

MISSION

The mission of the 11-month program is to offer our students the opportunity to gain a professional skillset that will allow them to take on the most pressing public health challenges. These skills will be taught in required courses, electives, and small group seminars that run throughout the year. The goal is for students to apply these skills as they develop, implement, and disseminate a final MPH project. The Interdisciplinary Program core faculty are committed to student success during the year and after graduation.
CURRICULUM REQUIREMENTS

The curriculum for the Interdisciplinary MPH Program is an intensive, full-time program. Students in the program are required to complete 42 semester units of course credit between July and May. Students are expected to start their studies by enrolling in the Summer Session prior to the Fall Semester in which they enter the program. After completing one or two summer courses (3-8 units), students take a heavy course load (17-19 units per semester), in order to satisfy the 42-unit requirement. Consequently, students should not plan to work during the semester, and should make every effort to minimize work-related responsibilities while at school.

We advise students to enroll in the six-week Summer Session D courses on Epidemiologic Methods (PH 250A) and/or the Introduction to Biostatistics (PH 142). This will reduce their course load to manageable levels in the Fall and Spring semesters. Students with previous biostatistics or epidemiology experience may take both summer courses provided that they can make a full-time commitment to coursework beginning in early July. Students who have taken rigorous or advanced epidemiology or biostatistics in the past are encouraged to take the exemption exams in epidemiology and biostatistics in late August. Passing out of a course, however, does not decrease the 42-unit requirement for graduation.

Students are required to attend a one-unit Interdisciplinary Summer Seminar during which they will begin to develop ideas for their year-long MPH project. The course number is PH 292. Students should enroll in this course for one unit with the LETTER GRADE grading option.

The Interdisciplinary MPH core requirements consist of seven courses totaling 25 units. These include:

**BIOSTATISTICS**

PH 141, or PH 142, or PH 245, or PH 252 (4-5 units)

There are several ways to satisfy the Biostatistics requirement:

1. Take PH 142 (Intro to Biostatistics) in the Summer (strongly recommended);
2. Take PH 142 (Intro to Biostatistics) in the Fall;
3. Take PH 245 (Intro to Multivariate Statistics) in the Fall;
4. Take PH 252 (Epidemiological Analysis) in the Spring
5. Take and pass the Biostatistics exemption exam during welcome week before the Fall Semester begins. *If passing the exemption exam, a total of 42 units is still required for graduation.*

**EPIDEMIOLOGY**

PH 250A (3 units) or PH 250B (4 units)

There are several ways to satisfy the Epidemiology requirement:

1. Take PH 250A (Epidemiological Methods I) in the Summer (strongly recommended) or Fall;
2. Take PH 250B (Epidemiological Methods II) in the Fall.
3. Take and pass the epidemiology exemption exam during welcome week before the Fall Semester begins. *If passing the exemption exam, a total of 42 units is still required for graduation.*
BREADTH COURSES

PH 200J — Health Policy and Management (2 units): in the first half of the Fall Semester
PH 200K — Environmental Health Sciences (2 units): in the first half of the Spring Semester
PH 200L — Health and Social Behavior (2 units): offered in the Spring Semester

NEW:
PB 291A - Preparation for Public Health Practice (or PB W289 or PB 223C as equivalent)

INTERDISCIPLINARY PROGRAM SEMINAR SERIES

PH 292 (1) – Summer Interdisciplinary Seminar (1 unit)

PH 292 (12) – Fall, 4 units, and PH 292 (7) – Spring, 4 units: a full-year course designed to enhance knowledge and practice skills and to provide guidance and mentorship in the development and implementation of a culminating MPH Project.

The one-year Interdisciplinary MPH Program requires completion of a research project (this is an MPH Project, not a thesis). Projects may take a variety of forms including community-based projects, research studies, needs assessments, program evaluations, analyses of secondary data, or policy analyses. Projects are presented at the end of the Spring Semester in written and oral formats and fulfill the School of Public Health Comprehensive Exam requirement.

The oral presentation and written paper for the MPH project satisfy the Public Health Practice and Comprehensive Examination requirements for the degree. A four-unit class is the equivalent of 180 hours or work per semester (45 hours per unit) – about 10-15 hours of work a week dedicated to your MPH research project.

We also recommend that you take PH 291, the Preparation for Public Health Practice Workshop Series, a one-unit course offered by the Center for Public Health Practice with a S/U grading option only. The remaining 19-20 units are available for electives that may be used to customize a curriculum that fits your career-building needs. Up to four units from previously completed graduate coursework may also be applied towards the 42 units, subject to ‘rules for transfer units’ and approval from Graduate Division. Curricular requirements are summarized below.

SCHOOL OF PUBLIC HEALTH SPECIALTY AREAS

While taking electives towards the MPH, students may also simultaneously complete a Specialty Area, or minor, in a particular area. Specialty Areas draw faculty and students across many areas of study. They require that students complete nine units of specific courses and electives. The School offers the following specialty areas of study:

- Aging
- Global Health
- Maternal and Child Health
- Multicultural Health
- Public Health Nutrition
The curriculum for the Interdisciplinary MPH program is an intensive, full-time program. The 42-unit program requires completion of at least 17 units of coursework in each of the Fall and Spring Semesters. In order to meet the 42-unit requirement, students are also expected to enroll in the summer session prior to the Fall Semester in which they enter the program. Up to four units from previously completed graduate coursework may also be applied towards the 42 units, subject to ‘rules for transfer units’ and approval from Graduate Division. Curricular requirements are summarized below. The one-year program also requires completion of a community-based research project (this is an MPH Project, not a thesis). Projects may take a variety of forms including research studies, needs assessments, program evaluations, analyses of secondary data, or policy analyses. Projects are presented at the end of the Spring Semester in written and oral formats and fulfill the School of Public Health Comprehensive Exam requirement.

**Bolded type** denotes courses that are required by the School of Public Health and the Interdisciplinary MPH Program.

**Recommended 1-year Interdisciplinary Course Selection (ALL MUST BE TAKEN FOR A LETTER GRADE EXCEPT WHERE NOTED):**

**SUMMER SEMESTER**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 250A</td>
<td>Epidemiological Methods I</td>
<td>3</td>
</tr>
<tr>
<td>PH 142</td>
<td>Introduction to Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>PH 292</td>
<td>Summer Interdisciplinary Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

**FALL SEMESTER**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 142</td>
<td>Intro to Probability &amp; Statistics in Biology &amp; PH (if summer PH142 not taken)</td>
</tr>
<tr>
<td>PH 200J</td>
<td>Health Policy and Management Breadth Course (half semester)</td>
</tr>
<tr>
<td>PH 292</td>
<td>Interdisciplinary Seminar</td>
</tr>
<tr>
<td>PH 250A or</td>
<td>Epidemiologic Methods I</td>
</tr>
<tr>
<td>PH 250B</td>
<td>Epidemiologic Methods II</td>
</tr>
</tbody>
</table>

(Note: PH 250A and/or 250B not needed if PH 250A was taken in summer)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PB 291A</td>
<td>NEW: Preparation for Public Health Practice (or PB W289, PB 223C as equivalent)</td>
</tr>
</tbody>
</table>

**SPRING SEMESTER**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 292</td>
<td>Interdisciplinary Seminar</td>
</tr>
<tr>
<td>PH 200K</td>
<td>Environmental Health Sciences Breadth Course (half semester)</td>
</tr>
<tr>
<td>PH 200L</td>
<td>Health and Social Behavior Breadth Course</td>
</tr>
<tr>
<td>PB 291A</td>
<td>NEW: Preparation for Public Health Practice (or PB W289, PB 223C as equivalent)</td>
</tr>
</tbody>
</table>

**Electives (to be chosen by student)*** (For examples, see below) 4-7 units

**TOTAL NUMBER OF UNITS REQUIRED FOR THE 11-MONTH MPH PROGRAM:** 42 units

*** Electives are chosen in collaboration with Faculty Advisor, customized to provide the skills for each student’s desired career path. Students must have approval of their faculty advisor for elective courses taken outside the School of Public Health.
EXAMPLES OF SCHOOL OF PUBLIC HEALTH ELECTIVES:

(see http://catalog.berkeley.edu for complete selection)

Note: there are no restrictions on where you take your electives as long as they are on the Berkeley campus. You can take electives in other UC Berkeley schools and departments such as Business, Public Policy, Demography and Anthropology, or any other department subject, to approval from that department and from the student’s faculty advisor. A limited number of electives for upper division undergraduate students may also be taken.

Fall Electives
PH 201E Public Health Interventions: Theory, Practice and Research (3 units)
PH 204A Mass Communication and Public Health (3 units)
PH 204D Community Organization and Community Building for Health (3 or 4 units)
PH 204E Multicultural Competence in Public Health (3 units)
PH 206A Nutrition Status, Physical Activity, and Chronic Conditions (3 units)
PH 206C Nutritional Epidemiology (3 units)
PH 210B Adolescent Health (3 units)
PH 210C Needs Assessment in Maternal and Child Health (3 units)
PH 212A International Maternal and Child Health (2 units)
PH 213A Family Planning, Population Change, and Health (3 units)
PH 216A Biological Embedding of Social Factors (3 units)
PH 217A Aging and Public Health (3 units)
PH 220F Healthy Workforce and Public Policy (2 units)
PH 222A Introduction to the Healthcare System (3 units)
PH 224A Health Organizations and Management (3 units)
PH 226A Health Economics (3 units)
PH 226D Global Health Economics (3 units)
PH 235 Impact Evaluation for Health Professionals (3 units)
PH 245 Introduction to Multivariate Statistics (3 units)
PH 252C Intervention Trial Design (3 units)
PH 252D Introduction to Causal Inference (3 units)
PH 253C Overview of AIDS Epidemic (3 units)
PH 255C Mental Health and Psychopathology (3 units)
PH 257 Outbreak Investigation (1, 3 units)
PH 260A Principles of Infectious Disease (3 units)
PH 263 Public Health Immunology (3 units)
PH 264 Current Issues in Infectious Disease (2 units)
PH 270B Toxicology (4 units)
PH 282 Topics in the History of Medicine and Public Health (3 units)
PH 285A Public Health Injury Prevention and Control (3 units)
PH 285A Public Health Injury and Control (2 units)
PH 290 (2) Health Issues Seminar: Social Justice and Worker Health (1-4 units)
PH 290 (4) Health Issues Seminar: Health Communications in the Digital Era (1-4 units)
PH 290 (5) Health Issues Seminar: Behavior Change in Adolescence (1-4 units)
PH 290 (6) Health Issues Seminar: Healthcare Quality (1-4 units)
PH 290 (7) Health Issues Seminar: Implementing Health Reform (1-4 units)
PH 291A Preparation for Public Health Practice
PUB POL 260 Public Leadership and Management (3 units – Note: special enrollment procedures)
Spring Electives
PH 144  Introduction to SAS Programming (2 units)
PH 200A  Current Issues in Public Health Ethics – Research and Practice (3 units)
PH 202E  Ethnic and Cultural Diversity in Health Status and Behavior (3 units)
PH 205  Planning, Development and Evaluation (3 units)
PH 212E  Private Sector Health Care in Developing Countries (2 units)
PH 212D  Global Health Core Course, Part 2 (2 units)
PH 217D  Biological and Public Health Aspects of Alzheimer’s Disease (3 units)
PH 218B  Evaluation of Health and Social Programs (4 units)
PH 219A  Advanced Methods: Qualitative Research (3 units)
PH 219C  Community Based Participatory Research in Health (3, 4 units)
PH 219E  Introduction to Qualitative Methods in Public Health Research (2 units)
PH 223C  Strategic Management and Organization of Health Services (2-3 units)
PH 223F  Effective PH Negotiations (2 units)
PH 224A  Healthcare Organizations and Management (3 units)
PH 223  Legal Basis for Healthcare Delivery (3 units)
PH 230  Advanced Health Politics (3 units)
PH 233B  Epidemiology and Control of Infectious Diseases (3 units)
PH C234  Green Chemistry: An Interdisciplinary Approach to Sustainability (3 units)
PH 253C  Ethical Challenges in Public Health Interventions (2 units)
PH 253D  Behavior and Policy Science in HIV Prevention and Treatment (3 units)
PH 255  Social Epidemiology (3 units)
PH 257A  Disaster Epidemiology (2 units)
PH 270B  Toxicology (3 units)
PH 271C  Practical Toxicology (3 units)
PH 271C  Drinking Water and Health (3 units)
PH 271E  Science and Policy for Environment and Health (3 units)
PH 271G  Health Implications of Climate Change (3 units)
PH 272A  Geographical Information Science for Public Health and Environment (3 units)
PH 281  Public Health and Spirituality (2 units)
PH 271D  Global Burden of Disease and Comparative Risk Assessment (3 units)
PH 282  Topics in the History of Medicine and Public Health (2 or 3 units)
PH 290(2)  Health Issues Seminar: Designing Innovative Public Health Solutions (3 units)
PH 290(8)  Public Health Journalism (3 units)
PH 290(9)  Seminar: HIV Biology to Policy
PH 285  Public Health Injury and Control (2 units)
PH 291A  Preparation for Public Health Practice
MBA 209F  Fundamentals of Business for Non-Business Majors (3 units)
PUB POL 280  Wealth and Poverty (3 units. Note: special enrollment procedures)
**FOUNDATIONAL 22 COMPETENCIES FOR MPH STUDENTS (CEPH CRITERIA)**

The MPH curriculum emphasizes active, student-directed learning, problem solving, and the acquisition of skills essential to the practice of public health. It follows the MPH Foundational Competencies laid out by the Council on Education for Public Health (CEPH). Among those, all MPH students identify 5 competencies to achieve (at least 3 from CEPH foundational list, the remainder can also be from the concentration-specific list) during their course of studies. We encourage students to carefully review the competencies and consult with their faculty advisor to choose elective courses best suited to their needs.

<table>
<thead>
<tr>
<th><strong>EVIDENCE-BASED APPROACHES TO PUBLIC HEALTH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply epidemiological methods to the breadth of settings and situations in public health practice</td>
</tr>
<tr>
<td>2. Select quantitative and qualitative data collection methods appropriate for a given public health context</td>
</tr>
<tr>
<td>3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate</td>
</tr>
<tr>
<td>4. Interpret results of data analysis for public health research, policy or practice</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th><strong>PUBLIC HEALTH &amp; HEALTH CARE SYSTEMS</strong></th>
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<tr>
<td>5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings</td>
</tr>
<tr>
<td>6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels</td>
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<tr>
<th><strong>PLANNING &amp; MANAGEMENT TO PROMOTE HEALTH</strong></th>
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<tr>
<td>7. Assess population needs, assets and capacities that affect communities' health</td>
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<tr>
<td>8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs</td>
</tr>
<tr>
<td>9. Design a population-based policy, program, project or intervention</td>
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<tr>
<td>10. Explain basic principles and tools of budget and resource management</td>
</tr>
<tr>
<td>11. Select methods to evaluate public health programs</td>
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<tr>
<th><strong>POLICY IN PUBLIC HEALTH</strong></th>
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<tr>
<td>12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence</td>
</tr>
<tr>
<td>13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes</td>
</tr>
</tbody>
</table>
14. Advocate for political, social or economic policies and programs that will improve health in diverse populations

15. Evaluate policies for their impact on public health and health equity

**LEADERSHIP**

16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making

17. Apply negotiation and mediation skills to address organizational or community challenges

**COMMUNICATION**

18. Select communication strategies for different audiences and sectors

19. Communicate audience-appropriate public health content, both in writing and through oral presentation

20. Describe the importance of cultural competence in communicating public health content

**INTERPROFESSIONAL PRACTICE**

21. Perform effectively on interprofessional teams

**SYSTEMS THINKING**

22. Apply systems thinking tools to a public health issue

**Additional Program-Specific Competencies for the INTERDISCIPLINARY PROGRAM**

23. Successfully navigate the application process for IRB Human Subjects approval and/or waiver for the MPH research project

24. Demonstrate skills needed for effective scientific presentations during the comprehensive exam

25. Demonstrate skills needed for authoring a comprehensive scientific publication (MPH research report)

26. Apply the skills for effective community engagement and community-based participatory research

27. Describe principles of design thinking approaches to public health
INTERDISCIPLINARY PROGRAM CORE FACULTY

Anke Hemmerling, MD, PhD, MPH is the director of the UCB SPH Interdisciplinary Program. She is an alumna of the class of 2004 and served as core faculty for the program since 2012.

Anke received her medical training at the Humboldt University in Berlin (Germany), and her public health education at the University of California, Berkeley (UCB). During her clinical training, she repeatedly worked in health projects and hospitals in Latin America. Her PhD research evaluated medication abortion in Germany. She was a postgraduate Global Health Research Fellow for the UCB SPH Bixby Program, and a Director of Special Health Projects for Venture Strategies for Health and Development, conducting research related to safe motherhood and safe delivery in developing countries.

In 2007, she joined the Bixby Center for Global Reproductive Health at the University of California, San Francisco (UCSF). There she has been focusing on the prevention of HIV and other genital infections in women and conducted a number of phase 1 and 2 clinical trials. Currently, she is the protocol co-Chair of the NIH-sponsored multi-site phase 2B study for the prevention of bacterial vaginosis and preparing a phase 1 clinical trial testing a biologic drug for HIV prevention in women. At UCSF, she is mentoring and teaching students in the Infectious Disease Research and Training Program (IDRTP) and the UCSF Global Health Master’s Program.

In addition, she leads the Education Committee at the UCGHI Center of Expertise in Women’s Health, Gender and Empowerment. She also serves as a senior technical adviser for the Coalition Advancing Multipurpose Innovations (CAMI), on the steering committee of the Coalition Advancing Multipurpose Innovations for Reproductive Health (IMPT), and on the Microbicide Advisory Board of the Population Council.

Email: ahemmerling@berkeley.edu

Karen Sokal-Gutierrez MD, MPH is a Clinical Professor at the UCB School of Public Health, and the UCB-UCSF Joint Medical Program where she teaches medical students, public health graduate students and undergraduates. She is a physician trained in pediatrics, preventive medicine, and public health/maternal-child health. Her work focuses on improving early childhood health and reducing health disparities. She has served as a physician in community health clinics, public health program administrator, consultant to childcare and preschool programs, and writer for a parenting website. She has worked in global health for 40 years, including for the past 15 years directing a family of studies on children’s nutrition and oral health in El Salvador, Ecuador, Vietnam, Nepal, and India. She received her BS degree from Yale University, MD from UCSF, and MPH from UCB; and is a Fellow of the American Academy of Pediatrics. For the academic year 2017-18, she was also a Fellow at the New England Journal of Medicine. Email: ksokalg@berkeley.edu

INTERDISCIPLINARY PROGRAM STAFF

Judy Smithson is the Program Manager for the Interdisciplinary Division. Judy has over 14 years of experience serving as an Academic Advising Administrator at elite public and private universities. She has a Master of Education from the University of Southern California in Postsecondary in Administration and Student Affairs, with a Certificate in Management of College Student Services. Judy has also held various leadership roles on-campus from being Co-
Chair of the Graduate Staff Roundtable to currently serving as Co-Chair for Cal Women’s Network Association. Her passion is social justice and this year Cal Women’s Network has teamed up with Food Insecurity & Housing Initiative to bring awareness and resources to staff about this growing crisis on our college campuses impacting our students. Email: ipmph@berkeley.edu

STUDENT REPRESENTATION

Class Ombudsman -- elected by nomination and vote of the class. The role of the ombudsman is to be a resource for students in the Interdisciplinary Program who have concerns that they may not want to voice directly to the program faculty. Concerns can be about the program itself, other courses in the school, or aspects of the learning environment that need to be addressed. The Ombudsman can elect to communicate concerns with any of the program faculty or staff. The program leadership will have regular check-in sessions with the Ombudsman to make sure that student needs and concerns are heard. The Ombudsman will also have a key role in the recruitment and admissions process for the Class of 2020-21.

Class Social Director -- elected or appointed by the class to suggest, initiate, and/or organize after-hours social events for the group such as happy hours, hikes, BBQs, etc. The program has a small budget for class social events, and requests can be made directly to the program leadership.
GRADING CRITERIA FOR INTERDISCIPLINARY MPH SEMINAR

SUMMER 2020

Students will receive a credit of one unit (LETTER GRADE) for attendance of the seminar and delivery of the assignment by TBA (outline of ideas for MPH project). More than one unexcused absence will result in a failing grade.

FALL 2020

10 %: Attendance and full participation in seminar and advisor meetings
20 %: Draft Project Plan
30 %: Final Project Plan, incl. completed IRB process
40 %: Literature Review

Assignment grading will be based on quality of content, adherence to outlined expectations, and timeliness of submission. **Deadline extensions will not be granted without prior approval from faculty.**

SPRING 2021

10 %: Attendance and full participation in seminar and advisor meetings
40 %: Project presentation
50 %: Final Project Report

Assignment grading will be based on quality of content, adherence to outlined expectations, and timeliness of submission. **Deadline extensions will not be granted without prior approval from faculty.**
SUMMER 2020 SEMINAR SCHEDULE

Interdisciplinary MPH Seminar
Public Health 292 (1) – Enrollment # 80045
Letter Grade or S/U grading option
Location: TBD, Berkeley Way West
Fridays, 2-4 pm (TBA)

July 10 Welcome Session
Anke Hemmerling, Karen Sokal-Gutierrez

July 17 MPH Program Overview
Anke Hemmerling, Karen Sokal-Gutierrez, Judy Smithson

July 24 MPH Project Overview
Anke Hemmerling, Karen Sokal-Gutierrez

July 31 Personalities in Leadership and Teamwork
Ruthann Haffke, UCB SPH CPHP

August 7 Alumni Panel
Participants TBA

August 16 Discussing your initial MPH Project Ideas
Anke Hemmerling, Karen Sokal-Gutierrez

Students will receive a credit of one unit (LETTER GRADE) for attendance of the seminar and delivery of the assignment by TBA --outline of ideas for MPH project. More than one unexcused absence will result in a failing grade.
Course description

This seminar is designed to enhance the knowledge and practice skills of students enrolled in the Interdisciplinary MPH Program and to provide guidance and mentorship in the development and implementation of a culminating MPH Project. Weekly meetings throughout the academic year will challenge students to integrate their learning and experiences across the MPH curriculum, and to synthesize their knowledge and skills via a project that addresses a specific public health challenge.

Instructors:  Anke Hemmerling, Karen Sokal-Gutierrez

August ___  Community Engagement
August ___  Mixed Methods Research in Public Health
September _  Community Participatory Research
September _  How to conduct a Policy Review
September _  IRB Workshop
October __  Survey Design in Public Health
October __  Ethics in Public Health Research
October __  Project Workshop 2
October___  Designing Innovative Public Health Solutions
November __  Cost Effectiveness Analysis in Public Health
November __  Project Workshop 2
November __  THANKSGIVING HOLIDAY – NO CLASS
November __  Community Engagement
December __  Project Workshop 3

Readings and assignments
Course readings and assignment guidelines will posted on B-Courses

Important deadlines

September __  Meeting with your program advisor once in September
October __  Completion certificate for CITI training
October __  Draft Project Plan, including detailed plan for IRB submission and identified project mentor/ mentor within community organization
October__  Completed IRB submission
November__  Meeting with your program advisor once in November
November __  Final Project Plans and Community Partner Agreement
December_  Literature review of your project
SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF CALIFORNIA, BERKELEY
Interdisciplinary MPH Seminar – PH 292 (7)
SPRING SEMINAR SCHEDULE
Location: TBD, Berkeley Way West

Example Only

Course description

This seminar is designed to enhance the knowledge and practice skills of students enrolled in the Interdisciplinary MPH Program and to provide guidance and mentorship in the development and implementation of a culminating MPH Project. Weekly meetings throughout the academic year will challenge students to integrate their learning and experiences across the MPH curriculum, and to synthesize their knowledge and skills via a project that addresses a specific public health challenge.

Instructors: Anke Hemmerling, Karen Sokal-Gutierrez

January __
Project Briefs and Introduction to Spring Semester
January __
Camera Training
February __
Leadership Skills
February __
The Art of Decision Making
February __
Project Workshop 2 - Dissemination & Sustainability
February __
How to write a good scientific article and get it published
March __
Grantseeking and Foundations
March __
Media Advocacy Training
March __
Student presentations 1
March __
SPRING BREAK – NO CLASS THIS WEEK
March __
Student presentations 2
March __
Student presentations 3
April __
Student presentations 4
April __
Student presentations 5
May __
Student presentations 6, also Wrap-Up and Course Evaluations

Readings and assignments
Course readings and assignment guidelines will be posted on B-Courses

Important deadlines
February __
Schedule a meeting with your program advisor at least once in February
February __
Completed Advancement Candidacy Forms due
March – May __
Student presentations in class
April or May
Interdisciplinary Annual Alumni and Student Picnic
May __
Final Project Report due
May __
COMMENCEMENT CEREMONY - Greek Theater, UC Campus
Interdisciplinary MPH Program
PROJECT PRESENTATION AND FINAL REPORT GUIDELINES

The Interdisciplinary Program Project spans 11 months and fulfills the School of Public Health's Master-level requirement for a practicum or field experience. The culminating assignments – an oral presentation to peers and colleagues, and a final project report worthy of publication – serve as the oral and written components of the comprehensive examination required for graduation. Please review the following guidelines carefully to ensure that you meet all requirements.

ORAL PRESENTATION GUIDELINES

Your oral presentation serves as the oral component of your comprehensive examination required for graduation. The presentation should describe what your project is designed to deliver and the outcomes you anticipate or hypothesize. Make sure to present your data, even if you have not completed the analysis. If your data gathering and analysis is not complete at the time of your oral presentation date, don't worry. You may call it a “work in progress.”

The oral presentation is not supposed to be a presentation of the written paper; rather, it is a demonstration that affirms your understanding of PH investigative processes, the appropriate use of statistical tools, and your ability to present.

These should follow the standard presentation outline:

- Title
- Background and Public health significance
- Project goal and objectives
- Methods: study design, ethical review, study population and partner organizations, variables, data collection methods and instruments, data analysis
- Results - real or hypothesized
- Discussion: Key findings, comparison to other studies
• Project impact: What is the relevance of this work in the bigger picture? Has it, or will it actually affect the lives of the people whose needs you sought to address?

• Plans for project sustainability and dissemination

• Project limitations and changes you would make if you had the opportunity to start over

• Acknowledgements

PRESENTATION TIPS

We strongly encourage attention to the following tips on how to make your presentation the best that it can be.

• Approach the presentation as if telling a story. Try to relax and enjoy the experience. Speak to and engage the audience.

• A slide on the public health significance of your project is required.

• Be focused. This is to be a 15-20 minute presentation with 5 minutes for questions (total: 25 minutes maximum). Practice in advance, time yourself, avoid redundancy, and cut out unnecessary material. Get feedback in advance - from a classmate, colleague or professor.

• Prepare answers for expected questions. In previous years students have found it helpful to provide a handout.

• Use Powerpoint, Prezi or similar presentation software – but use it effectively. Use a variety of media on the slides (e.g., text, photos, diagrams, graphs, tables) and also consider using brief video or audio. Count on one slide per minute, with no more than approximately 15-20 slides total. Be sure to include a slide with all
contributors and their affiliations. Put no more than 7-9 lines of text on a single slide as more than that is unreadable. Use graphs liberally.

PRESENTATION LOGISTICS

Oral project presentations are scheduled during class time between March 15 – April 26. Your audience will be asked to write down a few comments for your consideration.

We will provide a projector for presentations. We suggest that you coordinate with the other students presenting on the same day so that you can use a single laptop for both presentations. This will help save set-up time and avoid technical glitches.

PRESENTATION SCHEDULE

Following is the order of project presentations. We will circulate a sign-up sheet for the presentations in early February.

If you are not happy with your assigned session date, please negotiate with other students to exchange dates. Please let Anke know ASAP if you have changed your date so that she can adjust the schedule.
FINAL REPORT GUIDELINES

The written final report fulfills the written comprehensive examination requirement for the MPH degree. This is an opportunity to demonstrate that you can apply knowledge and principles learned from your coursework in addressing a current public health challenge.

Your project paper should be in publishable condition with perfect spelling, grammar, and organization. You can choose to write it as a longer report, or try to follow the “Guidelines for Authors” instructions for a specific journal you have in mind if you consider publication. Be assured that it will be harder to write a succinct 3000-6000 word manuscript for publications than a longer report that has more flexible page limits.

- Scientific writing is all about a structured presentation. Most journals will use a similar scientific format:
  - Introduction (background/ situational analysis) - should include your literature review, a statement as to why the problem addressed in your project is significant for public health, and a statement about how the objectives for the project address that problem
  - Methods – should describe details on study design, ethical review, study population and partner organizations, variables, data collection methods and instruments, data analysis.
  - Results - should describe your findings and their reliability (your data analysis)
  - Discussion - should go into detail about your key findings and their importance for the field, comparison to other studies, implications for policy/programs/research, limitations, lessons learned, and next steps. Any barriers to completing the work.
  - Recommendations - based on your work, what further actions would you recommend to address this problem? How might your findings be implemented on a larger scale?

- Length and format: About 12-15 pages, double spaced. EXTRA: tables, graphs, references, and any other appendices such as surveys etc.
- Feel free to write the paper as a manuscript for the journal you selected for publication, following their length and formatting requirements.
- Check out “Instructions for Authors” pages in the American Journal of Public Health for information on formatting references, tables, and graph headings
- For citations and references, please use AMA style or a style appropriate for your field

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1. **Is there a minimum grade required for required courses and a required overall GPA?**
   Yes-- students must attain a B- or better in the breadth course requirements (Epidemiology PH 250A; Biostatistics PH 142; Health Policy & Management 200J; Environmental Health PH 200K; and Health and Social Behavior PH 200L). Students who attain less than a B- will be required to retake the course. To receive the MPH degree, the student must also meet the Good Academic Standing Rule with an overall 3.0 GPA and a B average.

2. **Can I work during the 11-month program?**
   The full course load required is 42 semester units for the year, which is approximately 5-6 classes per semester - a very high course load compared to students in the 2-year MPH program who have to complete 48 units over 2 years. While some of our clinical fellows can fit in a few monthly shifts on selected days, like weekends or over holiday periods, we do not recommend any kind of regular part-time job or full-time job.

3. **Summer session: How do I decide which summer course(s) to take?**
   Students are required to take the Summer Interdisciplinary MPH Seminar PH 292 (1), course control number 50770. In addition, we also recommend taking Biostatistics PH 142 and Epidemiology PH 250A. The 2020 summer session runs from July 6 to August 14. As this is a heavy a course load for beginners on these topics, we recommend that you do not work during the Summer Session. If you’re not able to take all three courses, please check in with the Interdisciplinary Program faculty to make alternate plans.

4. **Do the summer session courses satisfy the MPH requirements for Biostatistics and Epidemiology?**
   - Yes, PH 142 satisfies the Biostatistics requirement.
   - Yes, PH 250A satisfies the Epidemiology requirement

5. **Can I take the Biostatistics and Epidemiology exemption exams to satisfy the requirements?**
   You can satisfy the Biostatistics and Epidemiology requirements by passing the exemption exams, which will be offered just before the Fall semester. You will receive notice of these exams in advance. Please email Judy Smithson at ipmph@berkeley.edu if you have questions. Please note that if you satisfy the Biostatistics and Epidemiology requirements by passing the exemption exams, you will NOT receive unit credit for them and will still need to complete 42 units of course work in order to graduate.

6. **Can you recommend any online resources for biostatistics preparation or a refresher?**
   Yes, please see the free courses that are available at http://oli.cmu.edu/

7. **Is health insurance for Summer Sessions available?**
   Please see Insurance Helpline for information on health insurance options.

8. **When do the Fall and Spring semesters begin and end?**
Please refer to UC Berkeley Registrar’s Office website for more details.
• Fall 2020 orientation activities (“Welcome Days”) are planned for late August 2020. More information about these activities and other important information will be coming to you soon via email from the School of Public Health Student Services office.

9. How can I satisfy the 42 units for the Interdisciplinary Program in just eleven months?
The two-year MPH programs require that you complete 48 units in two years, whereas the 11-month MPH programs require 42 units in 11 months. The Interdisciplinary program is rigorous but doable, provided you are not working or have other time-intensive obligations. We will provide a list of possible curriculum scenarios at the beginning of the Summer Session.

10. What is the minimum number of units that I may to take each semester?
The minimum allowable number of units per semester is 12. However, as an Interdisciplinary student, you will need to take many more units each semester.

11. Can I transfer of units from previous graduate coursework not counted towards another degree?
You may be able to transfer up to four units of graduate level coursework towards your MPH degree. According to UC Berkeley’s Graduate Division Policy: “A master’s student may transfer up to four semester units or six quarter units of course work completed as a graduate student at another institution. The units must be equivalent to courses in the student’s graduate program at Berkeley, and the student must have received at least a B in the course(s) and have a grade point average of at least 3.3.” The courses to be transferred must be approved by the School of Public Health Curriculum Review Committee to insure that they meet the requirements for transfer. Students must submit a syllabus for each course. Eligible units might be stand-alone courses or courses taken that exceeded the requirements (extra units) for a previous degree. Detailed procedures for transferring units will be announced at the start of the Fall semester.

12. Do I take PH297, the field practicum requirement that is listed on some UC Berkeley School of Public Health MPH curriculum materials?
No-- this course is for two-year MPH students only. As an 11-month student, you satisfy your practicum requirement as part of the Fall 2020 and Spring 2021 Interdisciplinary MPH Seminars --PH 292(12) and PH 292(7) in the Spring.

13. The Interdisciplinary Seminars — PH 292 in Fall and PH 292 -- in the Spring are variable unit courses. How many units should I enroll in for each of these courses?
4 units for each course, taken for a letter grade. This is the equivalent to 180 hours of work per semester.

14. Can I take undergraduate courses and can they count towards my 42 units? How many undergraduate units can I take?
Yes, you may take undergraduate courses and they will count towards the MPH, but they must be upper division courses numbered 100 or above. You may take a maximum of 12 units in 100-level courses.

15. How many elective units can I take outside the UCB School of Public Health?
   There is no limit on the number of elective units that may be taken outside SPH across other UCB departments.

16. Can I complete one of the public health specialty areas along with the interdisciplinary MPH?
   Yes. You may use elective units in the Interdisciplinary curriculum to complete specialty area requirements such as for the Global Health Specialty Area.

17. May I take courses Pass/Fail or Satisfactory/Unsatisfactory?
   All required courses must be taken for a letter grade. You may take electives as S/U, but no more than a third of your total units taken can be taken S/U (excluding independent study courses numbered 299).

18. What are the guidelines for taking independent study (299) units?
   - The maximum number of PH 299 course units you may take towards the degree is ten.
   - PH 299's can be taken either S/U or for a letter grade. The choice depends on what you arrange with the instructor.
   - Although no more than one third of total units can be taken S/U, this one third does NOT include PH 299 units.

19. As a UCB student, do I get access to STATA for data analysis?
   You have free access to STATA on the computers in the Epi/Biostat computer lab. You can also buy your own copy of STATA at a discount. Please see: http://www.stata.com/order/new/edu/gradplans/campus-gradplan/

20. As a UCSF resident, can I receive the two-thirds tuition and fee reduction available to UC staff?
    Unfortunately you cannot. To receive this discount, you may take no more than nine units of coursework per semester. The Interdisciplinary Program requires that you take more than nine units per semester.

21. When will I be presented with a financial aid package for this program? Are there financial support options that I should consider looking into?
    While the School of Public Health has a variety of merit and need-based scholarships/fellowships, there is no guarantee that a newly admitted graduate will be a recipient of an award. As of right now, SPH scholarship/funding award letters have been sent out, but that does not necessarily mean all opportunities have been exhausted! In addition to fellowships/scholarships offered through SPH, it is common for students to look into external scholarships and/or federal loans. With regards to financial aid packages, which consist of loan allocations, as well as any grants one may be eligible
for, UC Berkeley’s Financial Aid & Scholarships Office will notify newly admitted graduates of these opportunities around late April/early May, but only if the Statement of Intent to Register is submitted. In the meantime, I would highly encourage you to look at the different ways to fund your education.

Another thing to note is that there will be more opportunities, such as GSI/GSR-ships and other internal scholarships, which you can apply for through our SPH jobsite. Enclosed please find a “Tips for Finding GSI_GSR”.

Also, as a member of the Association for Schools and Programs of Public Health (ASPPH), our graduate students have access to funding resources such as "Tips and Tricks to Obtaining Scholarships" and external sources that are based on specific qualifying criteria (e.g., race, gender, state of residency, etc.):
Tips and Tricks to Obtaining Scholarships (http://www.aspph.org/study/financing-your-degree/)
How to Finance Your Public Health Degree (https://www.youtube.com/watch?v=eMRiom7Elmg webinar hosted by ASPPH).

22. Can I teach and facilitate a De-Cal course to undergraduates and receive unit credit for it?
   Yes. You can receive unit credit via undergraduate independent study 199 units. For information please see http://www.decal.org/

23. If I need to book a room to use for a student meeting, project interview, etc., how can I do so?
   You may ask Judy Smithson – email her at ipmph@berkeley.edu, and please give her at least several days’ notice to find the room.

24. Are students required to wear traditional regalia to the Commencement ceremony?
   Yes. The program has several gowns available that students can borrow.
Standards of Ethical Conduct

*Adopted by The Regents of the University of California, May, 2005*

The University’s *Statement of Ethical Values and Standards of Ethical Conduct* commits everyone in the UC community to the highest ethical standards in furtherance of the University’s mission of teaching, research, and public service. It identifies the University’s core ethical values as integrity, excellence, accountability, and respect.

**In summary, we are committed to the following:**

1. **Fair Dealing.** We will always conduct ourselves ethically, honestly, and with integrity.
2. **Individual Responsibility and Accountability.** We will accept responsibility appropriate to our positions and delegated authorities.
3. **Respect for Others.** We will treat everyone we contact with respect and dignity.
4. **Compliance with Applicable Laws and Regulations.** We will learn and abide by federal, state, and local laws that affect our campus roles.
5. **Compliance with Applicable University Policies, Procedures and Other Forms of Guidance.** We will learn and abide by University and campus policies and procedures that affect our campus roles.
6. **Conflicts of Interest or Commitment.** We will avoid both actual conflicts of interest and the appearance of such conflicts, and devote our primary professional allegiance to the University and its mission of teaching, research, and public service.
7. **Ethical Conduct of Research.** We will conduct our research with integrity and intellectual honesty, and show the greatest care for human or animal subjects.
8. **Records: Confidentiality/Privacy and Access.** We will follow applicable laws and University policies when accessing, using, protecting, or disclosing records.
9. **Internal Controls.** We will ensure that internal controls are established, properly documented, and maintained for activities within our jurisdictions.
10. **Use of University Resources.** We will ensure that campus resources are used only on behalf of the University.
11. **Financial Reporting.** We will ensure that accounting and financial records are accurate, clear, and complete.

**Reporting Violations and Protection from Retaliation.** We will report all known or suspected improper governmental activities under the provisions of the University’s Whistleblower policy, recognizing that everyone is protected from retaliation for making such reports under the Whistleblower Retaliation Policy.
EXTRA RESOURCES FOR INTERDISCIPLINARY STUDENTS

MINI GRANTS FOR STUDENT PROJECTS FROM THE SCHOOL OF PUBLIC HEALTH
CENTER FOR HEALTH LEADERSHIP

The Center for Health Leadership Association’s mission is to enhance professional skills and provide leadership opportunities for students of public health through active participation and relationship building. One way the Center for Health Leadership Association (CHLA) does this is through the Leaders In Service Grants. The Leaders In Service Grants is a unique way to provide funding for student initiated community service activities.

The Center for Health Leadership Association is offering up to $1,000 to support YOUR project. The goal of the CHLA is to energize and reward exceptional students from the School of Public Health who want to make a difference in the community.

Grants are meant to be an opportunity to enhance and develop leadership skills. The formal grant request and reporting process not only helps students conduct their own service project, but it also provides them with the opportunity to participate in a real-life grant application process.

Please see: http://chl.berkeley.edu/programs/chl-association/committees/mini-grants-sb

DLAB – STATISTICS HELP

IF there are specific questions or topic area that students think are aligned with one of our consultants, they can schedule appointments at http://dlab.berkeley.edu/consulting. They are also welcome to direct general questions to the consultant list - we we may or may not be able to answer.

You can also contact the Statistics Department's consulting service (http://statistics.berkeley.edu/consulting), the DataLab in Doe Library (http://www.lib.berkeley.edu/wikis/datalab/), or the Geospatial Innovation Facility (http://gif.berkeley.edu)/
HOW TO ENROLL IN COURSES IN OTHER UCB SCHOOLS AND DEPARTMENTS

Please visit the websites of other schools and departments for information about how to take courses in those departments. Enrollment in courses in many departments and schools is restricted to students in those schools.

Boalt School of Law, the Goldman School of Public Policy, and the Haas School of Business have specific procedures allowing students from outside those schools to enroll in courses. Those procedures follow below and on the next several pages.

BOALT SCHOOL OF LAW

*Note: Classes in the Law School start 2 weeks early.*

- You cannot just enroll via CalCentral - you need to use a separate procedure to apply to enroll in a law school course.
- Complete this [form](#).
- If you have any other questions, please call Boalt Law School Student Services - 510 643-2744.

GOLDMAN SCHOOL OF PUBLIC POLICY

- Elective courses are open to all students and you can get onto the waitlist by enrolling via CalCentral. Core courses are restricted and not open to students outside Goldman unless allowed by the professor teaching the course.
- Look in [http://catalog.berkeley.edu](http://catalog.berkeley.edu) for electives open to all. Also, the UCB online schedule [http://schedule.berkeley.edu](http://schedule.berkeley.edu) will tell you if the course is restricted.
- Students are advised to talk with the instructor on the first day of class to request to be added to course.

HAAS BUSINESS SCHOOL

*Enrollment Process For Non-Haas Students Wishing To Take MBA Electives*

For one course you can register following the normal process for your other classes via CalCentral:

**MBA209F – Fundamentals of Business: An Introduction to Business for Graduate Students**

Tuesdays 6:10 – 9PM, 3 units
Fundamentals of Business is a course specifically designed for graduate students in schools other than Haas (and will serve as an elective course for their degree programs). The purpose of the course is to introduce non-business students to the vocabulary of business and to understand how business people analyze problems and determine strategy. It’s not quite a “survey” course. Rather, we cover a selection of topics in some depth as is appropriate for graduate students.

Many UC Berkeley graduate students will go on to work in business and even those who continue their research careers will spend much of their professional lives interacting with business people.

The course is taught in 3 five-week modules:

1. Marketing and Strategy
2. Accounting and Finance
3. Organizational Behavior and Management

The class meets once a week, from 6:10 to 9:00 p.m. on Tuesday evenings in Fall 2020 at the Haas School; the first class meeting is Tuesday, August 26 and the last class is on Tuesday, December 11. There is no final exam; the course is examined by three take-home exams. Each module also has a required short term paper.

Unlike most other MBA courses, students should enroll in MBA 209F directly, via CalCentral using the class number. Contact FTMBA Academics Team for the course control number (ftacademics@haas.berkeley.edu).ink@berkeley.edu).

For all other courses at Haas Business School:

If you are a graduate student in another UC Berkeley department you may take elective courses in the Full-time MBA Program, provided:

- You are registered for the current semester, which means that you must be enrolled in at least one course and have paid your fees.
- There is space in the class at the end of the second week of the semester.
- You meet the prerequisites, if any, for the class.
- You submit your request(s) by the applicable deadline.
- Your home department or school does not offer an equivalent course.

The MBA Program does not use CalCentral to manage its course enrollments, with the exception of MBA209F – Fundamentals of Business. For all other MBA courses, we will add requested courses to your schedule if we are able to accommodate you. To request all other Haas MBA classes, you will instead use our Online Registrar system, which will open on July 5:

- Go to http://mbarequest.haas.berkeley.edu and log in to submit your request.
• Requests are not treated as first-come, first-served, so you just need to submit by the deadline
• The deadline to submit requests for Fall 2020 courses is 12 noon on Friday, September 4.
• You may request up to 3 MBA courses, order them according to your preference, and indicate the maximum number of courses you wish to be enrolled in.
• Once you enter your requests, you can edit them up until the end of the request period.

For a list of courses and instructions on how to enroll, please contact FTMBA Academics Team (ftacademics@haas.berkeley.edu.ink@berkeley.edu).

bCOURSES

bCOURSES at http://ets.berkeley.edu/bcourses/ is the course management system for all UC Berkeley courses, where course syllabi, readings, assignments and grades are posted. Each course has its own bCOURSES site. Please go to bcourses.berkeley.edu and click through the information and demonstration.
RECOMMENDED ELECTIVE COURSES

The following electives received a rating of 1 or 2 (out of 5 on a Likert Scale with 1=great and 5=would not take again) from Interdisciplinary students who took the course. Here are students’ comments.

Electives Recommended by Class of 2020

FALL


PBHLTH 210: Foundations of Maternal and Child Health Policy, Practice and Science Great overview of MCH, US policy, skill building. Well thought out assignments, readings, topics. Can be used for capstone project development.

PBHLTH 212A: International Maternal and Child Health Leisurably paced class. Best for students who want to learn international concerns with regards to maternal adolescent and child health.

PBHLTH 213A: Family Planning, Population Change, and Health For those interested in global health or reproductive studies. Small, interactive class with a professor who is an expert, knows everything and everyone!

PBHLTH 216A: Biological Embedding of Social Factors Best for students who are looking for the interface between social science and biomedicine, for students who need a lighter course to balance their course load. Teacher is a lovely human who gives time for in class discussion and does not shy away from talking through difficult topics (e.g., white supremacy, colonialism). Course attracts an interesting mix of students from SPH programs and programs from other schools.

PBHLTH 220D: Health Policy Advocacy Learn policy history, how law and public health work together. Experienced professors.

PBHLTH 224E: Health Care Quality Quality improvement work with an actual real-life application project. Good professor who will teach great theories and skills for future quality improvement projects as a doctor.

PBHLTH 257: Outbreak Investigation Very light workload. Art Reingold is an expert in the field and challenges you to think critically.

PBHLTH 266C: Hospital Associated Infections Learn the tasks of an infection preventionist. You’ll learn from others, and John Swartzberg has great experience to share.
PBHLTH 290: Health Issues Seminar - Critical Theory and Social Science Methods Learn critical theory analysis. Heavy workload, but readings are full of important historical and critical theories. You will also interact with laws students who have cool perspectives, it’s great to talk to them.

PUBPOL 271: The Political Economy of Inequality Best for students who want to learn politics. The discussion is super useful and you see students from other disciplines.

SOCWEL 210C: Aging Processes Learn about aging and social factors that influence it. Professor Scharlach is amazing, and there is great space for open discussion.

UGBA 152: Negotiation and Conflict Resolution Best for students who want to learn how to approach potentially contentious discussion of dividing limited resources in a way that leads both parties on good terms. You will practice negotiations of fictional and semi-fictional scenarios every week. Good for people comfortable with participation, must prep before class.

MBA 209F: Fundamentals of Business Good for anyone who wants to learn how to better understand how organizations do accounting as well as how to market. Excellent lectures, and although it is 3 hours, it is definitely worth it. It’s a good investment of your time and all the content is high yield/applicable.


PBHLTH 269E: Current Topics in Environmental Medicine Minimal workload. Different expert speakers every week, wonderful course directors. Great for OEM and environmental medicine.

SPRING

EW MBA/ MBA296.11 Unlocking Digital Health Innovation You get to partner with a real-life client (this year was Eko Health) and do a business proposal for something related to digital health. You work in an interdisciplinary team which is really great to learn other's perspectives and collaborate.

PBHLTH 201E Public Health Interventions: Theory, Practice, and Research Encouraging, energetic faculty. Small class size. Active small group work in every class. Opportunity to interact with students from a wide range of programs. A relatively light workload.

PBHLTH 210B Adolescent Health Mid-level of reading per week. Deliverables for semester include presenting one current events article during the semester, and then one major semester-long project. This project is scaffolded very well, and students submit small pieces of this and
receive helpful feedback from the instructor throughout the semester. The instructor creates a very open and collaborative classroom environment.

**PBHLTH 212A International Maternal & Child Health** Light workload. Best for students who want to learn about the global perspective of Maternal, Child, Adolescent Issues & Solutions. Engaging discussion.

**PBHLTH 219C Community-Based Participatory Research** Readings are assigned each week and are the basis of discussion. In general, the workload is pretty appropriate for a 3 unit course. Best for those who have a strong interest in or a background in participatory research. The professor really bases much of the class discussion around what is of interest to students.

**PBHLTH 219E Introduction to Qualitative Methods in Public Health Research** Moderate but evenly distributed workload. Best for students who want to learn qualitative methods—very comprehensive and detailed.

**PBHLTH 255A Social Epidemiology** An introduction to social epidemiology. You don't have to know much about epidemiology beyond the breadth course. The focus of this course is on learning and applying theories of social epi, NOT in learning and applying methods. Really interesting topics presented each week. Highly engaged class discussion. Highly recommend this course for anyone interested in exploring social determinants of health!

**PBHLTH 258 Cancer Epidemiology** Mixed workload. Great faculty.

**PBHLTH 269C Occupational Biomechanics** Best for anyone who wants to learn more about MSK disorders at work or even less thought-of things such as chair choice, lighting, desk height etc. Wide range of topic choices and interesting lectures.

**PBHLTH 288C Preventative Medicine Seminar** Great for physicians especially medical students, IMGs like myself and occupational medicine people.

**Electives Recommended by Class of 2019**

**FALL**

**PH 290 – Structural Competency** Interesting content not offered elsewhere in public health, diverse reading articles. Understand how macro structure impact individual situations. Would highly recommend for medical providers and those interested in social settings.

**PH 210 Foundations of Maternal and Child Health** The Professor is amazing and really made the class exciting and engaging. The workload was very manageable. A few reading each week. Class was leisurely paced and informative.
PH 213A Family Planning, Population Change and Health Any student interested in family planning should take this. If interested in an MCH/FP topic for your capstone project, you can work on that for this class.

PH207A Public Health Aspects of Maternal and Child Nutrition Readings are heavy but worthwhile. Great learning experience with great mentors. Instructor is very energetic.

PH 204A Mass Communications in Public Health Lori is wonderful, loved this class. Relatively heavy workload.

PH206C Nutrition Epidemiology Leisurely paces, speeds up around last few weeks. Got to work with real NHANES data. Applied basic nutrition science, Epi, STATA and research methodology. Professor Madsen is amazing.


PH250B Epidemiologic Methods Jack Colford is an amazing asset to research design and understand epidemiology. Good for those willing to take a deep dive in epidemiology methods.

MBA 292 B Nonprofit Boards Real life expertise from non-profit executives on execution, planning and governance.

INFO 290 Research Design and Data Analysis See data, research and decision making from an information systems perspective. Great Professor Nick Merrill.

SPRING

PH 269C - Occupational Biomechanics (Ergonomics) To learn about ergonomic assessment of jobs learn to use tools to assess risk of MSK diseases. Site visit/job analysis with a partner. Often have foreign researchers, who have a different perspective which can expand your own. The final was really hard and was surrounded by a number of other projects from my other courses.

PH 288CD Preventive Medicine Seminar - Broad topics that are relevant for physicians that don’t get covered in other SPH classes. Duration around 4 hours (2 papers and 1 short assignment). Two great instructors who want you to succeed as physicians.

PH 298 (UCSF M180) Occupational Toxicology 8 (half semester condensed course) 2 papers/1 presentation. To improve knowledge about workplace toxins/heavy metals. A large number of visiting lectures who may have been one of the first people to submit a case report/series on a particular compound. Fantastic course.

PH 270C Practical Toxicology Get into toxicology or present a poster with assistance. Develop a poster as a group and present it at the NorCal Society of Toxicology meeting as the main
portion of your grade. Half the time there is free food. The poster took a long time, but it was worth it.

**PH 200F Environmental Health Online** I liked the topic/lectures and the variety of assignments. Doing a group project with people in a number of different countries/time zones that have different availability than you. Way too much work for a 2-unit course. Take the in person class unless you have a light spring semester.

**PH 142W Intro to Biostats (Online)** Great lectures. Well thought out. Much better teaching on use of R than Fall in person class. Problem sets were not all R and multiple examples were in the reader. Study at their own pace and don’t mind doing Zoom/skype office hours. Second half of course had lectures and problem sets not being posted until over halfway through the week. Too late in the program for biostats to be useful in Capstone.

**UGBA 192T Edible Education 101** About the food system and how to take action and improve our food system. Great, well known guest lecturers like Alice Waters. Class challenges you to apply what you learn and take action in your daily life.

**PH 290 Public Health in Practice: Communicable Diseases** Get a sense of what the California department of health does and wants to work for the public health department or is interested in real life application of outbreaks. Many great speakers who all work for the California department of health (the class is held in Richmond at the California department of health). Great way to hear how people who work for the CDPH got to where they are and also connect with them if interested. Also got to stay up to date on the latest outbreaks, like measles, and how the CDPH handles outbreak cases.

**PH 281 Public Health and Spirituality** How spirituality relates to the public health field. This class is ultimately based on how well group discussions go since there is no lecture and everything is group discussions. Light – 1 final paper, 1 weekly 1 page reflection.

**PH 260F Infectious Disease Research in Developing Countries** Weekly guest speakers who spoke about their research in developing countries, able to connect with researchers whose work you find interesting.

**MBA 252 Negotiations and Conflict Resolution** Very engaging/fascinating/fun. One of the best classes I took at Berkeley. To gain exposure to this extremely important skill.
Electives Recommended by Class of 2018

FALL

PH 203A – Theories of Health and Social Behavior A lot of reading but the readings were helpful and enjoyable, Seth Holmes is an incredible professor and the readings really changed how I think about medicine and public health.

PH 250B - Epidemiology II Instructor is very clear and organized and the content and pace are good. Grades are heavily determined by three exams which doesn’t account for the investment in homework and readings.

PH 210B - Adolescent Health Students can do a real project. Multi-disciplinary view of the target population. Great presenters.

PH 216A - Biological Embedding of Social Factors Great discussions on the science behind social determinants of health. Very light workload and flexible deadlines.

PH 211 - Health and Human Rights Taught by the Human Rights Center on campus. Great expertise and brought in amazing guest speakers. Explored how to move health and law together in really interesting ways.

PH C233 - Healthy Cities Get to collaborate with students in city planning and do a community project.

PH 291A - Preparation for Public Health Practice Exposure to careers in public health, meet local public health professionals, and network.

MBA 209F - Fundamentals of Business Different approach to thinking compared to public health, broad exposure to management, leadership, and finance.

PH 224E - Health Care Quality This goes over the hard science of social determinants of health. The professor is hilarious and extremely knowledgeable, and we had good discussions. You gain on-the-job experience and practice. Great for health professionals.

PH 218B - Evaluation of Health and Social Programs Reading is a little heavy but the instructor does a very thorough job of how to conduct good program evaluations with real community partners. Expect a big workload with your evaluation plan for a community partner.

PH 269E - Current Topics in Environmental Medicine There’s a student presentation at the end.

PH 257 - Outbreak Investigation Some of the readings are old but Professor Reingold is smart and entertaining. Light work load.
PH 220D - Health Policy Advocacy  Professors really challenged you to think on your feet and think more critically. On the spot discussion of advocacy skills and current events. It can be intimidating at times but was a great experience overall. The projects at the end is long and time consuming.

PH 226A - Health Economics Decent amount of overlap with HPM breadths but definitely added information. In-depth health insurance discussion.

PH 129 - The Aging Human Brain Light reading and interesting material.

SPRING

PH 200A - Current Issues in Public Health Ethics: Research and Practice This is a very challenging but stimulating course and so critical for anyone in public health. Highly recommend the professor Jodi Halpern and the class size of about 18 students.

PH 201E - Public Health Interventions: Theory, Practice, and Research This was a great course, almost like a think tank, which included lots of discussion and student driven presentations. Definitely would recommend for any public health student, though especially for those in the Interdisciplinary program like clinicians or those who work in medical settings and want to learn more about creative approaches to the hardest public health problems.

PH W209 - Comparative Health Systems This is a must take online class for people interested in global health and health policy. It’s hard to balance the course load if it's offered on the second half of a regular semester.

PH 255A - Social Epidemiology This course covers equity issues through a social determinants of health lens.

PH W226C - Economics of Population Health This is an online course and covers the policy side of social equity issues.

PubPol 103 - Wealth and Poverty One becomes a better person out of taking Robert Reich’s class. It is very difficult to get into this course though.

PH 271C - Drinking Water and Health This course is excellent for those who are interested in water-related projects and how they impact public health. Heavy on reading and expectations but Prof. Smith makes it fun with her innovative jigs - Jeopardy, Movie, interesting case studies (Flint Michigan, Salinas Valley and more), visit to Orinda water treatment plant, stakeholder discussion forum, term paper, and quizzes - all rolled into one.

Electives Recommended by Class of 2017
FALL

PH 203A – Theories of Health and Social Behavior. Best for students who want to learn how to apply health theory to interventions and think about the social determinants of health. Learn how to bring a social justice perspective to public health work. A lot of readings per week but totally worth it. Seth Holmes is a great facilitator and wonderful resource. Definitely take this course if you can!

PH 204A – Mass Communications in Public Health. Learn really practical and applicable skills in using media to advance policy and in analyzing how media frames topics. Best for students who want to learn how to make upstream public health changes, how to start a social movement, and how to advocate for policy change. Lots of work, but would still highly recommend. The professor is amazing – she will try to scare you away from the class but just come back the week after and you will get in. She is knowledgeable, dynamic, engaging, and tough but fair.

PH 220D – Health Policy Advocacy. Best for students who want to learn really practical and applicable skills in policy and advocacy. Harry Snyder and Tony Iton are amazing! They shift the discussion according to the needs of the students. Great mentorship from professors. Engage in conversation rather than lecture. They expect you to know the readings very well. Work load goes up and down but is manageable. The policy plan is a lot of work but definitely worth it.

PH 223F – Effective Public Health Negotiations. Manageable workload but lots of outside prep. Learn practical negotiation skills in healthcare settings. Almost all practice scenarios. Learn how to better your own negotiation style. Best for students who want to learn self-confidence and power of persuasion. I now feel much more confident about asking for what I want and negotiating (including negotiating salaries!)

PH C253 – Foundations of Public Health. Light work load. Best for students who want to learn about the global burden of infectious and non-communicable diseases around the world. Work load is not too bad. Wonderful lectures. Great course overall.

PH 290(9) – Structural Competency. Gain knowledge in how different structures affect health and health care. Seth Holmes Is inspiring! Lots of amazing discussions. Very laid back and flexible course. Sometimes readings are very heavy on theory.

Soc Wel 255 - Community Organizing. Reasonable work load. Best for students who want to learn community engagement and organizing. Great students and speakers.

PP 260 – Public Leadership and Management. Weekly assignments, and tough for people that struggle with introspection. Best for students who are interested in the psychology of leadership and want to devote time to personal development. Dan Mulhern is incredibly invested in his students. The course gives you the structure and accountability to work on yourself and your vision/leadership goals with as much help from Dan as you need. You have to be personally
interested in self-development and have the personality to learn from different perspectives. Some students struggled with this.

**MBA 292N – Social Impact Metrics.** Good practical skills for working with non-profits. Practice consulting. Case studies are very relevant and practical. Engaging professors and guest lecturers. Awesome experience working as consultant. Heavy for a 2-unit course.

**SPRING**

**PH 201E – Public Health Interventions: Theory, Practice, and Research.** Best for students who want to learn design thinking for public health interventions, intervention oriented thinking, and network. Awesome professor, chill work load, but learned a lot. Your classmates really make the class- everyone has “learner” mindset. Leisurly class - workload is just a group presentation.

**PH 204G - Research Advances in Health Disparities: Multidisciplinary Perspectives.** Best for students who want to gain a broad understanding of health disparities. Fantastic discussion and guest lectures.

**PH 214 - Eat. Think. Design.** Tough class. Best for students who want to learn design thinking and work on multidisciplinary projects. Fun community but course is not very structured.

**PH 241 – Statistical Analysis of Categorical Data.** Lots of work- weekly homework forces you to stay on top of the work. Lectures are recorded which is very helpful. Best for students who want stat skills and how to use STATA. You get the stat skills you need for your MPH project.

**PH 281 – Public Health and Spirituality.** Light workload and short weekly readings. Best for students who want to learn about how religion and spirituality intersect with public health. Wonderful professor, great climate of the course, and great discussion.

**PH 290 – Impact Evaluation.** Moderate to heavy work load and weekly homework. Best for students who want to learn impact evaluation, causal inference, STATA, and research methodology. Learn practical skills. Dr. Gertler is fantastic and very accessible. Everything about the course was amazing. Consider taking it S/U.

**Devp 237 – Leadership, Conflict Resolution, and Community Development.** A lot of readings. Super cool guest lectures.

**Electives Recommended by Class of 2016**

**PH 253G - Sexual Health Promotion and Sexually Transmitted Diseases.** Great, highly recommend. Great guest speakers talking about transgender health, trauma-informed care, HPV, HIV, prevention, etc. Great overview of sexual health issues with a social justice perspective. Really low workload, just weekly readings, a final presentation and an annotated
bibliography. No Paper! Taught by the head of the STD control branch at CDPH, who is awesome.

Social Welfare 274 - Immigrants and Refugees in the U.S. Good if you want broad overview of the policies and social welfare issues affecting immigrants and refugees in the US. Good readings, covers wide range of issues including children, domestic violence, health care, etc. Enthusiastic, supportive professor. The 2nd half of the class is all student presentation which got kind of repetitive.

PH 205 – Program Planning, Development and Evaluation. Good overview of how to plan a program in public health. Enthusiastic, supportive professor. Get to work on a real-world project with a community organization.

PH281 – Health and Spirituality. A lot of reading, but can skim it. Weekly write-ups, but very easy. How religion and health interacts as shown in current literature. Doug Oman is great and very accommodating. The class is only 8 weeks, which gives time for MPH project.

CY PLAN 230 – US Housing, planning and policy. There was about 4 hours of reading per week, but not necessary. People who want to learn about housing, housing policy, housing advocacy, housing discrimination, etc. Carole Galante is the instructor; she is amazing and she invites amazing people both in HUD and other local and national housing organizations.


PH 291C – Participatory Research. Lots of reading and two papers. Moderate workload. CBPR qualitative research is awesome. Readings were good. Too much small group work.

PH 219E- Intro to Qualitative Methods. Paper builds throughout semester. Lots of reading. Really practical if you want to do Qualitative research.

PH 201E Public Health Interventions. Light and fun. Design thinking. Linda and Len rock! Fun, laid back, inspiring, opportunity to get creative. Professor extremely willing to meet outside class to discuss project and other life questions, which was helpful and inspiring.

PH200A – Current Issues in Public Health Ethics. Hard reading in the beginning, but lighter load later to focus on final paper. Small class with lots of open discussion.


PH216A – The Biological Embedding of Social Factor. Best for students who want to learn about the biological underpinnings of ow discrimination/poverty etc. affects health. Very light work load. Inspiring professor.
SW 210C - Aging Processes. Optional reading. In-class discussion most important. Professor was a very kind, enthusiastic, knowledgeable, and overall excellent professor. Variety of topics related to aging. Kind of slow paced class sessions, but gave me room to think.

Electives Recommended by Class of 2015

PH 181- Population and Poverty. Not a big workload. Good overview of all the issues facing our world today! Amazing, world-renowned and passionate professor (Dr. Potts).

PH 203C – Theories of Health and Social Behavior. How to think about health, policy, funding, the body and PH methodology more critically. Excellent professor (Seth Holmes, MD, PhD) with amazing class discussions. You get introduced to a whole new way of thinking so that we don’t keep repeating the same mistakes or making vast assumptions. Lots of reading – 60 pages per week.

PH 204 – Mass Communication and Public Health. Significant workload – 405 hours per week of reading, large semester-long project, and other assignments. Helps us understand how to use media to advance PH. Learning a real skill set – practical and you actually practice skills you’re learning. More work than my other classes – probably should be 4 units rather than 3. I learned more in this class than any other class. I heard from alumni and this was very valuable and useful. Lori Dorfman is an amazing instructor who inspires her students to take action. Writing an op-ed and letter to the editor as an assignment was a highlight. The group project was tough but it still wouldn’t deter me from the experience. Time intensive but learned the most SKILLS so far! Good guest lecturers. Lots of reading and assignments.

PH 206 Core Nutrition Topics. Good background for any student. Barbara Laraia is super nice and laid back. Topics are interesting, self-directed topics are great. Paper and presentation.

206C - Nutrition Epidemiology. Epi study design, critical thinking, STATA. Kris Madsen is an amazing teacher. Nutrition students are nice!

PH 213 Family Planning. Great class with good discussion of global issues but very high workload.

PH 220D – Health Policy Advocacy. Manageable short readings each week and one final paper -- ~2 hours/week. How to take a PH issue and come up with an advocacy plan to address it. Great guest speakers and group discussion with manageable workload. If you don’t like group discussion and speaking up in class, this course probably isn’t for you unless you’re trying to develop these skills. A great class for thinking about leadership and how to be a force for positive change in your community. Pretty leisurely. Learn about policy advocacy, coalition building, capacity building. Discussions were thoughtful, guest lectures were incredible, and students brought snacks! Not a lot of direction about final project until the end.
PH 224 – Healthcare Management. Take any class with Professor Hector Rodriguez!

PH 226D Global Health Economics. Great speakers. Learn how healthcare systems work.

PH 224D – Health Organizations and Management. Course is largely reading based with couple of short papers and a group presentation. Learn about organizational management and how it applies to health care. Instructor is very friendly and enthusiastic and engages the class very well. Is heavily theory based but with concrete examples.

PH 235 – Impact Evaluation. Weekly STATA assignments and major course project. Learn methods for evaluating impact of program or intervention. Instructors do great job of explaining material with real examples. This was the first year with STATA, which was not so good. But will likely improve. A fair amount of reading and almost weekly problem sets (3-4 hours each) and major final paper. Overall, an above-average workload. Best features: thinking through all the logistical challenges of designing an impact evaluation was really useful,. Also, some speakers talked about the future of impact evaluation, which was interesting. It’s a lot of time if you’re designing a hypothetical evaluation. You learn to write a grant, design randomized control trials and do an impact evaluation. Taught by Paul Gertler and Jack Colford-- two big shots. Homework is intense. Impact evaluation is a specific program evaluation tool – it’s excellent. Learn about impact evaluation – different methods and designing a study. Good class textbook and project. STATA homework not so great. Great knowledge based on real world examples and study design. A lot of STATA -- some took MANY hours. Pretty time intensive. Great lectures about components of impact evaluation, pretty theoretical. STATA homework took more time than the 1 unit that is allotted.

PH 240 – Community Needs Assessment in Maternal and Child Health. Heavy workload. You will be paired with a community group or member and actually do a CNA or related project. If you don’t have an MPH project, you could use this class to partner with an organization and work on your year-long project. The teacher was a bit distracted and not well prepared with good class activities. Grading criteria very unclear.

PH245 – Multivariate Statistics. Four homework assignments plus a final project--- overall, a light work load. Best for students who want more advanced stats knowledge and computing skills. Class is very useful and practical—you can apply skills to your project. First time this professor taught the course and it was a bit more confusing than it could have been. Great for learning different multivariate tools. Few mandatory homework assignments (4 total) plus one final project. Does not go too into depth. New lecturer– feels like he’s still working on his teaching style, but is open to feedback. Could use more real world examples.

PH 250B – Epidemiological Methods II. Tough, quick-paced, weekly optional homework, many readings. You get more in-depth coverage of study design and general epi. Great lecturer, well organized, you learn a lot. It may be too in-depth for students not that interested in epi.

PH 253 – Global Public Health Core Course. Readings interesting but did not have to do them. Good workload – 2 policy papers and a group project. Built around several issues in Global
Health. I enjoyed all the different perspectives and presenters and group discussions. It took a while to get our first assignment back and comments came just before the next assignment, but it was still OK. Lots of good speakers and info.

**PH 256 – City Planning and Healthy Cities.** A lot of reading – ~100 pages per week and required online responses. Also, big paper at end. Good for students interested in social justice. The readings were really interesting, diverse and important. The students are a smart bunch. But the professor isn’t good at stimulating a lively debate.

**PH 260A – Introduction to Infectious Diseases.** Medium load and required intermediate knowledge of virology and immunology. Best for students who need comprehensive knowledge of infectious diseases. Very organized and comprehensive about infection – it includes etiology, epidemiology, clinical features, treatment, and prevention of almost all infectious diseases. Not so great for MDs – would probably be repeated in medical school.

**PH 290(4) – Health Communication in the Digital Era.** Leisurely pace; weekly blog posts for the class website. Learn how to effectively use social media, start a blog, use multimedia in the public health sphere. I learned a lot and experimented with Twitter, making videos, and class blog posts. The pace was slow and it could have been a little deeper. Teachers for the course listen to feedback and made changes based on class concerns. You get to be creative! Great teachers (Diego and Lisa). Some projects, e.g., video production, take a lot of time.

**PH 290(6) – Healthcare Quality.** Workload is 5-8 hours per week, depending on internship commitment. Taught by COO of SF General – gives solid intro to how to improve healthcare processes and deepens policy background greatly. You do internship at SF General or other organization to practice real work skills. Internship is time consuming. Really special class for clinicians or those interested in process improvement, future COOs, people who want to work at SF General. A lot of reading, two papers, class group project. Learn how to do a QI project using LEAN. You learn a great skill set for doing QI. Group project takes a lot time. Based on a group project that requires 2-3 hours per week. Best for students interested in quality improvement, chronic care, lean management. Instructor is great and passionate about the subject matter. Project can be hit or miss but I think everybody in the class got something out of it.

**PH 298 (40) – Advocacy in Action.** Hands-on advocacy work with an organization. Getting to work with a community partner and learning about their work. I also liked learning from classmates about their placements. This semester the class was small, more organized in the future. If it isn’t, you just need to manage your own work. Unlike many other classes, you can put your work for this class on your resume since it’s like an internship or consulting project.

**Social Work 250M – Death and Dying.** Great course for anyone working in a medical setting and people working with older adults, long term planning and end-of-life care, or intensive care units. Really wonderful instructor, great discussion about end of life and personal experiences.
Social Work 265M – Motivational Interviewing. A new technique for motivating and working with patients to make change. Interactive, great instructor who has taught the course many times. You get a lot of practice with MI!

Electives Recommended by Class of 2016

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PH 205 – Program Planning, Development and Evaluation. Good overview of how to plan a program in public health. Enthusiastic, supportive professor. Get to work on a real-world project with a community organization.

PH 281 – Health and Spirituality. A lot of reading, but can skim it. Weekly write-ups, but very easy. How religion and health interacts as shown in current literature. Doug Oman is great and very accommodating. The class is only 8 weeks, which gives time for MPH project.

CY PLAN 230 – US Housing, planning and policy. There was about 4 hours of reading per week, but not necessary. People who want to learn about housing, housing policy, housing advocacy, housing discrimination, etc. Carole Galante is the instructor; she is amazing and she invites amazing people both in HUD and other local and national housing organizations.


PH 291C – Participatory Research. Lots of reading and two papers. Moderate workload. CBPR qualitative research is awesome. Readings were good. Too much small group work.

PH 219E- Intro to Qualitative Methods. Paper builds throughout semester. Lots of reading. Really practical if you want to do Qualitative research.

PH 201E Public Health Interventions. Light and fun. Design thinking. Linda and Len rock! Fun, laid back, inspiring, opportunity to get creative. Professor extremely willing to meet outside class to discuss project and other life questions, which was helpful and inspiring.
**PH200A – Current Issues in Public Health Ethics.** Hard reading in the beginning, but lighter load later to focus on final paper. Small class with lots of open discussion.


**PH216A – The Biological Embedding of Social Factor.** Best for students who want to learn about the biological underpinnings of ow discrimination/poverty etc. affects health. Very light work load. Inspiring professor.

**SW 210C - Aging Processes.** Optional reading. In-class discussion most important. Professor was a very kind, enthusiastic, knowledgeable, and overall excellent professor. Variety of topics related to aging. Kind of slow paced class sessions, but gave me room to think.

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**Electives Recommended by Class of 2014**

**FALL**

**PH 201C - Needs Assessment in Maternal and Child Health** :Best for students who want to learn about program planning. Not much weekly course work but there is a semester-long project. Small seminar group, community involvement. You have to do a project – time consuming but rewarding. Course could use a little more structured discussion.

**PH 204A - Mass Communication in Public Health.** A heavy workload – weekly assignments and readings, and a very large final project. It totally changed my thinking towards public health – very useful course, teaches framing issues around environmental policy changes. Don’t let the teacher scare you out of the class! She likes a smaller class size.

**PH 206 - Nutrition Core Course.** Overview of critical issues in PH nutrition. A couple of hours of leisure reading per week. Great topics, lecturers, passionate student who teach other. Professor Laraia is laid back. Interesting topics, interactive, wonderful teacher. Great class without too much work!

**PH 290 (4) – Health Communications in the Digital Era.** Global health mobile and web technology. Caricia Catalani is a great professor! But unfortunately class schedule interfered with seminar so had to leave early. Had to write up 5 blogs based on readings and present on one mHealth technology, and propose a new mHealth technology and present to the class in a powerpoint format. Totally doable. Professor was amazing and has great experience in the field. I learned a lot about new mHealth applications, wrote my first blogs, and created an mHealth innovation that ties into my public health interests. It was a very creative and hands on class—refreshing.
PH 290(6) – Healthcare Quality. My favorite class because the professor (Iman Nazeeri-Simmons) is very engaging and topics very useful, especially for those interested in healthcare administration. Tons of work – semester-long project with a hospital/clinic is very useful but very time intensive. Class is so popular – don’t let professor scare you away. She is amazing! She tries to weed out class to get smaller seminar. Two hours of reading per week; semester-long project; two other short papers and final paper. Very informative and dynamic professor, well run and organized. Seminar with 20-30 students. It’s the first time she taught the course. Group project with community partner had logistical challenges but professor was made aware and will make changes for next year. Course is very competitive to get in to – must go the first day to get admitted.

PH 290(8) – Family, Housing and Health. Light work load, no midterm or final. This course was taught in the problem-based learning pedagogy, and was my first class ever taught this way. It was a small multidisciplinary group (MDs, social workers, PH students, an architect) which enriched the discussions. There were three professors overseeing this course and it was awesome being able to hear from all of them. Class discussions were facilitated and run by students and we went over five different case studies over the semester. Excellent class for social workers or those who will need to know more about policies, resources and interventions related to housing and health, and how to go about finding them.

Business (Haas) 256 – Global Leadership. Professor is awesome, class is engaging. Hard to get in to.

SPRING

PH 200D - Global Nutrition and Food Policy. Instructor is awesome!

PH 201E – Public Health Interventions – Very supportive and knowledgeable faculty. Safe, creative space to grow as a public health practitioner.

PH 205 – Program Planning, Development and Evaluation. Grant writing skills and logic model. You walk away being able to plan a program! A lot of work – should be 4 credits.


PH 216A – Biological Embedding of Social Factors. Course is about epigenetics, social determinants of health, racism etc. Open forum to discuss cutting edge topics. Sometimes gets into nitty-gritty of science but course meant for non-science background people.

PH 219E - Qualitative Methods Light to moderate work load. Very good professor, interesting and interactive assignments although readings were often too theoretical.
PH 281 - Public Health and Spirituality. Great readings, laid back professor and class discussions. Class is half a semester only (first half).


PH 257 - Outbreak Investigation. Professor Reingold is incredible.

PH C271G – Health Implications of Climate Change. Global health, air quality, city planning. Some climate modelling readings were very complex.

PH 290(2) – Designing Innovative Public Health Solutions: Eat. Think. Design. Lots of work by the assignments are really fun. Design, prototyping, ethnographical interviewing. Fantastic course and great instructors, interdisciplinary group of students. Creative design thinking. Collaborative learning projects. Fun and useful! Group project working with a community organization. Lots of work but worth it.

PH 290(8) - Public Health Journalism. How to write articles, blogs, etc. Useful skills! Impacted course, but instructor will do small group independent study if you can get a few people together.

PH 291 - Preparation for Public Health Practice. Mini skills sessions. Useful for communications skills – amazing! Especially speech skills session. Team building, how to give good powerpoint presentations, program management and evaluation.


Public Policy 290(2) – Negotiations Seminar. Basic negotiation theory based on Harvard’s negotiation program. Excellent instructor (Amy Slater).

Electives Recommended by Class of 2013

FALL

PH 245 - Multivariate Statistics. Good class. Lectures are recorded which is super helpful. Maureen is a good teacher and easily accessible for questions.

PH 250B – Epidemiology. Good class. LOTS of reading and outside work. Fast pace.
PH 204A - Mass Communication and Public Health. This class should be required, and the first half of it was really fun... the group projects were hard, but I think everyone learned a great deal, and it was the most down to earth public health class I took.

PH 290 (1) - Impact Evaluation: Great class if you want to learn evaluation. Lots of work, but you will learn a lot. The instructors are awesome! Small class with lots of time for questions. Super interesting material, final project was time intense but a very good learning tool, readings and lectures were great, but readings were long and could be quite dense, probably my most high yield course during the semester.

285A - Injury Prevent and Control. Super interesting material, small discussion oriented class, few easy/low key assignments, final presentation, mid/low time requirement outside of class... depending on if you read the readings or if you skim them... found it very useful as a medical student interested in primary care...

SPRING

PH 200A – Public Health Ethics. My favorite class this semester. We think about the "why" behind what we do in public health - has spilled over and started informing how I approach my own discipline (landscape architecture) and how to teach my own theory class in the College of Environmental Design.

PH 217C – Aging and Public Health. Interesting seminar covering a very diverse set of topics relating to the elderly. Great for anyone who may have to work with the elderly in the future found it useful as a future MD; there were also a lot of Social Welfare students in the class. Weekly readings to prep for class discussion. Final paper at end of class/semester.

PH 219E - Qualitative Methods. Excellent class. Karuna is a great lecturer with a lot of qualitative & mixed methods research experience. Good balance of lecture & in-class activities. Assignments useful and fun to do.

271G - Climate Change and Health. interesting class, some overlap with 200C2 (Environmental Health Breadth course). Weekly readings and discussion. Poster presentation is final assignment. Covered lots environmental health topics that I was previously unfamiliar with. Some topics were pretty dense, especially since I basically didn't know anything about environmental health.

PH/EH 272A - Geographic Information Science for Public and Environmental Health. Very time-consuming, but I am learning a valuable new skill to use in public health. Clearer lectures than those taught elsewhere on campus. Class size is good and Alberto and Diane (the GSIs) are very supportive, patient and awesome.

PH 281 - Public Health and Spirituality. Really interesting readings, only 1/2 the semester, 2 units, short weekly assignments, option of a take home final or short final paper.
PH 290 - mHealth Experiential Learning: Excellent class and instructors!

PH 290 (2) - Designing Innovative Public Health Solutions. Excellent class! Applies methods from design, business, and engineering to creating solutions for PH problems. Excellent instructors and a fun class. Very challenging, always surprising, this class helps me re-learn how to approach projects and collaborate in a playful way. Very time-intensive, but I am also learning so much about pushing past my comfort zone.

PH 290 (11) - US Food and Drug Administration, Drug Development, Science and Health Policy. Interesting topics, readings and lectures can be quite dense/technical, readings can be quite long. Relevant for people interested in medicine, pharm, infectious disease, law, drug development, & drug regulation. Focus is on HIV/AIDS and Hepatitis C.

291A - Preparation for Public Health Practice. One-unit workshop, covers topics that would be useful for any future professional, not just people going into Public Health. You are only required to attend 11 of the 2 hour sessions. Lots of really dynamic speakers, usually involves class participation in some sort of group or partnered activity. Very little prep required.
UNIVERSITY OF CALIFORNIA BERKELEY SCHOOL OF PUBLIC HEALTH
INTERDISCIPLINARY MPH PROGRAM
PROJECT PARTNERSHIP AGREEMENT 2020-21

This work plan should be developed collaboratively by the community partner and student(s). All items must be agreed upon by both parties. Due TBA – please post to bCourses and email to your project adviser

Project Title
Brief Project Description
Project Objectives (each objective must be SMART: Specific, Measurable, Attainable, Relevant and Time-bound)
Expected Project Deliverables/Products
Sustainability Plans
Dissemination Plans
Communication between Student and Community Partner

Frequency of Progress Updates (check one)  □ Bi-weekly  □ Once per month  □ Once per quarter  □ Other (specify ___________)
Frequency of In-Person Meetings  □ Bi-weekly  □ Once per month  □ Once per quarter  □ Other (specify ___________)

Community Partner Liaison
Name _______________________  Title _______________________  Phone ___________________  Email ___________________

Signatures
The undersigned agree that the project plan outlined above meets a self-defined need of the Community Partner and engages the student in meaningful, specific efforts to meet that need. Both parties will retain a copy of this agreement, commit to regular communication and problem solving as needed, and will contact UCB Program Faculty promptly should any concerns arise.

Community Partner Liaison__________________________                 _________________________

Student(s)____________________________________________________________________________

UCB Interdisciplinary MPH Program Faculty
• Anke Hemmerling
• Karen Sokal-Gutierrez
Purpose:

The literature review will inform you of the body of research relating to the topic of your project. The best literature reviews are those that contextualize the project and its importance to public health, and discuss the shortcomings and successes of existing research to address similar questions/needs. For your reference, you can browse through several sample MPH project reports of recent years in your handbook.

Length and format:

Approximately 8-10 pages, double-spaced

Outline:

Literature reviews should use the following outline:

I. Title

II. Abstract

III. Introduction
   Describe the importance of the topic, both broadly and with respect to the specific population(s) served by your project, in a style appropriate for academic settings.

IV. Main themes in the literature
   This must reflect synthesis across sources as opposed to straightforward linear summaries of identified relevant articles.

V. Conclusions/lessons from the literature
   i. Summarize the lessons from the literature
   ii. Identify what is still lacking in the literature

VI. Reflection on application of literature to, and implications for, planned project

VII. Bibliography
   Be sure to include proper referencing of all cited sources. (e.g. AMA style http://medlib.bu.edu/facts/faq2.cfm/content/citationsama.cfm; AJPH; or other styles from peer reviewed journals in the field)
CPHS (IRB) – Ethical Review of your Project

Plan ahead - Many researchers are on set schedules for their research and theses. Plan in advance to allow enough time for the review cycle which can take some time depending on the circumstances. Review cycles, depending on the quality and completeness of the submission, can take up to 8 weeks or longer.

Seek feedback from colleagues - Student researchers should work with their faculty advisors closely for mentoring, drafting, and other assistance with the research protocol. Obtain a copy of an approved protocol from a colleague to see commonly used language.

Complete/comprehensive informed consent process - Researchers should ensure that the consent documents are clear and concise and should be in a language that is understandable to the subject. See the Informed Consent Guidelines, Consent Builder, and templates on our website (http://cphs.berkeley.edu/content/informedconsent.html).

Clearly describe study procedures - Remember that the reviewer needs to be able to put him/herself in the shoes of the subject and they can't do that if there is not enough detail. The protocol should include how long each procedure will take, frequency, and estimated total time commitment for the subject to participate in the study.

Confidentiality - Privacy refers to the individuals' right to control access to themselves. On the other hand, confidentiality refers to how private information provided by individuals will be protected by the researcher from release. Describing how the confidentiality of research information will be maintained is an important element of the protocol & consent process.

Anonymous data collection - Anonymous data collection means that no identifiable information (e.g., name, address, student ID number, email, phone number, etc.) is connected to the data either directly or through a coding system, at any point in the study. Therefore, even if the identifiers are separated from the data immediately after collection, the study would not be considered anonymous. In addition to videotapes and photographs, audio recordings are considered to be identifiable; therefore any data collection that involves audio recordings, video recordings, or photographs of subjects would not be considered anonymous. It is also possible that multiple pieces of information, none of which are identifiable on their own, may uniquely identify a person when brought together; in this case, the data would be identifiable and would not be considered anonymous.

Risks/discomforts from study participation- Remember to include both the possible risks and discomforts from participation in the study. With all studies that involve the collection of private identifiable information, there is a chance that confidentiality could be compromised. However, researchers should also keep in mind that some procedures, including surveys and lab experiments with deception might cause some type of discomfort (whether physical or emotional). When making a risk assessment, the Committee takes into account both probability and magnitude of harm, so researchers should address both of these factors in the protocol.
Guidance on specific topics - There are guidance documents on specific topics that may be germane to your research - what requires CPHS/OPHS review, deception in research, subject recruitment, data security, international research, etc. (http://cphs.berkeley.edu/guideline.html)

eProtocol Quick Guides:
http://cphs.berkeley.edu/eprotocol_guides.html
How to create a protocol:
http://cphs.berkeley.edu/eprotocolguide/investigator/create.pdf
How to check for completeness:
http://cphs.berkeley.edu/eprotocolguide/investigator/check.pdf
How to submit a protocol:
http://cphs.berkeley.edu/eprotocolguide/investigator/submit.pdf
How to respond to comments:
http://cphs.berkeley.edu/eprotocolguide/investigator/comments.pdf

Questions?
Call our office: 510-642-7461. We answer phones during business hours: 8 am - 5 pm, M-F. Drop-in at 2150 Shattuck Ave., Suite 300.

Website: http://cphs.berkeley.edu/ (use the search box) Email: ophs@berkeley.edu
*If you have submitted an application, contact your assigned panel manager.

Commonly Requested Revisions:
• Include maximum total sample size. If unsure, over-estimate.
• Include recruitment details specific to the proposed study.
• Include copies of all data collection materials.
• Include interview questions. At minimum, include topics to be explored during the interview.
• If obtaining consent online, choose the "Unsigned Consent" type. Be sure to complete all text boxes.
• Include a PDF copy of the Student Investigator's CITI completion report. Complete Group 1 (bio-medical) or Group 2 (social-behavioral) for Research Investigators and Key Personnel.
• Provide thorough but concise answers. Only include information relevant to the question.
• When responding to comments, be sure make the applicable revisions to the protocol information. Be sure to click on the "submit to IRB" button to submit your responses and revisions.
• Include anticipated benefit to subject and society in the protocol and the consent form. If no benefit to subject, state so.
• Make sure information is consistent between study procedures and the consent form.
• Template Text for Adverse Events and Reporting Section in section 13F (biomedical)/11C (social behavioral) of eProtocol: "An initial report will be made to the OPHS Director within no more than one week (7 calendar days) of the Principal Investigator learning of the incident. The report can be made by fax, mail/delivery, phone, or email. The initial report will be followed by a formal written report, submitted via eProtocol, within no more than two weeks (14 calendar days) of the Principal Investigator learning of the incident."
Some Current Positions Held By Interdisciplinary Alumni

(main source: 2012 Survey of Interdisciplinary Alumni)

- U.S. Surgeon General
- Academic Coordinator, USCF and Lecturer, UC Berkeley
- Assistant Clinical Professor, UC Irvine, Division of Obstetric Oncology
- Assistant Professor of Pediatrics, Seattle Children's Hospital, University of Washington School of Medicine
- Assistant Professor, UCSF – Hospitalist Physician
- Assistant Professor, Stanford University; Advisor - Ethics Subcommittee of Advisory Board to the Centers for Disease Control and Prevention; Alta Bates Summit Medical Center - Palliative Care Chaplain; and St. Mary’s College - Project Advisor
- Assistant Team Leader, Pathways to Housing DC, Assertive Community Treatment
- Associate Professor, Kumamoto University, Japan
- Associate Professor, University of Toronto, Factor-Inwentash Chair in Child Welfare
- Behavioral Psychologist, Golden Gate Regional Center Clinical Psychologist, Department of Social Services/Social Security Administration
- Executive Advisor for Strategic Partnerships, CamFed USA Foundation
- Cardiac Anesthesia Fellow, Stanford University
- Clinical Assistant Professor, Stanford University
- County Governor of South-Trøndelag (Fylkesmannen i Sør-Trøndelag, Norway) - Chief Medical Officer
- Director, Associates in Hospital Medicine / Methodist Division, Thomas Jefferson University Hospitals
- Director, CA Emergency Medical Services Authority / State appointed position
- Director, TEACH Program and Associate Clinical Professor, UCSF
- Fellow in Preventive Medicine and Public Health, University of Rochester Medical Center
- Fellow, Jiangsu Province Population and Development Research Center
- General Pediatrician, Kaiser Permanente
- Internist, Permanente Medical Group
- Laboratory Advisor, University Research Co., LLC,
- Managing Director, Absolute Return for Kids US
- Medical Director, Housing and Urban Health, San Francisco Dept. of Public Health/ Special Advisor to the Executive Director, US Interagency Council on Homelessness
- Medical Social Worker, Pathways Home Health and Hospice
- Nurse Practitioner, Stanford Hospital and Clinics
- Orthopaedic Trauma Fellow, Wellspan Orthopaedic Surgery
- Physician (Nunavut) Professor (University of Calgary) Partner (Habitat Health Impact Consulting)
- Pediatric Medical Director, San Mateo Medical Center; Keller Center for Family Violence Intervention
- Policy Analyst, Instructor and Researcher, University of California School of Public Health Center for Infectious Diseases Emergency Readiness
- Project Director, Global Access to Technology for Development (GATD) /
- Professor (University of Calgary) / Partner (Habitat Health Impact Consulting)
- Professor at PSIA-Sciences Po Paris and College de France, Chair: Knowledge Against Poverty
- Program Director, Division of Cancer Control and Population Sciences, National Cancer Institute, NIH
- Program Director, Division of Cancer Control and Population Sciences, National Cancer Institute, National Institutes of Health
- Psychiatrist (solo practice)
- Public Health Medical Officer, California Department of Public Health
- Public Health Physician, State of North Rhine-Westphalia, Health Department, Germany
- Self-employed / Graphic Facilitator & Group Process Consultant
- Resident, Department of Radiology, Stanford University Medical Center
- Self-employed in house calls and geriatric consultation practice; self-employed as geriatric consultant to www.caring.com. Also now blogging to raise awareness of needs of geriatric health providers at www.geritech.org.
- Senior Medical Officer, Danish Health and Medicines Authority
- Student at UC Davis School of Veterinary Medicine
- United States Air Force Commander, 374th Medical Group United States Forces Japan/ Surgeon General, 5th Air Force/ Surgeon General (responsible for 11,000 people)
2012 Alumni Survey Results
N=61 – 22% response rate

Some Geographic Locations of Alumni
Center for Public Health Practice
CAREER SERVICES

Jobs & Internships
Search for full-time or part-time jobs, fellowships, GSI/GSR, project & volunteer opportunities and internships utilizing the SPH jobsite:
sphjobsite.berkeley.edu/students/

Career Counseling
Make an appointment to discuss career decision-making and job search strategies, have your resume and cover letter critiqued, conduct a mock interview or learn about career resources available to SPH students. Career counseling is also available to discuss applying to medical school, negotiating salaries and job offers.

Send a list of your available times to haffke@berkeley.edu. Include your full name, program, expected graduate date, and reason for the appointment.

Career Assessment
Find out about the options available for you to evaluate your personality, interests, skills and values as they relate to your career choices. Make a career counseling appointment for more information.

Workshops and Programs
Topics include career planning, interview preparation, resume writing and job search strategies. Workshops are listed on the SPH jobsite calendar and in Career Services emails sent out on the student listserv.

Special Events
Interact with employers and public health professionals at a variety of special events hosted by CPHP, including Career Café, 291 Professional Development series, annual Career Fair, employer information sessions, guest lectures and conferences.

Ruthann M. Haffke, Career Services Manager
haffke@berkeley.edu
510-642-0431

Have a suggestion for SPH career services? Submit your ideas to haffke@berkeley.edu
Disclaimer: This fairly complete selection of MPH projects of recent years aims to provide additional details about methodological approaches that can help incoming students to quickly gain an understanding of projects conducted in the past. The provided remarks do not aim to be comprehensive summaries. If a particular report is of interest to you, request the full report in the SPH library, we can send anonymized pdf documents.

**Year 2020**

<table>
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<th>Title</th>
<th>Methodology</th>
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| Improvements in depressive symptoms in hospital employees after a workplace sales ban of sugar-sweetened beverage (SSB) | • secondary analysis of “The Impact of Workplace Food and Beverage Choices on Health and Wellness” clinical trial  
• before-after study of employees at a private hospital in San Francisco, CA that implemented a SSB sales ban in 2018, evaluating whether a SSB sales ban was associated with improvements in depression and anxiety symptoms, SSB craving, reward-based eating drive, and SSB consumption, among hospital employees who drank at least a serving of SSB per week.  
• N=276 participants at baseline and at 12 month follow-up |
| Utilization and Time to Treatment for Pediatric Patients with Gender Dysphoria Vary by Gender Identity and Diagnosing Provider | • Secondary data analysis of data from the Kaiser Permanente Northern California (KPNC) system health records between January 2015 and December 2018.  
• manual chart review of time span from TGD diagnosis date to 6 months after to confirm the first gender identity with which the patient identified.  
• Demographic data, patient-reported race, BMI, height and weight, medications prescribed, and surgical history were abstracted from medical charts.  
• TTT measured from diagnosis date to first prescription or surgical date.  
• Data were analyzed with descriptive statistics. |
| Health care utilization as mediated by acculturation and mental well-being in Asian-American subgroups | • secondary analysis using data from the California Health Interview Survey (CHIS) of California’s population, in 6 languages including Chinese, Vietnamese, Korean, and Tagalog, ongoing survey since 2011, collecting and providing data on a 2-year cycle.  
• CHIS data from 2011 to 2016 was pooled to generate a sample of 124,520 adult participants.  
• Subgroups assessed for health care utilization, acculturation and mental health wellness (Kessler score and acculturation score), and additional demographic covariates. |
| Eradicating Cervical Cancer: Lessons Learned from Rwanda and Australia | • policy analysis including key informant interviews and extensive literature review in order to improve the uptake of HPV vaccination and cervical cancer screening  
• specific objectives: (1) describe the historical context of cervical cancer screening and HPV vaccination, (2) analyze effective policy strategies to eradicate cervical cancer in Rwanda and Australia, and (3) propose  
• recommended policy interventions to eradicate cervical cancer globally. |
<table>
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<th>Study Title</th>
<th>Description</th>
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| Identifying Super-Utilizers In Medicaid: A Policy Review And Proposal       | • Planning project to identify super-utilizers among the Medicaid populations of South Dakota who could receive additional services via the SD Health Homes program with 5,800 patients  
  • Policy review to summarize our learnings from past efforts to identify persistent high utilizers across the country, to launch interventions to improve care and reduce costs for this population, and highlight opportunities for ongoing research.  
  • Four main sections: an analysis of methods for identification of persistent high utilizers in Medicaid, an overview of key challenges to those methods including examples, and some characteristics of successful programs to date. |
| Coal Miner Cardiopulmonary Exercise Test (CoM-CPET) Study                   | • secondary analysis of de-identified data from coal miners between 2005-2015, in one clinic specializing in Black Lung evaluations.  
  • Assessing occupational exposure history, past medical history (namely diabetes mellitus, cardiovascular disease, and hypertension), tobacco history, spirometry, chest radiograph (B read), and diffusion capacity.  
  • medical history chart review and cardiopulmonary exercise testing reports, chest radiography  
  • n=889                                                                                                                                                                                                 |
| Medication Abortion at California Community Colleges: A Pilot Study         | • Primary study to assess the need for on-campus MA at CCCs, and the capacity of CCC SHCs to provide MA  
  • Study objectives: 1) Estimate the demand for on-campus MA at CCCs, 2) Perform a preliminary evaluation of CCC SHCs’ capacity to provide MA, 3) Develop next steps for further assessment of on-campus MA at CCCs |
| Cue to Move                                                                | • study using a personal monitoring device to objectively quantify the amount of time spent in different postures and measuring behavior changes related to worker feedback through smart cueing.  
  • survey data assesses relationship between tasks and postures as well perceived barriers to utilizing sit-stand workstations.  
  • Compares parameters such as subjective pain, heart rate variability, blood pressure, serum lipids, and hemoglobin A1c at the beginning and end of the study 6 months later |
| Auditing Nurses on Pressure Ulcers Prevention At Zuckerberg San Francisco General Hospital Research Proposal | • quality improvement project using mixed methods analysis of pressure ulcer management at ZSFG  
  • qualitative analysis: interviewing ZSFG quality improvement team, Alameda Health Systems Quality Improvement Team, and ZSFG wound care nurse (WCN)  
  • Quantitative analysis: conducting audit by reviewing nursing documentation of patient charts of those who were in the Intensive Care Unit (ICU) or the Medicine/Surgical Unit (med/surge) between June 2014 to June 2017. Using Braden scale score, frequency of Braden scale checks, interventions documented, site of incidence, stage prior to discharge/death, what hospital day of stay incidence occurred, total length of stay, gender, race/ethnicity, nutrition status, comorbidities, age, resultant death. |
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| Accidental Pediatric Exposures from Household Cleaning Products      | • Descriptive Cross-Sectional Data Analysis from the American Association of Poison Control Center’s National Poison Data System (2000-2015)  
• cross-sectional study assessing all household cleaner exposure calls made to the American Association of Poison Control Centers (AAPCC) nationwide between the dates of 1 January 2000 and 31 December 2015, as logged into the National Poison Data System (NPDS)  
• includes comprehensive deidentified information on key characteristics of exposure, including subject demographics, route of exposure specifics, and relevant follow up and outcome determination. Exposures were grouped into 14 specific categories based on primary chemical agent.  
• A total of 1,317,970 cases were included for analysis |
| An Exploration of Black Women’s Lived Experiences of Abortion         | • qualitative study conducted in the Bay Area using convenience, purposive and snowball sampling to identify cis- gendered black women ages 18-46 with a history of abortion.  
• 23 one-on-one semi-structured interviews with participants both in-person and over the phone, following an interview guide developed with guidance from a Community Advisory Board (CAB) and Scholarly Advisory Board.  
• Interview questions covered numerous topics including abortion care, mental health, structural racism and interpersonal racism.  
• Interviews were digitally recorded, de-identified and transcribed  
• Analysis conducted using Atlas.ti. and modified grounded theory |
| Medicare Hospice Reimbursement in the US                             | • Retrospective Policy Analysis investigating the “Two-Tiered Routine Home Care Reimbursement” and “Service-Intensity Add On Payment” Medicare reimbursement policy changes of the Hospice Final Rule 2016 through a policy tracing technique.  
• a range of qualitative and quantitative techniques for data collection and synthesis and was conducted using a several step approach.  
• 1) a comprehensive and chronological review of the literature and key informant interviews with stakeholders in the hospice & palliative care industry, and analysis of publicly available data from CMS and the Dartmouth Atlas Fund to understand hospice spending and quality trends both pre and post the 2016 policy implementation.  
• 2) Using the Policy Triangle Framework to organize factors that influenced the Medicare policy change in 2016.  
• 3) performing comparative analysis, contrasting the structure of Medicare hospice delivery to hospice systems in eight countries to determine which components of other nations’ hospice systems could be transferred to the US to improve Medicare hospice performance. |
<p>| The role of benzodiazepines, z-drugs and gabapentinoids in accidental overdose | • Planning project for secondary data analysis assessing the role of benzodiazepine (BZD), gabapentinoids and z-drug prescription in accidental overdose risk among patients prescribed chronic opiates across the Kaiser Permanente Northern and Southern California Health Systems between 2007-2017 |</p>
<table>
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<th>Topic</th>
<th>Details</th>
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| Primary Care Sports Day                                             | • Developing a Video Training to Help Reduce Injury, Concussion, and Unexpected Death Amongst the Youth Athletes of the San Francisco Bay Area  
• produce a succinct overview presentation of the key findings of ten different systems (cardiac, nervous system, general medical conditions, pulmonary, gastrointestinal/genitourinary, dermatologic, musculoskeletal, mental health, female athletes, and athletes with disabilities), condensing an existing 300 page manual, and a 30-minute video and handout  
• Utilizing qualitative data collection/analysis, a survey distributed to all providers who participate in the UCSF Cardiac Physicals Day, and analyze if the tool resulted in increased knowledge entering the day. Provider feedback utilized for future learning tool improvements. |
| Association Between Personality Traits And Risk Of Falls In Older Men | • The Osteoporotic Fractures in Men (MrOS) is a multicenter prospective cohort study that focuses on assessing healthy aging specifically the incidence of fractures and osteoporosis in ambulatory community-dwelling men, since 2000 in 6000 men  
• Secondary data analysis of the personality assessment questionnaires which were completed during the follow-up “Visit 4” (Year 14) with all participants still in the study (n = 2,786) |
| India Smiles, Children’s nutrition and Oral Health                  | • Qualitative Analysis of extensive intervention and research that India Smiles conducted from 2012 to 2015.  
• FMCH is a prominent Indian non-profit, non-governmental organization that provides the First 1000 Days Program for mothers and children in several nutritionally impoverished and economically challenged communities of Maharashtra through an array of skilled community health workers.  
• Four focus groups of 42 healthcare workers and care providers from the community-based Foundation of Maternal and Child Health intervention program to assess knowledge, experiences, perceptions, and barriers regarding their children’s nutrition and oral health. |
| Assessment of School Teachers’ Knowledge and Skills About Child Traumatic Dental Injuries In The San Francisco Bay Area | • study assessing collected data of a developed online survey distributed to school teachers in Santa Clara school district, and develop recommendation to improve teacher’s preparedness for dental injuries in school children  
• The survey questionnaire consisted of two parts, (1) demographic information and (2) three scenario based questions.  
• Data collected using qualtrics were analyzed for school teachers’ knowledge about TDI management. |
| Factors affecting time to chemotherapy for breast cancer care        | • pilot study evaluating factors affecting timeliness of chemotherapy at University of California at San Francisco for breast cancer patients  
• determine the average TTC for women being treated for breast cancer, and find factors leading to delayed initiation of chemotherapy.  
• retrospective chart review of patients receiving doxorubicin and cyclophosphamide followed by paclitaxel (AC-T) or the combination of docetaxel and cyclophosphamide (TC), in neoadjuvant (NAC) and adjuvant chemotherapy (AC) for breast cancer of all stages, between 2014-16.  
• Evaluated factors included patient age, race/ethnicity, surgery type, and tumor biology |
| Program Evaluation and Analysis of Farmers’ Market Utilization | • evaluation of farmers’ market utilizations among low-income residents, and optimize access to healthful nutrition  
• Recommend policy interventions to increase incentives for vendors to sell and low-income residents to buy and consume greater quantities of fresh fruits and vegetables.  
• Study assessed purchasing data collected at the mobile farmers’ market in Richmond, California in 2019 (total 1044) |
| Occupational Adult Exposures to Household Cleaning Products | • Descriptive cross-sectional secondary data analysis from the American Association of Poison Control Centers (AAPCC) National Poison Data System (NPDS) between 2000 – 2016.  
• Using de-identified data on significant features of exposure to include; details of exposure route, demographics of the subject, and outcomes germane to the participants and their specific exposures. |
| Provider and administrator-level perspectives on strategies to reduce fear and improve patient trust in the emergency department in times of heightened immigration enforcement. | • Qualitative study examines provider and system-level policies on caring for undocumented patients in a California ED.  
• recruited 12 ED providers and administrators from San Francisco’s safety-net ED, using a trusted gatekeeper and snowball sampling.  
• conducted semi-structured interviews that asked about providers’ knowledge of and suggestions for policies and practices to reduce fear and enhance trust among immigrant patients in the ED.  
• analyzed the transcripts using constructivist grounded theory. |

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<th>Year 2019</th>
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<td><strong>Title</strong></td>
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| Bundled Payment in Health Care: The Way of the Future for Quality Improvement in Surgical Patients | • Descriptive analysis of the patient population included in the bundled payment program. Inclusion criteria was patient’s eligibility for Medicare as their primary insurer and be enrolled in Medicare Part A & B.  
• Analyzed datasets from a variety of sources (CMS, electronic medical record of UCSF patients, and the National Surgical Quality Improvement Program (NSQUIP) to investigate if a close correlation between readmission and higher care episode costs exist. |
| Assessment of the oral health needs of children in Berkeley | • A mixed-method secondary data analysis.  
• Quantitative Data was collected from the pre-existing programs in the City of Berkeley which include: - Head Start, Berkeley Unified School District-School Dental Sealant Program and Denti-Cal Utilization.  
• R was used to conduct Chi Square analysis to assess the association of the School Dental Sealant Internal Program with the history of Dental caries  
• Qualitative data was collected through focus group discussion comprising of seven African-American mothers who were pregnant or had children, and residents of Berkeley. |
<p>| Bad to the Bone: Pediatric Osteomyelitis in the Northern California Region | • Retrospective descriptive study of children ages 6 months to 17 years hospitalized with osteomyelitis from 2008-2017 in Northern California Kaiser Permanente. Descriptive, bivariate, calculation of incidence rates, trend tests were used. |
| Beats Rhymes and Primary Care | • Employed a community based participatory research (focus group discussion) to investigate barriers and solutions most relevant to the adolescent community in the Oakland Area from ten participants between the age of 18-21 years who perform in Beats Rhymes and Life. |</p>
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<th>Topic</th>
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| Black Women and Abortion: An exploration of Attitudes and Experiences | • A cross-sectional qualitative study. In-depth semi-structured interviews were conducted with a team who have experience providing care to Black women of reproductive-age (18-45).  
• Sixteen participants from several communities around the San Francisco Bay metropolitan area were selected to participate in the interviews. Used Dedoose software to analyze themes. |
| Childhood Malnutrition: A look at Foundation for Mother & Child Health in India data | • The nutritional status of 391 females and 402 males pre and post intervention were evaluated. The three forms of malnutrition assessed included stunting, wasting, and underweight.]  
• A de-identified, non-coded data set from Foundation for Mother and Child Health India was obtained from patient charts via FMCH’s electronic medical records (Salesforce). |
| Contraception Prescribing Practices after Senate Bill 999: A Qualitative Case-Series Analyzing Reproductive Health Policy Implementation | • Investigator contacted five institutions with recruitment information for the study, which had previous IRB approval by UC Berkeley’s Committee for Protection of Human Subjects. Recruitment occurred via Respondent-Driven Sampling (RDS) – a contact person within each institution was provided with a description of the study and a request for volunteer participants.  
• All interviews were conducted by a single researcher and took a semi-structured format. Data transcription, coding, and analysis was completed using the qualitative data analysis tool Dedoose. |
• Used STATcompiler to compare trends over time for family planning indicators, source, and reasons for discontinuation. |
| Knowledge and Perceptions of Practicing Radiology Resident Physicians within the United States Regarding the B Reader Program | • An electronic survey was designed on the basis of information from a focus group of a public health training cohort at the University of California at Berkeley. The electronic survey was distributed via email and results were collected using the Qualtrics Software (Qualtrics, Provo, UT) between and April 18, 2019 and May 9, 2019.  
• The survey included a 2-minute introductory video on the basic requirements of a B Reader and 12 multiple-choice questions that pertained to the national B reader program |
| Physician Management of Elevated Lead Levels Among Workers in California | • Mixed method approach. Incorporated both quantitative and qualitative questions into the survey to obtain a complete understanding of the current barriers to care for workers with elevated lead levels as well as how to best remedy those issues through legislation and physician education.  
• Contacted 321 physicians and after up to three follow-up contacts via mail, researchers received a total of 101 completed questionnaires that were eligible for inclusion in the study. |
| Maternal acculturation and child obesity in Asian Americans | • Analyzed public-use data from the 2013-2016 California Health Interview Survey to assess whether there is an association between maternal acculturation and obesity in Asian American children, and whether obesogenic behaviors mediate this relationship.  
• Used logistic regression to determine the odds of obesity and obesogenic behaviors associated with maternal nativity and time in the US. |
<p>| Non-High Density Lipoprotein Cholesterol Association with Metabolic Syndrome within Obese Adolescent Youth and Young Adults: Evaluation Using | • Secondary analysis was performed on obese individuals from 12 to 23 years-old from the National Health and Nutrition Examination Surveys 2003-2014 year cycles whom had fasting laboratory data for assessing all components of the International Diabetes Foundations (IDF) definition of MetS and non-HDL-C. |</p>
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<th>Study Title</th>
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<tr>
<td>NHANES 2003-2014 Year-Cycles.</td>
<td>Odds ratios (OR) were constructed using a quasibinomial logic regression for non-HDL-C cutoffs with outcome of metabolic syndrome. ROC and AUC were calculated for MetS criteria components and non-HDL-C cutoffs with outcome of MetS.</td>
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<td>Oral Health Needs Assessment of Pregnant Women/Mothers in Berkeley</td>
<td>Mixed methods. Descriptive analysis of anonymous and deidentified, uncoded data (N=57) collected by City of Berkeley Public Health Department through prenatal surveys was performed using Statistical Package for Social Sciences (SPSS 22.0). Logistic regression model was used to examine the predictors associated with dental visits among pregnant women/mothers in Berkeley. One African American focus group transcript was analyzed to identify themes and patterns of utilization of dental services among that population.</td>
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<tr>
<td>Investigation of potential factors in healthcare workers and evaluation behaviors after blood-borne pathogen exposure events</td>
<td>A case-control analytical study designed to compare follow up behaviors with characteristics of the employees initiating contact regarding an injury that may result in transmission of a bloodborne pathogen. The database used to track all contact made to the UCSF Needle Stick Hotline was reviewed and coded into six primary variables: job type, trainee status, campus to which the employee belongs, exposure type, exposure likelihood and follow-up behavior.</td>
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<tr>
<td>Predictors of High Multisystem Urgent and Emergency Care Utilization for High Risk San Francisco Population</td>
<td>Used the Coordinated Case Management System (CCMS), San Francisco County’s integrated data system, to perform a retrospective cohort analysis of the top 5% population (n=2140) during the 2017-18 fiscal year. Chi-squared analysis was used to determine group distinction and logistic regression with adjustment by gender and race/ethnicity was used to determine predictors of increased utilization.</td>
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<td>Identification of Sexual Minority Youth in Pediatric Primary Care Setting by EHR in a Large Integrated Health Care System</td>
<td>Electronic health record (EHR) data was analyzed for adolescents ages 12.5-18 years, with known birth-assigned sex, who were seen for a Well Check at one of the 52 outpatient pediatric or family medicine Kaiser Permanente Northern California facilities from January 1- December 31, 2016.</td>
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<tr>
<td>Socioeconomic Predictors of Stage at time of Diagnosis of Hepatocellular Carcinoma (HCC) in California</td>
<td>A complete case analysis that sought to evaluate the odds of being diagnosed at later stages (as opposed to the Local stage) of HCC given various socioeconomic qualities. The final study population incorporated in this analysis was derived from the California Cancer Registry (CCR). Conducted statistical analysis using using chi-square and multinomial logistic regression.</td>
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<td>Urban Hospital Closures and Healthcare Access: A Case Study of Richmond, CA</td>
<td>A case study. This was a part of an evaluation of the City of Richmond's Health in All Policies (HiAP) initiative, which strives to integrate considerations of health equity in all city government activities and policies. Analyzed current healthcare services provided by key providers in Richmond such as Kaiser Richmond, Lifelong Medical Center, Community Clinics, Planned Parenthood, Native American Health Center, Community clinic consortium and school-based health clinics.</td>
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<tr>
<td>Use and Usability of Patient Facing Digital Health Interventions Based on Sociodemographic Factors and a Proposal for Reaching Underserved Populations through a Novel Approach to Generate Patient Profiles</td>
<td>Systematic review of literature primarily sourced from PubMed was used to identify papers that focused on use, usability, or barriers to use of health information technology. Key informant interviews collected through semi-structured in-depth interviews using stakeholder-specific interview guides conducted with five experts over video conference from each of five stakeholder groups. The stakeholder groups include healthcare venture capitalists, developers/vendors, payers/employers, providers and patients.</td>
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| The Use of Technology to Prevent Public Health Disasters Before, During and After Hajj | Mixed method study. Qualitative and quantitative data were used to generate information on the topic and secondary sources such as archival research and government websites were used as the main source of data collection.  
Secondary sources provided data collected from surveys, observations, and case studies that focused on crowd management technologies and disease interventions such as infectious disease surveillance systems used in Hajj.  
Primary qualitative data was gathered from one interview with a physician who recently worked during Hajj season. |
|---|---|
| Vaping and Social Media | Used mixed method study uses cross-sectional data collected by tracking vaping hashtags on two social media platforms: Instagram and Twitter.  
Collected social media posts from two time periods: before September 2018 when the FDA launched its anti-vaping campaign and about six months after the campaign started. |

### Year 2018

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| Needs Assessment For Girls Health Champions | Girls Health Champions (GHC) is training adolescent girls in Mumbai as peer health educators and health leaders in 10 local schools.  
4-part curriculum to focus on nutrition, anemia, reproductive health, menstruation and mental health.  
qualitative needs assessment using focus groups to understand what health information girls already understand and what are the challenges faced |
| Using Google Trends for Public Health Research & Surveillance: Review & Critique of a Novel Method | Internet search queries offer a tremendous amount of data about uncensored human interests, curiosities, foibles, intended behaviors, true needs and serve as proxy measures for on sensitive and personal health-related topics, and can be compared or correlated with traditionally generated research data.  
evaluating the promise of Internet search big data analysis to study social and health behaviors typically dogged by problems of participant recruitment, selection and information biases, or stigmatization.  
This paper provides a survey of the Google-based public health landscape and assessment of the state-of-the-art reflected in publication trends as well as a critique of the normative challenges and ethics issues raised by Google Trends use for surveillance and research. |
| Improving Door-to-Antibiotic Time in Pediatric Oncology Patients with a Fever and Central Line | quality improvement of door-to-antibiotic time in pediatric oncology patients with a fever and central line who present to the Kaisers emergency room.  
A standardized protocol was implemented and evaluated, comparing baseline and post-implementation results (13-21 months later). |
| Promoting Effective Implementation of Social Determinants of Health Interventions in Clinical Settings: A Program Evaluation of the Roles Outside of Traditional Systems | program evaluation of the Roles Outside of Traditional Systems (ROOTS) program in seven clinics, each clinic has decided which social determinants of health (SDOH) and specific interventions it would focus on  
collect information around which resources clinics need as they implement their projects as well as assess providers’ perceptions on their perceived clinic capacity to address patients’ SDOH.  
assess what technical assistance challenges clinics face and gather feedback from the various webinars and in-person sessions for the ROOTS program. |
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<tr>
<td>Exploring pediatric resilience factors and their application in the Family Information and Navigation Desk (FIND) Platform</td>
<td>- qualitative assessment exploring protective resilience factors within children’s wider social environments and within their families in a standardized way in order to be integrated into their “Action Plan” profile page in the FIND Platform and consistently be accessible to all health providers they come in contact with (pediatricians, social workers, psychologists)</td>
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| Coccidioidomycosis - Case studies in inmate firefighters             | - identifying an ideal medical monitoring system to reduce incidence of coccidioidomycosis in inmate firefighters through strategic prevention and to provide recommendations for earlier suspicion/detection of the disease.  
- reviewing the medical records of 6 inmate firefighters from the 2017 Derrick fire who contracted coccidioidomycosis and make a collective case report to better describe the nature of the problem. |
| Adherence Challenges In Diabetes Management In School Settings       | - community assessment of routine diabetic management of school-aged children and adolescents in school settings in Brentwood Unified District  
- observations over six months with the help of the district nurse in order to establish a diabetic management routine and identify the management challenges that increase or decrease adherence  
- formulate recommendations based on the nurse’s perspective |
| Health Literacy Systems in the Safety Net: The Contextual Health Assessment of Social Stability (CHAOSS) Measure | - mixed methods study using the CHAOSS 18-item multiple choice questionnaire survey on health literacy and cognitive interviews  
- assessing patients’ perceptions of their health, medical care, social situation and support system. |
| Using a modified YPAR Curriculum to create a survey through a structured and informed process for an Oakland after-school program assessing student perceptions of issues concerning queer youth in high school | - modified process of Youth-led Participatory Action Research (YPAR) curriculum to create a survey that assess issues surrounding queer youth in high school in a local Oakland community organization which focuses on Violence Prevention  
- The organization’s after-school violence prevention program works with high school youth in building their capacity to address violence in their community. The ultimate goal of the project is to prevent violence towards queer and trans youth in Oakland High Schools by enhancing the organization’s needs assessment tool using YPAR. |
| Adolescent Childbearing & Migration: Youth and Provider Perspectives  | - focus groups and interviews in several communities in Fresno County, California, and Guanajuato, Mexico in young pregnant and/or post-partum women and health providers |
| Preventing Edible Cannabis Exposures in Young Children: Applying the Human Factors Analysis Classification System to California Poison Control System Data | - analyze CPCS data retrospectively, develop training for personnel within CPCS to improve the documentation quality of the circumstances surrounding each unintentional edible cannabis exposure in children  
- assessing human factors (errors, preconditions, supervisory, and organizational) leading to unintentional pediatric exposure to cannabis.  
- Developing interventions may work at the legislative, regulatory, public health, industry, and educational level to reduce the frequency and severity of these pediatric exposures |
| Sugar Sweetened Beverage Consumption in San Francisco Unified School District and the Potential of Taxing | - Nutrition surveys at middle and high schools within SFUSD assessing beverage consumption and weekly and daily consumption patterns.   
-  |
| **Insulin Use in Older Adults with Type 2 Diabetes: Changes to Treatment Over Time.** | • cross-sectional analysis of members of a large integrated healthcare delivery system in Northern California age 75 and older with type 2 diabetes.  
• After gathering cross-sectional data on insulin use, we performed a retrospective longitudinal cohort of patients who turned 75 years old between 2009-2013 with type 2 diabetes in order to study outcomes associated with changes in insulin use among different patient groups. |
| **Alcohol Use as a Moderator of the Relationship Between Perceived Neighborhood Disorder and Psychological Distress** | • survey of 1037 adults age 18 to 50 who presented to Highland Hospital Emergency Department in Oakland  
• In-person interviews and surveys about health and health behaviors using computer assisted personal interview (CAPI) techniques with tablets running the Qualtrics platform. |
| **Head injuries and head and spine surgeries increase risk of Streptococcus pneumoniae meningitis in adults** | • case-control study within the Kaiser Permanente Northern California patient population to evaluate the association of prior head injury (HI) or head or spine surgery (H/SS) with pneumococcal meningitis, between 2008 – 2017. A blinded chart review identified prior HI and H/SS and pneumococcal vaccination history. |
| **Understanding The State Of Oral Health In Rural And Sub-Urban Nepal** | • Survey to assess levels of understanding of causes of oral health problems among adults in rural and sub-urban villages in Nepal, as well as current oral health norms and practices, availability of resources, and tangible interventions/ solutions applicable to the oral health problems |
| **Chronic disease and cancer screening in an underserved community: Improving population health programming through medical assistant (MA) education and empowerment.** | • intervention aimed to increase MAs knowledge and self-efficacy regarding screening through education and empowerment, with a goal of improving chronic disease and cancer screening rates.  
• monthly education sessions to give MAs concrete tools on giving feedback, teaching, and patient education. Topics included vaccines, colorectal cancer, cervical cancer, breast cancer, hepatitis C, diabetes, and hypertension screening.  
• MA knowledge was assessed through pre-, post-, and final surveys, and clinic order rates were tracked over time using a population health database management system.  
• A post-intervention focus group was held to assess MAs’ perception of the program. |
| **Youth Civic Action Across the United States: Projects, Priorities, and Approaches** | • Survey assessing action civics projects using classroom-level de-identified data from Generation Citizen records in January 2018 provided by involved democracy coaches and/or classroom teachers.  
• Data included classes from spring 2012 through fall 2017 (S12-F17) semesters in schools located in six metropolitan regions of the USA. |
| **Pediatric Paralysis: Host Risk Factors and Incidence of Acute Flaccid Myelitis in a Fixed Population** | • evaluation of incidence data and epidemiological analysis of potential risk factors and outcomes on a retrospective cohort study at Kaiser Permanente Northern California (KPNC).  
• Incidence, demographics, pre-existing conditions, clinical features, lab/MRI results, treatment, outcomes and proposed polio risk factors were assessed.  
• This study provides more accurate incidence data than previous reports given the closed-population based design. Findings support previous reports of male predominance and prior medical history of asthma. Asian overrepresentation, September to December seasonality, and optimistic outcomes were unique to this study. |
<table>
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<tr>
<th>Transitions: The Impact of Declining Opioid Prescribing and Increasing Stewardship Efforts</th>
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<td>• study of 600 patients who have received OPRs in San Francisco</td>
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<td>• Data collected combined that from a detailed computer-assisted interview (CAPI), which provided a historical reconstruction of illicit substance use and overdose, with electronic chart extraction that detailed prescription of OPRs and other controlled substances, adherence to care, exposure to opioid stewardship measures, and opioid-related emergency department utilization from 2012 through 2017.</td>
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<td>• A nested cohort approach to evaluate associations between reduced or discontinued OPR dosage and the initiation of heroin or other illicit opioid use and overdose, patient interviews and chart extraction</td>
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<td><strong>Title</strong></td>
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<td>Assessing California’s Progress: The Prescription Opioid Overdose Epidemic</td>
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<td>• Policy review evaluating California’s progress in addressing the opioid epidemic</td>
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<td>• mixed methods approach, using strategic management practices of environmental scanning, elements of design thinking, and traditional concepts of policy analysis</td>
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<tr>
<td>• reviews how optimizing the Controlled-substances Utilization Review and Evaluation System (CURES), California’s prescription drug monitoring program (PDMP), as a preventive tool is the most important first step to counter the progressing opioid epidemic.</td>
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<td>The Resurgence Of Polio In Nigeria: What Went Wrong? A Policy Analysis</td>
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<td>Methodology</td>
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<tr>
<td>• Policy review, analyzing past and current immunization policies regarding policy process in Nigeria, including recommendations for policy change and implementation to ensure that the country will reclaim and maintain a polio-free status</td>
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<td>Exploring The Mental Health Of Latinx Medical Students: A Qualitative Study</td>
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<td>Methodology</td>
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<td>• Qualitative study, including focus groups and key informant</td>
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<td>• Interviews conducted at the Latino Medical Student Association (LMSA) West Regional Conference,</td>
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<td>Factors Associated with Adherence to Hydroxychloroquine in SLE Patients</td>
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<td>Methodology</td>
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<tr>
<td>• Quantitative study, retrospective cohort study using Kaiser Permanente Northern California (KPNC) data.</td>
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<td>• Medication adherence per medication possession ratio (MPR), patient demographics, socioeconomic status, comorbidities per Charlson Comorbidity Index, serum creatinine, eGFR, number of hospitalizations and outpatient rheumatology visits, and number of SLE-related prescriptions. Standard descriptive statistics and multivariable logistic regression were used for data analysis.</td>
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<td>A Special Supplemental Nutrition Program for Women, Infants, and Children Participation Trends for a Sample of Alameda County Cities: Berkeley, Fremont, Hayward, and Oakland</td>
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<tr>
<td>Methodology</td>
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<tr>
<td>• Mixed methods approach</td>
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<td>• secondary data analysis of WIC data for Alameda County through various sources, including the CDPH WIC Program Data Analysis, Research and Evaluation (DARE) Section.</td>
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<td>• Good report on the challenges faced when contacting state officials and stakeholders in pursuit of (in theory) publically available data</td>
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<td>Photovoice: Latino Migrant Stories</td>
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<tr>
<td>Methodology</td>
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<tr>
<td>• Qualitative study suing Photovoice methodology</td>
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<td>• in collaboration with the San Francisco Day Laborer Program (DLP) and the Women’s Collective (WC)</td>
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<td>• looking at the intersection of immigration, occupation and health</td>
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</table>
| An Analysis of U.S. Federal Policies and Administrative Actions on the Adoption and Implementation of Patient Reported Outcome Measurement: Jan. 2009 to 2017 | - policy analysis seeking to analyze recent policies’ effects on the healthcare IT ecosystem and their role in improving value, either through introducing cost-savings or through enhanced measuring and thus improving outcomes.  
- This analysis approached the problem of confusing and complex health IT policy over the past decade by blending formal policy analysis paradigms with interviews with key IT stakeholders |
| Addressing Racial Health Disparities Through Medical Education        | - Qualitative pilot study seeking to understand how issues of race and racism can be meaningfully integrated into a medical school curriculum in order to train physicians equipped to address racial health disparities.  
- Interviews with medical students using focus groups, semi-structured interviews with key informants who do racial consciousness trainings professionally, and participant-observation during classes.  
- data was collected, transcribed, coded to identify prominent themes and significant deviations. Themes were analyzed and synthesized. |
| Where is the Naloxone? Assessing Optimal Spatial Distribution of Pharmacy Dispensed Nonprescription Naloxone | - analysis using overdose death data from CDC database and census data from American Community Survey (ACS) and National Center for Health Statistics (NCHS) to define boundaries of California counties and to determine demographic characteristics per county.  
- using Quantum GIS (QGIS), Matlab for spatial data analysis of pharmacy locations. |
| An Analysis of Colon Cancer Screening Rates at MayView Community Health Center | - quantitative study exploring whether demographic characteristics could predict likelihood of completing recommended colon cancer screenings.  
- 874 patients at MayView Community Health Center  
- Univariate and multivariate logistic regressions |
| Lessons From The Island: Shared leadership for health in a community experiencing homelessness | - Qualitative study using oral history interviewing and observations from daily life  
- seventeen interviews conducted along riverbanks, at park benches, inside tents, at cafes, and even while walking or bicycling along river trails, using recording device  
- questions about experiences in traditional healthcare settings as well as health challenges while homeless  
- audio recordings of nine interviews were transcribed and analyzed |
| Impact Evaluation of an Intervention on Data Quality Collection and Effectiveness of the Medical Supervision Program | - quantitative data analysis of before/after training data collection |
| An Analysis of Vaccination Policy in California | - policy analysis to evaluate the impact of AB 2109 and SB 277 on childhood immunization and exemption rates in California.  
- secondary analysis of data from CA Department of Public Health (CDPH) kindergarten immunization annual reports.  
- County-level census data from the 2011-2015 American Community Survey 5-Year Estimates, and from the 2010 United States Census Bureau.  
- key informant interviews with people instrumental to the development, implementation, or enforcement of these policies about participant’s role |
| The Effect of Border Proximity on the Relationship between Acculturation and Mental Health Outcomes in Mexican-Origin Populations | • quantitative study nested in the U.S. Mexico Study of Alcohol and Related Conditions (UMSARC) (Borges et al., 2015; Cherpitel et al., 2015), of populations living along the border addressing alcohol use, using simultaneous data collection on both sides of the border. |

### Year 2016

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| **"It’s Not Just Traditional Care, It’s Loving Care": A study of best practices used in organizing a cultural, traditional, healing clinic** | • mixed methods, drawing on elements of community-based participatory research, community assets-oriented assessment, and exploratory data analysis through inductive methods  
• “ground-up” methodology, using stories embedded in collected data to uncover themes and theories |
| Understanding and improving communication between community clinical providers and the Berkeley Public Health Division: A quality improvement project with the Berkeley Public Health Division | • Mixed methods  
• Quantitative: survey on a Qualtrics platform distributed to clinical providers  
• Qualitative: semi-structured interviews with staff members at the BPHD |
| Trachoma Elimination Strategies in Rural Ethiopia | • devise an improved means of grading trachomatous scarring, based on the original WHO trachoma grading schema  
• Ranking Conjunctival Scarring: Assessing internal and external validity, using photos of patients in Ethiopia |
| The Effect Of Breast Density Notification | • Data analysis with Northern California data from Kaiser Division of Research (DOR) and the Breast Cancer Tracking System (BCTS)  
• retrospective cohort study with quantitative analysis of a four-year period to calculate changes in screening practices (two-year period before legislation from April 2011 to March 2013 was compared to the two-year period post-legislation from April 2013 to March 2015) |
| Dissecting and Streamlining the Medical Record Acquisition Process in Death Investigation Systems | • needs assessment survey with the primary goal of investigating the medical record acquisition procedures at MDI systems around the nation, particularly surrounding the impact EMR has had on medical record acquisition.  
• examine whether and how current death investigators see their work fitting into the larger sphere of public health and safety.  
• mixed methods approach |
| Psychosocial Determinants and Effects of Flavored Smokeless Tobacco Use Among Rural Adolescent Males | • semi-structured, in-depth interviews exploring of rural adolescent male perceptions regarding flavored smokeless tobacco, with 55 participants from high schools in California. |
| Use Of Hemoglobin A1c To Predict Risk For Type 2 Diabetes Among Children And Adolescents | • retrospective cohort study of Kaiser Permanente Northern California (KPNC) pediatric members (n=3,675 children)  
• including inpatient and outpatient ICD-9 diagnosis codes, labs, pharmacies, and anthropometric measurements. |
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| High Deductible Insurance Under the Affordable Care Act and Patient Engagement in Type 2 Diabetes | ● retrospective cohort study using claims and medical chart information from Kaiser Permanente Northern California (KPNC).  
● Selected patients compared before and after enrollment into individual KPNC plans for the year of 2014 under the Bronze, Silver Plus and Silver plan types. |
| Oral Health Indicators and Associated Factors Among Older Homeless Adults: Results from the HOPE HOME Study | ● longitudinal study of life course events, geriatric conditions, and their associations with health-related outcomes among older homeless adults.  
● From July 2013 to June 2014, we enrolled a population-based sample 83 of 350 homeless adults aged 50 years and older from all overnight homeless shelters in Oakland. |
| Economic feasibility of a clinic and hospital based intervention to improve pain self-efficacy in traumatic lower-limb amputees | ● mixed-methods study including analysis of economic as well as operational utility via both quantitative and qualitative methods.  
● Survey and key-informant interviews |
| Low-Income Minority Population Access to Mental Health Services: Barriers and Gaps | ● Policy review |
| Identifying The Risk And Protective Factors Of Emotional Wellbeing Of Minority Students During The College Transition | ● Mixed methods analysis providing recommendations for Youth Creating Change (YCC), a non-profit organization dedicated to helping disadvantaged youth develop life skills and achieve critical milestones on their way to independence and adulthood through Saturday workshops.  
● Semi-structured interviews with Community College SF students and key informants. |
| Emergency Preparedness in the Kidney Transplant Community: A qualitative assessment of patients and providers and preparation of a survey instrument to study emergency preparedness | ● Qualitative analysis, key informant interviews  
● Bay Area patients of the transplant nephrology clinic at UCSF Medical Center and the General Nephrology clinic at the San Francisco General Hospital |
| Superutilizers in the Safety Net: Achieving Success In Complex Care Management | ● Health Literacy Systems in the Safety Net (HEALSS) study based at the UCSF Department of Anthropology, History and Social Medicine,  
● using an ethnographic and interview-based approach to analyze the functionality and challenges of Complex Care Management (CCM) programs at San Francisco General Hospital and Highland Hospital, with a specific focus on characteristics in the safety net that promote or inhibit patient engagement.  
● 31 participants were surveyed at SFGH and 29 at Highland Hospital using convenience sampling, either when patients were in clinic for an appointment or through referral from CCM clinic providers and staff. |
| The WHO Guidelines for the Management of Latent Tuberculosis Infection and National Policies of Middle and High Income Countries. | ● Policy review and comparison of existing national policies |
| Prognosis Communication with Disabled Elders | ● develop a model for communicating prognostic information |
- qualitative analysis of interviews with participants recruited through UCSF Housecalls, On Lok Lifeways, and Institute on Aging in San Francisco, CA as well as the Over 60 Clinic in Berkeley, CA.

### Year 2015

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<tr>
<th>Title</th>
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| Impact of variations on EMS policies and procedures in Out-of-hospital cardiac arrest outcomes (2015) | ● mixed methods research  
  ○ Quantitative Analysis of Kaisers dataset  
  ○ Interviews with key stakeholders  
  ○ Using GPS data |
| Informing a Resident Physician Nutrition Counseling Smartphone Application-Based Education Module: A Qualitative Analysis of Expert Nutritionist Opinion (2015) | ● Qualitative analysis with nutritionists  
  ● Development and testing of online application |
| Assessment of the factors that contribute to the skewed distribution of doctor’s specialties and geography in Japan and globally (2015) | ● Policy review |
| Health Services Use among Medicaid Managed Care Enrollees Pre and Post ACA Implementation (2015) | ● Extensive quantitative analysis of Kaisers dataset |
  ● Interviews with key informants |
| The Role of Socioeconomic Origin on Student Service Patterns (2015) | ● Nationwide quantitative online survey of medical students |
  ● Questionnaire at Native American Health Centers in the Bay Area |
| Factors Associated with Hepatitis B Knowledge Among Vietnamese Americans (2015) | ● Quantitative analysis of a large dataset of surveys from several thousand participants in Bay Area and DC. |
| Needs Assessment of the California Juvenile Justice System: Perspectives From Key Informant Interviews (2015) | ● Interviews with key informants |
| Meeting Patient Needs in an Integrated Care Model: A Study of High-Utilizers of Primary Care Services at Community Health Center Ole, Napa (2015) | ● Analysis of EHR data for clinic |
  ○ Analyzed survey data  
  ○ Interviews with key informants |
<p>| Assessment of Economic Status in Trauma Registries: A New Algorithm for Generating Population-Specific | ● Quantitative analysis of a trauma dataset and developing models |</p>
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| Clustering-Based Models of Economic Status for Low-Resource Settings (2015) | ● Key informant interviews  
● Process mapping of EHR                                                                 |
| Utilizing Health Information Technology for Quality Improvement at the Alta Bates Summit Diabetes Center (2015) |                                                                                               |
| Needs Assessment: Food security and food distribution planning in Cambodian and Karen refugees (2014) | ● in collaboration with Asian Health Services in Oakland  
● mixed methods survey among Karen and Cambodian populations in Oakland  
● Descriptive statistics                                                                 |
| The convening authority: Using the multiple streams model to explore the opening of policy windows to effect change in military sexual assault (2014) | ● Policy review                                                                                  |
| The Impact Of Permanent Supportive Housing On Homeless Adults With Diabetes: Healthcare Utilization, Health Literacy And Diabetes Management (2014) | ● mixed methods survey in collaboration with the San Francisco Department of Public Health and its Direct Access to Housing (DAH) Program  
● Descriptive statistics, Chi-Square  
● The provision of DAH housing resulted in fewer ED visits and hospital days among formerly homeless adults with diabetes. Using patterns of healthcare utilization before and after housing, this study shows that individuals with diabetes benefit from housing, which represents cost savings for hospitals and insurers. |
| Understanding the Association Between Working Equine Health and Human Health in Rural Nicaragua (2014) | ● cross-sectional quantitative survey of convenience-sampled animal owners at mobile clinic, collecting demographics, standard of living markers, access to health services, perceptions of working equine value and human personal health-related quality of life measures, anthropometric growth data on children, grading scale for measuring working equine.  
● Results: socioeconomic status, wealth index and education as measures are insufficient measures to predict working equine health. |
| A Qualitative Study of Barriers Preventing Pregnant Women From Obtaining Care at Health Care Facilities in Kembata Timbaro Zone, Timbaro District, Ethiopia (2014) | ● Qualitative Study  
● In collaboration with WEEMA  
● Study assesses the barriers that exist for pregnant women seeking care in rural Ethiopia, and reveal intervention points that must be explored and considered for implementation. |
● needs assessment survey collecting baseline knowledge and barriers to seeking eye care for diabetic adults, in order to plan the new eye clinic |
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| Nutrition Education And Dietary Counseling Practices In Internal Medicine Residency Training. (2014) | ● quantitative, nation-wide online cross-sectional survey, completed by Internal Medicine program directors (n=40) and residents (n=133).  
● Multimodal nutrition education in IM residency and better resident dietary habits are associated with higher frequency of dietary counseling for patients. Barriers such as such lack of expertise and lack of personnel, faculty and interest in patient counseling need to be addressed. |
| Transitioning the San Francisco Health Care Security Ordinance Under the Affordable Care Act (2014) | ● Policy analysis  
● examines how San Francisco will adjust its Health Care Security Ordinance, a policy designed to provide health care access to the city’s uninsured and undocumented residents, in light of the national transition to the Affordable Care Act. The city aimed to maintain affordable coverage and close to universal health care access for all San Franciscans. A focus on the context, process, actors, and content that make up the policy triangle model provides a way to analyze the complexities of perspectives, debates, and legislation in the policy process. |
| Concussion Knowledge Survey for Athletic Coaches and Instructors: A Pilot Study (2014) | ● pilot survey to determine concussion knowledge before and after an educational module.  
● target population: athletic coaches and physical education instructors, attending the ACT taught by CaCC  
● sample size completing all three surveys, pre-test, post-test, and follow up surveys, was smaller than anticipated. (n=10), descriptive statistics |
| Intervening at the Intersection: A Program Evaluation of Bay Area Girls Rock Camp (2014) | ● assisting BAGRC in Oakland with program evaluation and quality improvement  
● mixed methods program evaluation comprised of survey administration and focus groups from Girls Rock Afterschool Program (GRASP) and the Girls Rock Summer Camp, using Rosenberg self-esteem scale (RSES) and Brief sense of community scale (BSCS), n=25 |
| Assessing hospital re-admission for traumatic injuries after intervention by the SF Trauma Recovery center (2014) | ● quantitative data analysis of existing data set at Trauma Recovery Center (TRC) at San Francisco General  
● This study compares younger (under 30) and older (over 30) patients regarding race, gender, initial injury mechanism, and need for hospital admission, as well as incidence of reinjury and all-cause mortality over 1-, 5- and 10-year periods. Intervention group (TRC versus usual care) was also evaluated as a predictor of reinjury and mortality. |
| Disparities in utilization of surgical treatment for medically refractory epilepsy among African Americans, Asian/Pacific Islanders and persons with limited English proficiency: A first-hand account from those affected. (2014) | ● In collaboration with Bay Area clinics, in-person and phone interviews  
● phone interview instrument consisting of both close- and open-ended questions asking patients about demographics, personal epilepsy history, health insurance status, general health, and quality of care.(n=18)  
● descriptive statistics |
A Data Quality Assessment of Primary Care Records in Haiti’s Multi-Site Electronic Medical Record System (2014)

- assessing baseline data quality for primary care records in iSanté across the system and across sites, with focus on TB indicators.
- Overall, data quality appeared to be strong for accuracy but moderate to low for completeness. Reasons for underreporting, however, are likely complex, reflecting the reality of health care delivery in low-resource settings.

Building Community and Empowerment Among San Francisco Seniors: Connection for Health Aging Workshops (2014)

- Qualitative program evaluation using semi-structured interviews.
- Conclusion: Community Living Campaign is a well-respected organization with a strong mission to create grassroots community change. Thematic analysis shows that the CHA workshops are successfully helping increase awareness of critical issues affecting seniors, encourages participants to feel more empowered to make health care decisions, promotes opportunities for social connection, and is a foundation for creating stronger communities.


- Multi-prong qualitative study
- Key informant interviews with experts in Geriatrics, Nutrition, and Public Health about geriatric nutrition.
- Community focus group at North Berkeley Senior Center
- Experiential observations of users of public nutrition programs (San Carlos Mobile Produce Market, Millbrae Senior Brown Bag distribution sites)

Evaluation of the “Design Sprint” – a Design Thinking Pilot in the Castlemont Best Babies Zone in Oakland (2014)

- Human-centered design (HCD) or “design thinking” as a promising approach to develop programs that would begin to address social determinants of health.
- 12-week design sprint including the design thinking phases of Understand and Ideate

Year 2013

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<tr>
<td>Barriers to Mental Healthcare Utilization in Latino Immigrant Day Laborers (2013)</td>
<td>in collaboration with the Multicultural Institute in Berkeley, a non-profit organization which links Day Laborers with employers</td>
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<tr>
<td></td>
<td>quantitative survey with 50 participants</td>
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<td>Impact Evaluation: Rwanda Health Enterprise Architecture (RHEA) eHealth Implementation (2013)</td>
<td>designing an impact evaluation to evaluate the impact of technology on maternal and child health in Rwanda.</td>
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<td>target audience for the impact evaluation is the Rwandan MOH</td>
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  • Data from the Institute of Health Metrics and Evaluation Global Burden of Disease Project, 2010.  
  • Data was extracted and analyzed using the program R. Population estimates, population weights, and age-adjusted rates for prostate cancer death, DALYs, YLLs and YLDs, and life expectancy were determined for each region, age group and year |
| Flammability Standards without Flame Retardants. A Policy Analysis (2013) | • examines the original California flammability standard, known as Technical Bulletin 117 (TB 117) and the problems with this standard from a health and fire safety prospective.  
  • reviews the arguments in favor of the standard and flame retardants in general, along with potential biases and questionable practices on the part of flame retardant manufacturers.  
  • explores different alternative standards. |
| Prescription Drug Overdose in Black & White: paradoxes of public health and the news (2013) | • media analysis to evaluate whether the public gets an accurate representation of the problem of fatal prescription drug overdose by reading the news. Includes analysis of how news stories inform the public with useful facts, and examines variables in news stories that influence the public health message delivered |
| Aging and Discrimination: The Mental, Social, and Physical Health of Bay Area South Asian Elderly Immigrants. (2013) | • multi-method study to explore whether South Asian .5-generation immigrants experience discrimination post-September 11th, 2001 and how they perceive this affects their health.  
  • In collaboration with two East Bay Sikh Temples, a South Asian Community Center in Silicon Valley  
  • Qualitative interviews of community organizers and immigrants  
  • proposes public health interventions, and lists future direction for research. |
| Addressing complementary and alternative medicine use and medication adherence among Street Level Health Project allopathic clinic patients: A survey-based needs assessment. (2013) | • mixed method study in collaboration with “Street Level Health Project ([SLHP]) using their designed questionnaire  
  • needs assessment survey,  
  • data analysis of survey results, recommendations and identifying potential interventions based on the survey results, survey design guidelines for future survey |
| Resident Physician Knowledge of Health Reform and Career Impact (2013) | • online survey for medical residents, using the Qualtrics survey software, for 18 residency programs in the greater San Francisco Area and Sacramento.  
  • collecting demographic information, knowledge assessment questions, inquiry about intended practice, comfort with health reform, prior health policy education, and preferred educational method of health care policy and reform.  
  • IRB exempt status, survey completely anonymous with no identifying data collection.  
  • Primarily descriptive statistics |
### Disparities in the Use of Surgery Among Minority Patients with Temporal Lobe Epilepsy (2013)

- Retrospective Chart Review, single unmatched retrospective cohort study
- Examine whether race/ethnicity and limited English proficiency (LEP) are associated with the following health disparities:
  1. Underutilization of anterior temporal lobectomy (ATL) as a treatment for medically refractory epilepsy in the setting of MTS (Logistic regression and generalized linear models);
  2. Longer delays from the time of diagnostic work-up to the date of ATL (Survival models).
- Multivariate Logistic Regression and Generalized Linear Models

### Do homes make children sick? The case of acute respiratory illness in Myanmar.

- Quantitative analysis of existing data set from Population Services International (PSI)
- Questions: Incidence of ARI for children under age 5, statistically significant difference in incidence rates between north and south townships?

### Year 2012

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| The Role of Wildlife in Human Nutrition in Central Africa (2012)      | ● Cross-sectional household survey in Cameroon, cluster sampling by village (20 villages with 527 household interviews), use of survey instrument student had piloted in 2006  
  ● Surveys conducted by 8 Cameroonian grad students in 2007  
  ● Descriptive statistics |
  o Comparing children with no insurance, Medical/healthy Families/ or private insurance  
  o Multivariate analysis adjusting for demographics |
| Volunteering By Older Americans: Findings from the Healthy Aging Network Walking Study (2012) | ● Data from Healthy aging network (HAN) walking study (PI: UCB Professor Satriano)  
  ● Interviews with 884 participants  
  ● Most important variables assessed influence by volunteer work: walking, caregiving, depression, education, gender&race, social ties |
| Understanding the Interface Between Surgery and Global Public Health: A Case Study of Inguinal Hernia in Ghana (2012) | ● Extensive literature review on current dialogues in Global Surgery, definitions, priorities  
  ● Targeting a Priority 1 condition: Inguinal hernia in Ghana  
  o Scope of problem, modeling extent and surgical capacity in Ghana using US NHANES data, resulting in projected backlog of 2.2 million surgeries over 10 years  
  o Developing innovative solutions for low tech surgery (mosquito net mesh – Indian example; COSECSA from South Africa example; Humanitarian Hernia Surgery like British ‘Operation Hernia’)  
  ● Very little data is presented on capacity of Ghana health system |
<table>
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<tr>
<th>Study Title</th>
<th>Methods/Findings</th>
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| Fast Food at UCSF (2012)                                                   | Landscape analysis on eating options at UCSF Parnassus Medical Campus, mixed methods  
  ● Cross sectional study with convenience sample, 26 questions administered on ipad  
  ● 6 Semi-structured interviews with key informants  
  ● Ongoing data collections since 03/2012                                                                                   |
| Health Outcomes Related to Tobacco Use in Patients with Tuberculosis in Santa Clara County (2012) | Collaboration with Santa Clara County PHD  
  ● Chart review of suspected TB patients in 2009 and 2010, identification of patients with confirmed TB (n=250)  
  ● Retrospective population based cross-sectional study, outcome variables: demographics, length and extent of tobacco use, other exposures (foreign travel), homelessness, alcohol and other risk factors  
  ● Univariate and multivariate logistic regression                                                                 |
| Easy as 1, 2, 3: Population Specific Strategies to Lower the Barriers to Valley Care Enrollment in the Santa Clara Valley Health and Hospital System (2012) | Data collected from Valley Care database, analyzing financial assets of applicants to determine eligibility  
  ● Tool: Design thinking Framework (Empathize, define, ideate, prototype, test)  
  ● During 15 visits of 4 hours each by student, office procedures were observed; later semi-structured interviews (n~50) with enrollees and counselors and potential enrollees  
  ● Development of materials for enrollee intake (nice folder for potential enrollees to assemble necessary documentation; also a pocket guide), streamlining process, budget calculations for implementation |
  ● Chart review  
  ● Identifying primary health providers for diabetic patients  
  ● Preparing diabetic patient list (n=47 patients) for the primary health providers to facilitate tracking patients after missed apt etc.  
  ● Evaluating the disease registry process, including interviews with providers and strategies for financial sustainability of the registry  
  ● Preparing results and recommendations in video format for involved providers                                                                                           |
| The Role of Local Policy in Creating Healthy Good Zones Around Schools: An Analysis of Issues and Opportunities (2012) | Developing a causality framework,  
  ● assessing the role of (local) policy,  
  ● extrinsic issues and alternative policies  
  ● serving size, availability of unhealthy food  
  ● conclusions: current policy environment, the role of advocacy                                                                                                                |
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| Accountable Care Organizations in the American Health Reform 2010:   | ● Policy analysis, gathering information on American Health Care Reform and examen implications for ACPs/ Medical Shared Savings Program in Japan  
| Its Challenge and Implications for Japan (2011)                     | ● Key informant interviews in California, Washington DC, and Japan  
| Can Mindfulness Meditation Help Prevent Post-Traumatic Stress        | ● Secondary data analysis using data from The Heart and Soul Study from the SF Veterans Administration  
| Disorder? (2011)                                                    | ● Data collected in 2000-2010, n=1024 followed for psychological factors and association with cardiovascular events after completing mindfulness meditation intervention  
|                                                                      | ● Using validated Hospital Anxiety and Depression Scale  
| Program Evaluation of the Health Care for Homeless Veterans Program  | ● Initially planned study to evaluate program effect at improving housing proved impossible to implement  
| for the San Francisco VA Medical Center Downtown Clinic (2011)       | ● Instead review of literature on homeless housing, develop best practices, additionally compilation of summary data on the program, costs and detailed recommendations for modifications  
| Use of Incentives for Behavior Change in Environmental Health        | ● Literature review and key informant interviews  
| Interventions: Lessons for Improved Cookstove Dissemination (2011)   |  
| Restoring Justice in Public Health: A proposal for preventing youth  | ● Literature review  
| violence (2011)                                                     | ● Action plan to bring Family Group Conferencing to juvenile justice in Alabama  
|                                                                      | ● Planning concept for program, including budget for 138 FGC  
| Continuing Care for Patients for Alcohol and Other Drug Disorders   | ● Collaboration with Kaiser’ Division of Research  
| (2011)                                                             | ● 18 key informant interviews for regional data and online provider survey (n=73) on knowledge of available resources, attitudes of working with AOD patients, barriers and cost savings  
| Evaluation of a Substance Abuse, HIV and Hepatitis Prevention       | ● Mixed method outcome evaluation of Native Voices (prevention organization of urban American Indians in the SF Bay Area)  
| Initiative for Urban Native Americans: The Native Vision Program     | ● N=100 youth on 4-day retreat, outcome measures: knowledge, risk perception, ethnic identity, sexual risk behavior - using scales and items from National Minority Substance Abuse Initiatives Instrumentations (SAMHSA) and qualitative interviews  
| (2011)                                                             | ● Also: evaluating the Gathering of Nations Curriculum  
| The Nutrition Transition in Rural Bolivia: Addressing Diabetes and  | ● Partnering with local community organization, assess nutritional status in rural community, barriers to healthy eating, train health workers to promote improved nutrition  
| Obesity in the Context of Food Insecurity (2011)                    | ● Health screenings (obesity, glucose levels, stunting, blood pressure, eating habits) and focus groups |
Shifting the Paradigm of Emergency Care in Developing Countries: The Need for Community-Health Worker Administered Emergency Services in Fort Liberte, Haiti (2011)

- Medical record review to assess burden of emergency disease, and community survey to assess barriers to care seeking
- Location: Fort Liberte Hospital Haiti, 2000 medical records reviewed from 2009-2010, community survey in 50 households
- DALY framework for analysis

The Ashland Youth Center Health and Wellness Center. A Youth-led collaborative project (2011)

- Center developed and run by Clinica de la Raza and Alameda County
- Project aimed to community and youth needs assessment, strategic planning of vision, mission and outcomes/ indicators for center, conduct inventory of existing services, recruitment and training of youth advisors for center
- Interview process of selected youth, developing model for replicable youth leadership panel,
- Good example for how project focus shifted and for initially difficult and then improving relations with the collaborating agency

Safer e-mining: Situational Analyses and recommendations for tackling the electronic waste recycling issues, globally and locally (2011)

- Developing educational toolkit to train workers how to safeguard their health
- Collaboration with Silicon Valley Toxics coalition in San Jose
- Situational analysis methodology globally (lit review, interviews with experts) and locally (visiting e-waste facility in CA, e-waste drop-off centers, interview local experts and NGOs as well as local stakeholders), exposure assessment
- Deliverables: an educational video, poster, manual for workers,

Facebook, Seniors, activity and health. Can social networking empower frail elders? (2011)

- Part 1: detailed Literature review,
- Part 2: Setting up a pilot with North Berkeley Senior Center and develop a provider webpage for them
  - Recruit 20-30 seniors
  - Baseline survey, teach use of Facebook, follow-up survey after 6 weeks
  - Evaluate use of provider’s page and participants use of their FB page to connect with provider and each other
- Part 3: Proposal for a next step for a Norwegian setting
- Good example of IRB and MoU process with collaborating organization

The Nutrition Transition in Rural Bolivia: Addressing Diabetes and Obesity in the Context of Food Insecurity (2011)

- Partnering with local community organization, assess nutritional status in rural community, barriers to healthy eating, train health workers to promote improved nutrition
- Health screenings (obesity, glucose levels, stunting, blood pressure, eating habits) and focus groups

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<tbody>
<tr>
<td>An Ethnographic Study of Latino Children’s Dental Health in Oakland/Hayward CA (2010)</td>
<td>Ethnography studying 21 Latino families recruited at Clinica De la Raza, Surveying parents and children on breast feeding, eating and sleeping habits, oral hygiene, living conditions, dental care</td>
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| Housing as a Health Intervention for Homeless People Living With AIDS: A Health Care Utilization and Cost Analysis in SF (2010) | - Identified 69 homeless PLWA by linking registries from SFDPH  
- Determining healthcare visits, hospital stays etc for 24 months before and after entrance into housing program |
| The Utility of Incorporating Religious Leaders into Disaster Mental Health Preparedness, Response, and Recovery (2010)    | - Very detailed literature review  
- Qualitative interviews with 5 religious leaders in New Orleans, despite massive recruitment efforts through church listservs, snowballing etc. – conducted over telephone, recordings, transcriptions |
- Retrospective cohort study using data from Santa Rosa Memorial Hospital 2004-2009, n=279 |
| Geriatrics for Family Caregivers: an Online Education Pilot (2010) | - Collaboration with caring.com website  
- Development of online case studies as blogs in narrative format (case, challenge, solution),  
- after 6 months online preliminary analysis of user experience - interviews of 4 site users (care givers for dementia) |
| Sexual Violence and Accountability (2010) | - Developing the Sexual Violence and Accountability project with the Human Rights Center  
- Review of barriers to accountability in 5 countries: Kenya, DRCongo, Colombia, Kashmir, Sudan  
- 20 interviews with victims/first responders in the Bay Area, followed by pilot in Kenya, with 50 informants there |
| Improving Quality of Primary Care for Low Income Minority Patients: Current Perspectives on Medical Home Policy (2010) | - Policy review |
| Barriers to Healthcare Utilization in Latino Immigrant Day Laborers (2010) | - Convenience sample of 50 day laborers in 2 Bay Area cities (with Multicultural Institute in Berkeley)  
- 30 item questionnaire, previously validated on health care utilization, barriers, immigration status, demographics  
- Attached are questionnaire and CHR forms (useful sample) |
| The Health Impact of the Deficit Reduction Act (2010)    | - Monte Carlo simulation and Markov structure projecting costs for future pregnancies  
- 2 page self-assessment states: Plans to compare utilization of FP clinics 18 months before and after documentation |
<p>| Risk Perceptions Around Walking and Biking to School | - developed a framework to understand risk perceptions in a comparative analysis (risk assessment model) |</p>
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| Transportation self-efficacy for older adults, related health outcomes, and the role of social networks (2009) | ● focus group and survey (n=41) in convenience sample from North Berkeley Senior Center  
● Statistical analysis: frequencies, t-test, regression to measure factors influencing transportation self-efficacy and health outcomes  
● Detailed self-designed questionnaire |
| Injury Patterns and Assessment of Effectiveness in Pre-Hospital Interventions in Uganda (2009) | ● UCSF-Uganda collaboration, IRB approved  
● PART 1:  
  ○ Prospective cross-sectional study  
  ○ database for Kampala, dataset from 2007  
  ○ very short result section, mainly frequencies (male/female, type of injury)  
● PART 2:  
  ○ Prospective cohort study  
  ○ Developing first-aid curriculum, first responder training  
  ○ Knowledge baseline of trainees before training, compared to after training in short, self-developed survey  
  ○ short analysis, frequencies |
● Methods:  
  ○ qualitative interviews; transcribed and coded. Post-interview journaling by interviewer.  
  ○ County in Northern California with 4 volunteer and 1 Medicare-certified hospice  
  ○ interviews at all 5 hospices with directors and key informants  
  ○ first round of analysis to extract and sort information, second round re-analyzed per grounded theory |
| Microbiological Evaluation of a Three Week Hygiene Education and Hand Washing Intervention Among School Children in an Urban Slum Setting in Mumbai, India (2009) | ● Had to come up with new project in Mumbai after fire destroyed infrastructure for first study (product survey of water treatment products)  
● With PSI Mumbai, pilot hygiene training for school children, giving out soap, to increase hand washing, n=29  
● Result reported on tested hand rinse cultures |
| Clinically Significant Trauma Symptoms in San Jose-Based Cambodian Khmer Refugees Interested in Meditation (2009) | ● planned as prospective cohort study, but later altered since consistent follow-up proved impossible, no control group established  
● weekly course for 12 weeks  
● cohort recruited from UNITED Khmer Krom Temple in San Jose, N=13  
● baseline questionnaire (PTSD checklist and others, all validated)  
● detailed analysis of demographics, PTSD subscales, correlations, reliability, but small sample size |
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| Disparities in Referral for Liver Transplantation Among African      | ● detailed literature review on process and disparity in referral system for organ transplant in US  
| Americans: An Update and Public Health Approach to Fixing the         | ● based on this, developing a public health approach to improving referral for liver transplants for African Americans (planning ecological framework for interventions following recommendations in the literature)  
| “Referral” Speed Bump (2009)                                         |                                                                                                                                                                                                         |
| Community Out-of-School Promotion of Healthy Norms in Children (2009)| ● analyzes data after school programs in Alameda County to exam program for learning healthy norms (4/5th graders)  
|                                                                      | ● 47-item questionnaire from Kansas State Community Health institute measuring self-efficacy for eating habits, physical activity for children and their families  
|                                                                      | ● Analysis of demographic and socio-economic variables                                                                                                                                                   |
| Planning a Malaria Abatement Project in Rural Kenya: The Matitbabu   | ● Outlines plan for 3 year project to improve malaria therapy provision and use of insecticide treated bednets, staff and community education, referral of pregnant women to treatment  
| Foundation Malaria Initiative (2009)                                 | ● Baseline assessment of existing malaria prevention and its reach was performed earlier  
|                                                                      | ● Proposal includes objectives (85% U5 children with treatment and bednets, behavior change communication) and strategies.  
|                                                                      | ● visited 11 of 15 district facilities in Kenya and conducted needs assessment, 270 questionnaires to clients                                                                                       |
| Mexico City Barriers to Accessing Abortion Services in the Public     | ● conduct and analyze qualitative interviews for policy recommendations  
| Sector and Policy Recommendations (2009)                             | ● extensive literature review  
|                                                                      | ● 11 key informant interviews in Mexico City and Morelos  
|                                                                      | ● Results broken into sections based on findings (barriers, cost, patient autonomy, providers, discrimination by medical staff etc), recommendations |
| ASHA Assist: A Mobile Phone Based Teaching Tool for Community Health   | ● Randomized cluster controlled pilot study to gather preliminary data to assess if intervention has impact (acceptability, feasibility, improved knowledge) to warrant larger trial in rural villages  
| Workers in Rural India (2009)                                        | ● Randomized into 5 groups (1 control, 4 interventions)  
|                                                                      | ● Measure before and after intervention: knowledge of anemia and corresponding iron intake, birth preparedness, client satisfaction  
|                                                                      | ● Self developed survey instruments, first version modified after interviews with pregnant women  
|                                                                      | ● Study will be conducted 09/2009 (in the future, after MPH completion)                                                                                                                                   |
| Quantitative Assessment of Delay in Cataract Surgery Uptake in        | ● Gender or degree of impairment influencing delay?  
| Eastern Nepal and Bordering India (2009)                             | ● Cross sectional study  
|                                                                      | ● Questionnaire with 14 items plus demographics, revised after piloting on 40 people, final sample n=447  
|                                                                      | ● Statistics: multivariate regression                                                                                                                                                                    |
| Considerations for Effective Hospice Outreach: Addressing Disparities  | ● 2 Focus groups with hospice staff (n=4)and community members (n=7)  
| in Hospice Care (2009)                                               | ● Transcripts, coding, Atlas.ti  
|                                                                      | ● Results: identifying 20 different concepts                                                                                                                                                            |
INTERDISCIPLINARY MPH PROJECT TITLES, AUTHORS AND YEARS

2003-2008

2008


Vulnerabilities to HIV Seroconversion Among Biologically Female and Male-to-Female Transgender Prostitutes in San Francisco: A Qualitative Analysis (2008)

Needs Assessment for Pediatric Services in Native American Populations of Northern California Relative to the Scope of Services of Shriners Hospitals for Children Northern California (2008)


Sociodemographic Predictors of Prostate Cancer Risk Category at Diagnosis—Unique Patterns in Those With Significant and Insignificant Disease (2008)

From Features to Functions: A discourse analysis of physicians’ communication practices in colorectal cancer screening discussion (2008)

A Public Health Approach to Addressing Adolescent Mental Health in California (2008)


Cervical HPV Incidence and Persistence in a Community-Based Cohort of HIV-Negative Women in Zimbabwe (2008)

Integrative Epidemiology May Reveal Key Roles for Brain Plasticity and Borderline Intellectual Functioning in Health Inequities (2008)


Assessment of Malaria Diagnostic Test in the Remote Settings and Implication for Its Application in the Malaria Eradication Program with Special Reference to Vanuatu (2008)

Asthma and School Achievement in California: A Data Analysis (2008)


Campaign to Remove Trans Fats from Kaiser (2008)

HIV/AIDS in Migrant Communities Along the US-Mexico Border (2008)


2007

The Role of Social Support, Self-Efficacy and Health Status on Depression in HIV-Positive Women: A Theoretical Research Approach (2007)

Naloxone Distribution For Out of Hospital Overdose Prevention (2007)

Study of Patients’ Satisfaction on Complete Denture Rehabilitation (2007)

Developing a Criteria for Discharge from an Adult Day Care Center for Dementia Patients (2007)


Homeless Veterans and VA Health Care (2007)

A Legislative Advocacy Plan: New Legislation to Improve California’s Health Through Mandating Regulation and Reduction of Tropospheric Ozone and Diesel Emissions (2007)

Self-Rated Health and Physical Functioning Among Chinese American Seniors (2007)

A School-Based Mandate for the HPV Vaccine—The Right Cure for Cervical Cancer Inequities in California? (2007)

Permanent Exits from Foster Care: Informing Measures Over Time (2007)

Vasectomy Perceptions Among Tricycle Drivers in Quezon City (2007)

Barriers to Female Education and Family Planning: A survey of two rural villages outside Peshawar, NWFP, Pakistan (2007)

Wellness Reports: New Opportunities in Consumer Health Information (2007)

Reproductive Health Qualitative Surveys with Female Sex Workers in Karnataka, India (2007)

The Preparedness of Biochemical Terrorism in Japan (2007)

Faster, Smaller, Cheaper: The Promise of Point-of-Care Diagnostics (2007)
Displacement Within Displacement: Developing a Deeper Understanding and Responsible Policy for Addressing the “Night Commuter” Phenomenon in Kitgum Town, Northern Uganda (2007)

Developing a Trauma Research Center to Reduce Accidents and Injuries in Jamaica, West Indies (2007)

2006

An Assessment of Information Resources for Families of Children with Special Health Care Needs at Glankler Medical Therapy Unit, Alameda County California Children’s Services (2006)

HPV Vaccine – Key Informant Interviews (2006)

Effectiveness of the Influenza Vaccine in Preventing Laboratory-Confirmed Flu in Infants: A Matched Case Control Study (2006)

Dentists’ Attitude, Knowledge and Practices Towards Diabetes in Dental Setting: Understanding and enhancing the dentists’ extent of current contribution to this public health issue (2006)

A Review of Mind-Body Medicine with a Focus on the Staying Well Study: A Clinical Trial of Mindfulness Based Stress Reduction (MBSR) or Education Groups for HIV Infection (2006)

The Incidence and the Estimated Direct Cost of Sexually Transmitted Infections Among Young People in California, 2005 (2006)

UGTA1A1 Genetic Testing to Avoid Adverse Reactions to Irinotecan: A Pharmacogenomics Study (2006)

Built Environment and Health Specialty Area – A Proposal (2006)


Knowledge, Attitudes and Acceptability of Vaginal Microbicides Among Health Care Providers (2006)

Medical Students: A Snapshot of Disorders, Coping Methods and Utilization of Mental Health Services (2006)


Assessment of Barriers to Care to in Prevention of Parent-to-Child HIV Transmission Programs in Karnataka, India (2006)

Access to Pain Medication in Neighborhood Pharmacies of Fresno, CA (2006)

Hospital Based Peer Intervention Program for Violently Injured Youth Reduces Involvement in the Criminal Justice System (2006)
Rising C-Section Rates: Trends and Implications (2006)


2005

California’s Uninsured Children: Health Implications (2005)


Infectious Correlates of HIV-1 Shedding in the Female Upper and Lower Genital Tracts (2006)


Comparing Diagnostic Strategies for Chlamydia, Gonorrhea and Trichomoniasis: Data from an Urban Primary Health Care Center Sao Paolo, Brazil (2005)

Evaluation of Clinical STD Training for Health Care Providers (2005)

Prior Antimalarial Use Among Patients Presenting for Enrollment in Clinical Trials: Data Analysis from Eight Sites in Uganda (2005)

California Medical Student Attitudes Toward Health Insurance and Health Education Policy (2005)

Feasibility Analysis of Universal Birth Dose Immunization for Hepatitis B in California (2005)

Smoking in College Students: A Focus on Asian and Pacific Islander Students (2005)

Needs Assessment of Clients Seeking Homeless Services in Palo Alto, CA (2005)

A Cost-Effectiveness Analysis of Hysteroscopic versus Laparoscopic Female Tube Sterilization (2005)

Contraceptive Patterns at School-Based Health Centers in Alameda County (2005)

2004


An Inquiry into the Effectiveness of Asthma Teaching in a Community-Based Organization (2004)


Water in Malawi: The Sustainability of Shallow Wells (2004)

Historical Trauma Among Native Americans: A Public Health Perspective (2004)


Canadian Survey on Abortion Training in Obstetrics and Gynecology Residency Programs (2004)


Storytellers and Storycollecting: Their Roles in Health Advocacy (2004)

DNIF Rates in Air Mobility Command Aircrews During the Initial Implementation of the US Military Smallpox Vaccination Program (2004)

Association Between Birth Weight and Childhood Acute Lymphocytic Leukemia in the Northern California Childhood Leukemia Study (2004)

2003

Prehospital Care of Road Traffic Injuries in Chang Mai, Thailand (2003)


Regional Variations in the Use and Awareness of the California Poison Control Center (2003)

Religion and Health in Alameda County Korean Americans (2003)


Benefit Perceptions and Household Demand for Improved Woodburning Stoves in Highland Guatemala (2003)


How Do Young Adolescents Make Decisions Regarding Sexual Activity and Safer Sex? (2003)


Predictors of Change in Cardiovascular Risk Factor Reduction Intervention (HEART Health Education and Risk Reduction Training Program) (2003)


SELECTION OF RECENT PUBLICATIONS OF MPH RESEARCH PROJECTS
Obesity and Obesogenic Behaviors in Asian American Children with Immigrant and US-Born Mothers

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Abstract: Child obesity is understudied in Asian Americans, which include a growing population of recent immigrants. We examined the relationship between maternal nativity and time in the US, and obesity and obesogenic behaviors among Asian American children. We analyzed public-use data from the 2013–2016 California Health Interview Survey for Asian American children ages 2 to 11 years. We used logistic regression to determine the odds of obesity and obesogenic behaviors associated with maternal nativity and time in the US. This study included n = 609 children. Children of US-born mothers had lower odds of obesity (adjusted odds ratio, AOR, 0.12; 95% CI 0.02 to 0.91) and lower fruit intake (AOR 0.15, 95% CI 0.03 to 0.81) than children of recent immigrants (< 5 years in the US). Asian American children with recent immigrant mothers are more likely to be obese and eat less fruit than children with US-born mothers. Efforts to prevent obesity and increase fruit consumption are particularly important for this vulnerable population of children of recent immigrants.

Keywords: obesity; immigrants; nativity; Asian American; children

1. Introduction

Asian American children are under-investigated in obesity research. In 2015–2016, 23.2% of Asian American children in the United States (US) were overweight, and 10.7% were obese [1]. While the prevalence of overweight/obesity is relatively low in this population compared to other racial/ethnic groups [1–3], there is a need to better understand risk factors for elevated body mass index (BMI) in Asian American children for several reasons. First, some Asian American ethnic subgroups have a higher prevalence of overweight/obesity than others [4–7]. One study found that Filipino and Vietnamese American children are more likely to have elevated BMI than their white peers [7]. Second, the prevalence of elevated BMI is increasing in some Asian American children. The national prevalence of obesity among Asian American girls increased sharply from 5.6% in 2011–2012 to 10.1% in 2015–2016 [1]. Third, a substantial proportion of Asian individuals are at risk of cardiometabolic disease at BMIs below the threshold for overweight [8], so the relatively low prevalence of overweight/obesity in this population may not be reassuring. Finally, Asian immigrants comprise the largest proportion of new arrivals to the US [9], and Asian Americans are the fastest growing racial/ethnic group overall [10]. With the growing Asian American population, it is increasingly important to examine the health of this group, particularly among recent immigrants.

One factor that may affect child BMI is maternal acculturation. As immigrants settle in the US, they may adopt Western obesogenic behaviors through acculturation, a complex process through which individuals from one culture adopt the practices of another [5,11]. Given the role of maternal influence on dietary [12–15] and sedentary behaviors [16–18], mothers may pass obesogenic habits
onto their children and increase their obesity risk. Exploring how acculturation might influence obesity and obesogenic behaviors may identify opportunities for intervention.

1.1. Maternal Acculturation and BMI

The small body of literature exploring the relationship between maternal acculturation and BMI in Asian American children is mixed. Maternal acculturation, as measured by English proficiency, has been shown to be a risk factor for consistent overweight/obesity in early elementary school children with less educated mothers but a protective factor in those with more educated mothers [5]. Another study found that Asian American preschool-age children with immigrant mothers had a lower obesity risk than those with US-born mothers [7]. Several studies by Chen et al. found an association between a lower maternal acculturation score on a multi-item questionnaire and elevated BMI in Chinese American children 8–10 years old [19–22]. These studies tended to be small and recruit from after-school programs and foreign-language schools in the San Francisco Bay Area [19–22], which may not represent the broader population.

1.2. Maternal Acculturation and Obesogenic Behaviors

Few studies directly assess the association between maternal acculturation and obesogenic behaviors in Asian American children [11,23]. Studies by Chen et al. found that a higher maternal acculturation score was associated with low sedentary activity [21], while both a lower maternal acculturation score and unhealthy food choices were risk factors for elevated BMI [22] in Chinese American children. Another study found that Chinese American parents (predominantly mothers) with a higher acculturation score tend to practice an indulgent feeding style, impose less restriction of unhealthy foods, and apply less pressure to eat healthy foods [24]. One study described the eating habits of Chinese American preschoolers whose caregivers had generally low acculturation scores but did not directly assess the relationship between caregiver acculturation and child diet [25]. Again, these studies tended to be small and/or recruit from after-school programs, foreign-language schools, and childcare centers, which may not be broadly representative. There is also a need to study the relationship between maternal acculturation and a wider range of obesogenic behaviors.

This study examined the association between two proxies of maternal acculturation (nativity and time in the US), and obesity and several obesogenic behaviors in a relatively large sample of Asian American children in California. We assessed whether children whose mothers were born in the US or have been in the country longer are more likely to be obese and engage in obesogenic behaviors (low fruit and vegetable intake, high sugar-sweetened beverage and fast food intake, and high sitting activity).

2. Materials and Methods

2.1. Data

This cross-sectional study examined public-use data from the California Health Interview Survey (CHIS), a continuous survey on various health topics [26]. The datasets generated and analyzed in this current study can be accessed on the CHIS website [26]. CHIS is the largest state health survey and provides representative data on all 58 counties in California [27]. CHIS uses a geographically stratified random-digit-dial telephone sampling strategy to randomly select households within counties and then one adult per household [28]. If present, children (birth to 11 years old) and adolescents (12–17 years old) may be interviewed separately [29]. Children are interviewed by proxy through the parent/guardian most knowledgeable about their health [29]. CHIS oversamples Korean and Vietnamese households [30] and conducts interviews in several languages [31] to increase Asian American representation.
2.2. Sample

We pooled public-use data from the 2013–2016 CHIS for children 2–11 years old. These years were chosen to represent the most recently available datasets that include the variables of interest and define them similarly. We excluded children < 2 years because they have different BMI thresholds for overweight/obesity than older children [32]. Since obesity was a primary outcome, we excluded children with no reported weight. The data were otherwise complete for the variables of interest. To account for biologically implausible anthropometric data and reduce misclassification bias in BMI categorization due to parental misreporting, we excluded children with weights or heights beyond 1.5 times the interquartile range for age and sex. We included all remaining children that were reported as being non-Hispanic Asian (exclusive of mixed-race children), which we referred to as “Asian American”.

2.3. Measures

We used two proxies for maternal acculturation: nativity and time in the US. Maternal nativity was a binary variable: immigrant and US-born. Maternal time in the US was an ordinal variable with five levels: < 5 years, 5–14 years, 15–24 years, ≥ 25 years, and US-born. US nativity and increasing time in the US served as proxies for acculturation, similar to larger studies in Asian American populations [5,6,33–36] in which acculturation questionnaires were not administered.

BMI was organized into three categories based on age- and sex-specific guidelines from the Centers for Disease Control and Prevention [32]: not overweight/obese (BMI < 85th percentile), overweight (BMI 85th to < 95th percentile), and obese (BMI ≥ 95th percentile). In multivariate analyses exploring obesity as the outcome, children with BMI < 85th percentile served as the reference group.

Dietary behaviors were dichotomized based on literature using CHIS data to examine Asian children’s obesogenic dietary practices [6]. Fruit and vegetable intake were determined by the number of caregiver-defined servings consumed yesterday. Given the low prevalence of soda and sweetened fruit drink consumption in the sample and the conceptual similarity of these drinks, they were combined into sugar-sweetened beverages (SSBs). SSB intake was determined by the number of glasses or cans of SSBs consumed yesterday. Fast food intake was defined as the number of times fast food was eaten in the past week. Similar to prior literature [6], consuming < 2 servings of fruit yesterday, < 2 servings of vegetables yesterday, ≥ 1 serving of SSB yesterday, and ≥ 1 serving of fast food last week were considered “obesogenic behaviors”.

Sedentary behavior was measured by sitting activity, defined as the number of hours spent sitting and watching TV, playing computer games, talking with friends, or doing other sitting activities on a typical weekday. Sitting activity was dichotomized, defining > 2 hours per day as an “obesogenic behavior” based on literature linking this amount of childhood TV time with adult overweight status [37].

Family income was identified as an important covariate and defined as a percentage of the federal poverty level (FPL): 0%–99% FPL, 100%–199% FPL, 200%–299% FPL, and ≥ 300% FPL. Besides child age and sex, there were no other relevant covariates, including ethnic subgroup and maternal education level, that were consistently available in the 2013–2016 public-use dataset.

2.4. Analyses

We computed descriptive statistics of the participants’ characteristics. Bivariate analyses were conducted using chi-square tests with the Rao–Scott second-order correction to account for the complex survey design. These analyses examined the associations between maternal nativity and time in the US, and child BMI and obesogenic behaviors. Separate multivariate logistic regression models examined the association between maternal nativity and time in the US, and child obesity and obesogenic behaviors, while adjusting for family income. Replicate weights provided by CHIS were used in all analyses to account for the complex survey design. All analyses were conducted using STATA/IC.
Version 15.1 (2019, StataCorp LLC, College Station, TX, USA), with statistical significance defined as \( p < 0.05 \).

2.5. Human Subjects

The University of California, Berkeley Institutional Review Board confirmed that this study was secondary analysis of a publicly available, de-identified database, which is not considered human subjects research. This study was conducted in accordance with the Declaration of Helsinki.

3. Results

3.1. Sample

Asian American children accounted for 8.4% of the 8507 children ages 2–11 years in the 2013–2016 CHIS dataset. From this subset, excluding those without a reported weight (\( n = 65 \)) or an implausible weight/height (\( n = 39 \)) yielded a sample of 609 children.

3.2. Demographics

Table 1 displays the participants’ characteristics. Among the children, 55.4% were boys, and the mean age was 7 years. Most families (62.9%) were in the highest income bracket, and most mothers (76.2%) were foreign-born. Among immigrant mothers, 15.2% had been in the US for < 5 years, 36.6% for 5–14 years, 21.4% for 15–24 years, and 26.8% for ≥ 25 years.

Table 1. Weighted characteristics of Asian American children ages 2 to 11 years old and their mothers (\( n = 609 \): California Health Interview Survey (CHIS) 2013–2016.

<table>
<thead>
<tr>
<th>Child Age, Mean Years (sd)</th>
<th>7.0 (2.8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child sex, %</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>55.4</td>
</tr>
<tr>
<td>Female</td>
<td>44.6</td>
</tr>
<tr>
<td>Family income, %</td>
<td></td>
</tr>
<tr>
<td>0%–99% FPL (^2)</td>
<td>12.5</td>
</tr>
<tr>
<td>100%–199% FPL</td>
<td>16.2</td>
</tr>
<tr>
<td>200%–299% FPL</td>
<td>8.4</td>
</tr>
<tr>
<td>≥300% FPL</td>
<td>62.9</td>
</tr>
<tr>
<td>Maternal nativity, %</td>
<td></td>
</tr>
<tr>
<td>Immigrant</td>
<td>76.2</td>
</tr>
<tr>
<td>US-born</td>
<td>23.8</td>
</tr>
<tr>
<td>Maternal time in US, %</td>
<td></td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>11.6</td>
</tr>
<tr>
<td>5–14 years</td>
<td>27.9</td>
</tr>
<tr>
<td>15–24 years</td>
<td>16.3</td>
</tr>
<tr>
<td>≥25 years</td>
<td>20.4</td>
</tr>
<tr>
<td>US-born</td>
<td>23.8</td>
</tr>
<tr>
<td>Child BMI category, %</td>
<td></td>
</tr>
<tr>
<td>Not overweight</td>
<td>65.7</td>
</tr>
<tr>
<td>Overweight</td>
<td>9.6</td>
</tr>
<tr>
<td>Obese</td>
<td>24.7</td>
</tr>
<tr>
<td>Obesogenic behaviors, %</td>
<td></td>
</tr>
<tr>
<td>&lt;2 servings of fruit yestday</td>
<td>49.0</td>
</tr>
<tr>
<td>&lt;2 servings of vegetables yesterday</td>
<td>55.8</td>
</tr>
<tr>
<td>≥1 serving of SSB(^3) yesterday</td>
<td>28.9</td>
</tr>
<tr>
<td>≥1 serving of fast food last week</td>
<td>64.9</td>
</tr>
<tr>
<td>&gt;2 sitting activity hours per day</td>
<td>28.1</td>
</tr>
</tbody>
</table>

\(^1\) standard deviation, \(^2\) federal poverty level, \(^3\) sugar-sweetened beverage.
3.3. Child BMI

Table 2 shows the children’s characteristics by BMI category and the results of related bivariate analyses. Overall, 9.6% of children were overweight, and 24.7% were obese. There was a significant association between income and BMI, with the lowest income group having more than 2.5 times the prevalence of obesity as the highest income group.

Table 2. Weighted characteristics of Asian American children ages 2 to 11 years old by BMI category (n = 609): CHIS 2013-2016.

<table>
<thead>
<tr>
<th></th>
<th>Not OW/OB 3</th>
<th>Overweight</th>
<th>Obese</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children, %</td>
<td>65.7</td>
<td>9.6</td>
<td>24.7</td>
<td>—</td>
</tr>
<tr>
<td>Child age, mean years (sd 1)</td>
<td>7.1 (2.8)</td>
<td>8.2 (3.0)</td>
<td>6.3 (2.4)</td>
<td>—</td>
</tr>
<tr>
<td>Child sex, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>63.9</td>
<td>6.0</td>
<td>30.2</td>
<td>0.154</td>
</tr>
<tr>
<td>Female</td>
<td>67.9</td>
<td>14.1</td>
<td>17.9</td>
<td></td>
</tr>
<tr>
<td>Family income, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%–99% FPL</td>
<td>37.7</td>
<td>12.7</td>
<td>49.6</td>
<td></td>
</tr>
<tr>
<td>100%–199% FPL</td>
<td>49.6</td>
<td>6.8</td>
<td>43.7</td>
<td>0.018 *</td>
</tr>
<tr>
<td>200%–299% FPL</td>
<td>89.9</td>
<td>7.2</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>≥300% FPL</td>
<td>72.1</td>
<td>10.1</td>
<td>17.8</td>
<td></td>
</tr>
<tr>
<td>Maternal nativity, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant</td>
<td>60.9</td>
<td>10.0</td>
<td>29.1</td>
<td>0.066</td>
</tr>
<tr>
<td>US-born</td>
<td>81.1</td>
<td>8.4</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td>Maternal time in US, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>33.9</td>
<td>9.3</td>
<td>56.8</td>
<td></td>
</tr>
<tr>
<td>5–14 years</td>
<td>62.8</td>
<td>10.1</td>
<td>27.1</td>
<td></td>
</tr>
<tr>
<td>15–24 years</td>
<td>69.0</td>
<td>7.7</td>
<td>23.3</td>
<td>0.155</td>
</tr>
<tr>
<td>≥25 years</td>
<td>67.1</td>
<td>12.1</td>
<td>20.8</td>
<td></td>
</tr>
<tr>
<td>US-born</td>
<td>81.1</td>
<td>8.4</td>
<td>10.6</td>
<td></td>
</tr>
</tbody>
</table>

1 standard deviation, 2 federal poverty level, 3 overweight/obese, * p < 0.05.

3.4. Maternal Nativity

In the multivariate analyses (Table 3), there was a trend toward children with US-born mothers having lower odds of obesity than those with immigrant mothers (p = 0.055), after adjusting for income. Higher income was significantly associated with lower odds of obesity. There were no associations between maternal nativity and obesogenic behaviors in either the bivariate or multivariate analyses.
Table 3. Association between maternal nativity and maternal time in the US and obesity among Asian American children ages 2 to 11 years old (n = 609): CHIS 2013-2016.

<table>
<thead>
<tr>
<th></th>
<th>OR (95% CI)</th>
<th>p-Value</th>
<th>Overall</th>
<th>AOR (95% CI)</th>
<th>p-Value</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maternal nativity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant (ref 1)</td>
<td>1.00</td>
<td>—</td>
<td>—</td>
<td>1.00</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>US-born</td>
<td>0.27 (0.09–0.81)</td>
<td>0.020 *</td>
<td>—</td>
<td>0.31 (0.10–1.02)</td>
<td>0.055</td>
<td>—</td>
</tr>
<tr>
<td><strong>Family income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%–99% FPL (ref)</td>
<td>1.00</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>100%–199% FPL</td>
<td>0.69 (0.11–4.54)</td>
<td>0.700</td>
<td>—</td>
<td>0.001 *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200%–299% FPL</td>
<td>0.03 (0.00–0.25)</td>
<td>0.001*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>≥300% FPL</td>
<td>0.20 (0.04–1.05)</td>
<td>0.058</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>overall</th>
<th>AOR (95% CI)</th>
<th>p-value</th>
<th>overall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maternal time in US</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5 years (ref)</td>
<td>1.00</td>
<td>—</td>
<td>—</td>
<td>1.00</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5–14 years</td>
<td>0.26 (0.05–1.30)</td>
<td>0.100</td>
<td>0.054</td>
<td>0.34 (0.05–2.28)</td>
<td>0.267</td>
<td>0.267</td>
</tr>
<tr>
<td>15–24 years</td>
<td>0.20 (0.04–1.12)</td>
<td>0.067</td>
<td>—</td>
<td>0.34 (0.04–2.72)</td>
<td>0.307</td>
<td>—</td>
</tr>
<tr>
<td>≥ 25 years</td>
<td>0.19 (0.02–1.56)</td>
<td>0.121</td>
<td>—</td>
<td>0.27 (0.02–2.96)</td>
<td>0.282</td>
<td>—</td>
</tr>
<tr>
<td>US-born</td>
<td>0.08 (0.01–0.41)</td>
<td>0.003 *</td>
<td>—</td>
<td>0.12 (0.02–0.91)</td>
<td>0.040 *</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>OR (95% CI)</th>
<th>p-value</th>
<th>overall</th>
<th>AOR (95% CI)</th>
<th>p-value</th>
<th>overall</th>
</tr>
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<tbody>
<tr>
<td><strong>Family income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%–99% FPL (ref)</td>
<td>1.00</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>100%–199% FPL</td>
<td>0.67 (0.07–6.55)</td>
<td>0.727</td>
<td>—</td>
<td>0.008 *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200%–299% FPL</td>
<td>0.03 (0.00–0.39)</td>
<td>0.007 *</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>≥300% FPL</td>
<td>0.24 (0.03–2.13)</td>
<td>0.201</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
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</tbody>
</table>

1 reference group, 2 federal poverty level, 3 odds ratio, 4 adjusted odds ratio (controlling for family income), 5 confidence interval, * p < 0.05.

3.5. Maternal Time in the US

In the multivariate analyses (Table 3), children with US-born mothers had 88% lower odds of obesity than children with recent immigrant mothers (< 5 years in the US), after adjusting for income (p = 0.040). Higher income was significantly associated with lower odds of obesity.

In the bivariate analyses, there was a trend for the prevalence of low fruit intake (< 2 servings yesterday) to decrease with increasing maternal time in the US (p = 0.052). This finding was significant in the multivariate analyses (Table 4); compared to children of recent immigrants, children whose mothers had been in the US for ≥ 25 years had 89% lower odds of low fruit intake (p = 0.011), and children of US-born mothers had similarly lower odds (p = 0.027), after adjusting for income. There were no associations between maternal time in the US and other obesogenic behaviors.

In the multivariate analyses, children whose mothers had been in the US for 5–14, 15–24, or ≥ 25 years had similar odds of obesity (Table 3) and low fruit intake (Table 4), which were lower than for children of recent immigrants. We performed post-hoc analyses to examine whether these three groups could be considered one homogenous group. We re-coded maternal time in the US into three levels: < 5 years, ≥ 5 years, and US-born. The odds of obesity and low fruit intake for the combined ≥ 5 year group were essentially unchanged and remained lower than for the < 5 year group, though only the difference in fruit intake was significant. Specifically, children whose mothers have been in the US for ≥ 5 years had lower odds of low fruit intake (adjusted odds ratio, AOR, 0.19; 95% CI 0.04 to 0.90) than children of recent immigrants, after adjusting for income.

<table>
<thead>
<tr>
<th>Maternal time in US</th>
<th>&lt; 2 Servings of Fruit Yesterday AOR (95% CI) p</th>
<th>&lt; 2 Servings of Vegetables Yesterday AOR (95% CI) p</th>
<th>≥ 1 Serving of SSB 4 Yesterday AOR (95% CI) p</th>
<th>≥ 1 Serving of Fast Food Last Week AOR (95% CI) p</th>
<th>≥ 2 Sitting Activity Hours Per Day AOR (95% CI) p</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5 years (ref 3)</td>
<td>1.00 (1.00)</td>
<td>1.00 (1.00)</td>
<td>1.00 (1.00)</td>
<td>1.00 (1.00)</td>
<td>1.00 (1.00)</td>
</tr>
<tr>
<td>5–14 years</td>
<td>0.25 (0.05–1.25)</td>
<td>0.091 (0.06–2.21)</td>
<td>0.269 (0.78–38.64)</td>
<td>0.086 (0.13–4.53)</td>
<td>0.782 (0.06–1.92)</td>
</tr>
<tr>
<td>15–24 years</td>
<td>0.21 (0.04–1.14)</td>
<td>0.071 (0.12–4.71)</td>
<td>0.766 (0.85–43.22)</td>
<td>0.071 (0.15–6.06)</td>
<td>0.964 (0.02–0.80)</td>
</tr>
<tr>
<td>≥ 25 years</td>
<td>0.11 (0.02–0.60)</td>
<td>0.011* (0.08–3.80)</td>
<td>0.553 (0.49–45.13)</td>
<td>0.178 (0.13–6.96)</td>
<td>0.973 (0.07–4.24)</td>
</tr>
<tr>
<td>US-born</td>
<td>0.15 (0.03–0.81)</td>
<td>0.027* (0.08–3.37)</td>
<td>0.489 (0.26–17.19)</td>
<td>0.489 (0.15–6.39)</td>
<td>0.979 (0.10–3.83)</td>
</tr>
</tbody>
</table>

Overall p (obesogenic behaviors) 0.111 0.672 0.213 0.995 0.165

Overall p (family income) 0.999 0.343 0.679 0.712 0.875

1 maternal, 2 obesogenic, 3 reference group, 4 sugar-sweetened beverage, 5 adjusted odds ratio (controlling for family income), 6 confidence interval, * p-Value, * p < 0.05.

4. Discussion

This study explored the relationship between maternal nativity and time in the US, and child obesity and obesogenic behaviors in Asian Americans. Children with US-born mothers were not more likely to be obese than those with immigrant mothers as a whole. This finding differs from a study showing that Asian American preschool-age children with immigrant mothers are less likely to be obese than those with US-born mothers [7]. The contrast may be due to mothers being particularly influential on the diet [15] and physical activity [18] of younger children. The older children included in our study might be more influenced by external factors that attenuate any protective effects of having immigrant mothers.

The likelihood of obesity did not increase with increasing maternal time in the US. The only significant difference in the odds of obesity was between children of recent immigrants (< 5 years in the US) and children with US-born mothers. Using less time in the US as a proxy for lower acculturation, this result strengthens several studies in Chinese American children linking lower maternal acculturation scores with elevated BMI [19–22]. This study highlights children of recent immigrants as a vulnerable group that should be addressed in future obesity prevention research and interventions and challenges the notion that lower acculturation is protective. While prior studies have shown Asian American children as a whole to have a relatively low risk of elevated BMI [1–3], this study adds nuance to the literature by suggesting that the risk of obesity is not homogenous in this population. Specifically, a subgroup of children with recent immigrant mothers have a higher risk of obesity than peers with US-born mothers. It is unclear whether children of recent immigrants tend to arrive in the US already obese or adopt obesogenic behaviors as they are exposed to a Westernized environment. Children of recent immigrants may also tend to come from countries where they experience food insecurity and encounter dietary excess upon arrival in the US [38]. This abrupt change in dietary environment may lead to an initially higher risk of obesity, which may stabilize or decrease as they spend more time in the US. These processes are important to explore further.

Few studies directly assess the relationship between maternal acculturation and obesogenic behaviors in Asian American children [11,23], and this study adds to the literature by exploring several behaviors. Children whose mothers were US-born or have been in the country longer were not more likely to engage in obesogenic behaviors. Children of recent immigrants were actually more likely to have low fruit intake than those whose mothers were US-born or have been in the US for ≥ 25 years.
This finding aligns with literature suggesting that maternal acculturation explains differences in fruit consumption among Asian ethnic groups [6].

In post-hoc analyses, children whose mothers have been in the US for ≥ 5 years were less likely to have low fruit intake than children of recent immigrants. This finding adds complexity to the literature by highlighting the heterogeneity in dietary behavior among Asian American children and specifically identifying children of recent immigrants as a nutritionally vulnerable subgroup. Recent immigrants may consider fruit a special occasion item that is less important than other foods [39]. Culturally preferred fruits may also be more costly or difficult to find [40]. Increasing access to affordable, culturally acceptable fruits may improve intake in children of recent immigrants.

There are several reasons why children whose mothers are US-born or have been in the country longer may not be more likely to engage in obesogenic behaviors. With the rise of caloric processed foods in Asian countries due to globalization and urbanization [41,42], recent immigrants may already have obesogenic behaviors upon arrival and have a similar or higher risk of obesity than US-born peers. Additionally, increased time in the US may not equate to increased adoption of Western behaviors. Recent immigrants may come from countries with a heavy Western influence and already have obesogenic practices before arriving. Conversely, mothers who have lived in the US for decades may maintain a traditional diet and expose their children to these foods. Finally, maternal and child diets may differ [23,38,43], despite parental efforts to retain a traditional diet [38,43], particularly in older children.

Lower income was consistently associated with a higher odds of obesity. Adjusting for income attenuated the initially significant difference in the odds of obesity between children of immigrant versus US-born mothers. This finding reinforces the link between low income and elevated BMI [4] and the interconnectedness of socioeconomic status and acculturation [5] in Asian American children. While Asian Americans are the highest earning racial/ethnic group, they are the most economically divided, partly due to different sociopolitical histories and immigration policies that shape their experiences [44]. Furthermore, low acculturation is associated with food insecurity in most Asian American subgroups [35], and participation in the Supplemental Nutrition Assistance Program (SNAP) is low in this population [35]. Providing financial assistance to low income, less acculturated families and addressing barriers to SNAP participation may help reduce obesity in Asian American children. Community-based interventions that are sensitive to cultural food preferences can also be helpful in promoting healthier dietary habits in Asian American populations [45].

This study has several strengths. We used a dataset designed to be representative of a state with a large Asian American population, with oversampling of less represented subgroups. The sample was larger than many studies exploring the relationship between maternal acculturation and obesogenic behaviors in Asian American children. We examined two proxies for acculturation, which are important to distinguish, and several obesogenic behaviors.

In terms of limitations, causal relationships cannot be established in this cross-sectional study. Caregiver-reported data may reduce internal validity, including in BMI classification [46], though we did attempt to reduce misclassification bias by omitting biologically implausible data. Additionally, asking caregivers to describe children’s fruit, vegetable, or SSB intake over the past day may not capture their typical diet. Other dietary assessment methods, such as 7-day food records, may be more representative but potentially more burdensome. We were unable to conduct ethnic subgroup analysis because this information was not consistently available in the public-use CHIS dataset for children in 2013–2016. Studies have noted interethnic variation in the risk of child obesity and obesogenic behaviors [4–7]. Thus, care should be taken in extrapolating our findings to a particular subgroup, and further studies are needed to assess the replicability of our results in different Asian American ethnicities. Given the limitations of the dataset, we were also unable to examine the effects of maternal education level, which has previously been described as an important factor in the relationship between maternal acculturation and child BMI [5]. Additionally, we used proxies that do not fully capture the concept of acculturation. Acculturation is a complex process that affects beliefs, attitudes,
and behaviors [21] and can manifest in multiple dimensions of life [20] in varying ways. Smaller studies have used multi-item acculturation questionnaires [19–22,25], but nativity and time in the US have been used as proxies in larger studies in Asian American populations in which detailed acculturation scales were not administered [5,6,33–36]. Finally, we used data from 2013-2016, which may not be representative of the current population. However, there is a lag in the availability of yearly data in the public-use CHIS dataset, and we needed to pool multiple years given the small number of Asian American children. This limitation speaks to the need for larger datasets on the health of Asian American children for future research.

5. Conclusions

While Asian American children are known to have a relatively low risk of elevated BMI, a subgroup of children with recent immigrant mothers are more likely to be obese and eat less fruit than those with US-born mothers. Children of immigrants are not homogeneous, and efforts to prevent obesity and increase fruit consumption are particularly important for a more vulnerable population of Asian American children of recent immigrants.

Author Contributions: Conceptualization, B.R.A.; methodology, B.R.A., K.S.-G., and K.A.M.; formal analysis, B.R.A.; writing—original draft preparation, B.R.A.; writing—review and editing, K.S.-G. and K.A.M.; supervision, K.S.-G. and K.A.M. All authors have read and agreed to the published version of the manuscript.

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#Vape: Measuring E-Cigarette Influence on Instagram With Deep Learning and Text Analysis

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The UC Berkeley Center for Integrative Research on Childhood Leukemia and the Environment, Berkeley, CA, United States

E-cigarette use is increasing dramatically among adolescents as social media marketing portrays “vaping” products as healthier alternatives to conventional cigarettes. In September 2018, the Food and Drug Administration (FDA) launched an anti-vaping campaign, in U.S. high schools, on social media and other platforms, emphasizing “The Real Cost” of e-cigarettes. Using a novel deep learning approach, we assessed changes in vaping-related content on Instagram from 2017 to 2019 and drew an inference about the initial impact of the FDA’s Real Cost campaign on Instagram. We collected 245,894 Instagram posts that used vaping-related hashtags (e.g., #vape, #ejuice) in four samples from 2017 to 2019. We compared the “like” count from these posts before and after the FDA campaign. We used deep learning image classification to analyze 49,655 Instagram image posts, separating images of men, women, and vaping devices. We also conducted text analysis and topic modeling to detect the common words and themes in the posted captions. Since September 2018, the FDA-sponsored hashtag #TheRealCost has been used about 50 times per month on Instagram, whereas vaping-related hashtags we tracked were used up to 10,000 times more often. Comparing the pre-intervention (2017, 2018) and post-intervention (2019) samples of vaping-related Instagram posts, we found a three-fold increase in the median “like” count (10 vs. 28) and a 6-fold increase in the proportion of posts with more than 100 likes (2 vs. 15%). Over 70% of Instagram vaping images featured e-juices and devices, with a growing number of images depicting a “pod,” the type of discrete vaping device that delivers high concentration of nicotine and is favored by novice e-cigarette users. In addition, the Instagram analytics data shared by the vaping influencers we interviewed showed underage Instagram users among their followers.

Keywords: vape, vaping, e-cigarettes, social media, Instagram, deep learning, images

INTRODUCTION

Electronic nicotine delivery systems (ENDS), also known as e-cigarettes (National Institute on Drug Use, 2018), are now the most-commonly-used tobacco products among American teenagers (Centers for Disease Control and Preventions, 2019). According to the National Youth Tobacco Survey, the fraction of high-school students who reported using e-cigarettes jumped from 12% in 2017 to 28% in 2019 (Wang et al., 2019). In combination with stagnating declines in the use of other tobacco products, this considerable increase in e-cigarette consumption has reversed recent progress in controlling adolescent tobacco
use (The U.S. Food Drug Administration, 2018a; Gentzke et al., 2019; Wang et al., 2019). While the long-term health effects of e-cigarette consumption are not fully understood (American Cancer Society, 2017), e-cigarettes can harm the adolescent brain and increase susceptibility to tobacco addiction (The U.S. Department of Health Human Services, 2016; Fraga, 2019; Wang et al., 2019). As a result, youth who use e-cigarettes are more likely to subsequently try combustible cigarettes (The U.S. Food Drug Administration, 2018a). Beyond addiction, e-cigarettes pose a risk of breathing difficulties, inflammatory reactions, lowered defense against pathogens and lung diseases (Centers for Disease Control and Prevention, 2019a,b; The U.S. Food and Drug Administration, 2019d).

The design and portability of e-cigarette devices contribute to their growing popularity among young people. E-cigarettes deliver high concentrations of nicotine from a device the size of a USB flash drive (Supplemental Figure 1) while producing a discreet vapor cloud. Pod devices with disposable or refillable cartridge-based systems are particularly popular among beginner users due to their simple design and convenience (MistHub, 2015; Matt, 2018; Fraga, 2019). More experienced users may opt for larger tank systems (also called mods, box mods or sub-ohm devices) (MistHub, 2015; Smoketastic, 2016) that must be manually-refilled with liquid (also called e-juice or E-liquid).

Young adults are exposed to e-cigarette endorsements from peers and influencers (Carbone, 2018; Dyer, 2019; The U.S. Food and Drug Administration, 2019b; VaporDNA, 2019), on social media. Exposure to social media marketing and other forms of visual advertising have been associated with increased e-cigarette use among adolescents (King et al., 2016; Maloney and Cappella, 2016; Pokhrel et al., 2017; Kim et al., 2019b; Wang et al., 2019). Instagram is one platform popular with U.S. teenagers and young adults (Lee et al., 2015; Smith and Anderson, 2018; Clement, 2019) through which e-cigarette brands have used visual advertising to market their products (Philips, 2018; Hatchinson, 2019). Tobacco companies like JUUL (which controls 70% of the U.S. e-cigarette market) (Centers for Disease Control and Prevention, 2018; Richtel and Kaplan, 2018; Huang et al., 2019; Sherman, 2019) have used Instagram to promote vaping and to brand their products as safe alternatives to conventional cigarettes (Brodwin, 2018; Dyer, 2019), perpetuating a “cost-free” mentality (The U.S. Food Drug Administration, 2018a) toward e-cigarettes. In one national survey of high-school students, nearly 80% of the respondents perceived “no great risk of harm from regular use of e-cigarettes” (Johnston et al., 2019). One common misconception among users is that e-cigarette aerosol consists of innocuous water vapor (Richter, 2018). In reality, e-cigarette vapor can contain several harmful substances, including nicotine, lead, volatile organic compounds, and cancer-causing agents 1.

In September 2018 the U.S. Food and Drug Administration (FDA) launched “The Real Cost” Youth E-Cigarette Prevention Campaign in U.S. high schools as well as on social media platforms, including YouTube, Spotify, Pandora, Facebook and Instagram. The campaign aims to educate nearly 10.7 million youth aged 12–17 about the hazards of e-cigarettes. It is a nearly $60 million effort funded by fees collected from the tobacco industry (The U.S. Food Drug Administration, 2018a).

To further discourage youth tobacco use (The U.S. Food Drug Administration, 2018b), in November 2018, the FDA announced a restriction on fruity- or sweet-flavored e-liquids sales, allowing them to be purchased only at age-restricted stores or through online merchants that use age-verification (Kaplan and Hoffman, 2018; Kirkham, 2018; Morean et al., 2018; Kaplan, 2019), and a requirement that all ENDS must “bear the addictiveness warning statements on product packages and advertisements,” including on social media (The U.S. Food and Drug Administration, 2019c). Despite this regulation, social media influencers have continued to post vaping content on behalf of e-cigarette manufacturers, often failing to include the required nicotine warning (The U.S. Food and Drug Administration, 2019b).

Here we provide a descriptive analysis of Instagram content related to e-cigarettes and comment on the initial impact of the FDAs social media intervention to reduce vaping among youth. We analyze samples of Instagram posts BEFORE and AFTER the FDA introduced The Real Cost campaign and other anti-vaping measures to evaluate changes in the volume, themes, and user-engagement (number of likes) of vaping-related posts.

MATERIALS AND METHODS

This mixed method study consisted of two parts: (1) Deep learning analysis of images and captions from Instagram posts; (2) focus groups with young social media users and interviews with Instagram vaping influencers. The goal of the focus groups and interviews was to reinforce, validate, and contextualize the data analysis. The study was approved by the Internal Review Board of the University of California, Berkeley Committee for Protection of Human Subjects (CPHS).

Qualitative and Quantitative Analysis of Instagram Posts

Instagram Data Collection

We collected vaping-related Instagram posts before and after the FDA started its anti-e-cigarette campaign and compared the pre-intervention (2017, 2018) and post-intervention (2019) samples. The posts were obtained by accessing the Instagram Application Programming Interface (API) using subscriptions to web-based applications designed for hashtag tracking. Access to the 2019 data was provided by the social network analyzer Keyhole (Toronto, Canada). The 2017 and 2018 data were collected as part of a prior study (Laestadius et al., 2019) that used the social network analyzer Netlytic (Toronto, Canada) and provided to the authors by the University of Wisconsin-Milwaukee.

For the 2019 sample, we collected 201,703 publicly available posts by tracking the following Instagram hashtags which were linked to the promotion and endorsement of vaping in previous content analysis (Laestadius et al., 2016, 2019; Chu et al., 2017): #vape, #ejuice, #eliquid, #vapecommunity, #vapefam, #vapelife, #vapelyfe, #vapenation, #vapeporn. We also collected 46 posts

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from the FDA campaign by tracking the hashtag #TheRealCost (Figure 1).

For the 2017 and 2018 samples (22,293 and 21,906 publicly available posts, respectively), Instagram posts were collected only if one of two hashtags—#ejuice or #eliquid—was among the terms used in the caption; however, at least several other hashtags (e.g., #vape or #vapenation) were always present as well.

Instagram posts were collected in real time during sampling periods of <2 weeks. Posts were captured 24 h a day at a rate determined by the API limit of about 100 posts per hour. The collected data included the URLs for images and videos, the date and time of posting, the like count and captions for each post.

**Number of “Likes” on Instagram**

“Likes” is a metric of user engagement (Chu et al., 2017; Boogaard, 2018; Sunshy Group of Companies, 2018) and an important indicator of a post’s impact (Sherman et al., 2017; Martínez-Pecino and García-Gavilán, 2019). We compared the median “like” count and the proportion of posts with more than 100 “likes” on Instagram posts before and after the FDA campaign. For the purposes of this comparison, we replicated the protocol which was previously used by Laestadius et al. to collect the 2017 and 2018 Instagram samples (Laestadius et al., 2019), by restricting our June 2019 sample to the 22,000 Instagram posts containing #ejuice or #eliquid as one of the terms in the post’s caption (Figure 1).

**Image Analysis**

We performed deep learning image classification analysis of #ejuice and #eliquid posts from the 2017 sample ($N = 14,810$), the 2018 sample ($N = 14,907$) and the June 2019 sample ($N = 14,982$). These samples excluded any images that were removed from Instagram by the posts’ authors during the data collection period (and prior to analysis). Based on image classification themes identified in the previous studies of vaping posts on Instagram (Laestadius et al., 2016, 2019; Chu et al., 2017) and the description of vaping devices available in the literature (MistHub, 2015; Smoketastic, 2016; Goniewicz et al., 2019), images were divided into the following six categories: (1) **man** and (2) **woman** (facial images of men or women, usually posing with vaping devices or vape juice bottles or exhaling smoke clouds), (3) **mod** and (4) **pod** devices, (5) **e-juice**, and (6) **other**. Male or female hands holding a vaping device or a bottle of e-juice were assigned to the appropriate vaping device categories.

Deep learning image classification analysis was based on the convolutional neural networks (CNN) framework (The University of Stanford, 2013; Keras, 2015; Deshpande, 2016; Zhang et al., 2018) that recognizes and classifies images by extracting features from an input image (as a matrix of pixel values) and generates a probability distribution over possible output classes (e.g., 0.80 for a man, 0.15 for a mod system device, and 0.05 for e-juice). For each image we selected the output class that had the highest predicted probability in our image classification analysis. We applied transfer learning and fine-tuning (TensorFlow, 2017) to create a customized image classifier capable of recognizing and classifying vaping images. We used the existing CNN called Inception v3 trained by Google on an image dataset consisting of over 1,000,000 images of about 1,000 different classes (ImageNet Library, 2016) as the basis for building our own classification model. We fine-tuned Inception v3.

v3 on a set of images identified on Google Images and Instagram using the query terms corresponding to the six identified classes (i.e., "man," "woman," "mod," "pod," "e-juice," and "other") and obtained via a Google Chrome extension downloader (Chrome Web Store, 2019), which allows for the rapid download of large batches of enumerated images. These images were manually reviewed, grouped and labeled according to the six identified classes. The resulting image dataset was divided into a training (1,745 images) and validation set (356 images) at a ratio of 5:1. To fine-tune the neural network we added a 128-unit dense layer, followed by dropout with 60% probability, and then a 6-unit output layer with softmax activation. The model was optimized for categorical cross-entropy loss over 8 epochs using stochastic gradient descent with a learning rate of 0.00001. The model achieved 0.90 validation accuracy and 0.32 validation loss (Supplementary Figure 2). The model was not trained to identify more than one class in a single image. For the images featuring more than one class (e.g., mod, e-juice, group of people), we considered the prediction correct if the classification was accurate for either of the classes.

The fine-tuned model was first evaluated on the smaller set of 4,956 images from the 2017 sample (N = 1,486 posts), the 2018 sample (N = 1,512 posts), and the March 2019 sample (N = 1,958 posts), which were labeled manually. The model correctly classified above 90% of the images with men, women, e-juices, mod system devices across all samples. The model correctly classified 90% of the images with pod system devices in the 2019 sample, 64% of those images in the 2018 sample and 30% in the 2017 sample (Supplementary Figure 3). As a final analysis, we applied the fine-tuned model to generate label predictions on our complete data set: 44,699 unlabeled images from the 2017 sample (N = 14,810), the 2018 sample (N = 14,907) and the June 2019 sample (N = 14,982, Supplementary Figure 4).

We also manually reviewed 1,958 posts for the presence of a warning label and a geographic location, and 4,956 posts for the presence of sexually-explicit imagery.

Text Analysis

We applied text mining and natural language processing methods using Tidytext software package in R to analyze and quantify the content of Instagram captions (Silge and Robinson, 2017). We counted the most frequently used words in Instagram captions from the pre- and post-FDA intervention samples. We ignored #eliquid and #ejuice as they were used in every caption (by design) as well as “stop words” such as connecting verbs, prepositions and articles in English and other languages (e.g., “the” “is,” “to”) that are not useful for analysis (Manning and Schütze, 1999). We also analyzed the context surrounding words commonly used in Instagram captions of the #eliquid and #ejuice posts compared to captions of #TheRealCost posts from the March 2019 sample. We used latent Dirichlet allocation (LDA) analysis topic modeling based on unsupervised clustering (Silge and Robinson, 2017). The LDA grouped the dataset of Instagram captions from our sampled posts into a mixture of topics by connecting similar words together and calculating the probability (Beta coefficient) that the grouped words would be part of a selected topic. The desired number of topics and the number of words per topic are user-defined parameters in LDA. Since Instagram captions are sparse and short texts with diverse themes (Hong and Davison, 2010), good results have been achieved in previous studies (Steinskog et al., 2017; Maier et al., 2018) by using a higher number of topics than what is needed for larger, more coherent corpora. We used 50 clusters (K = 50) and a threshold probability for topic inclusion of 2% (Beta = 1/K). We reviewed the words with the highest probabilities for each topic (top words) and attempted to label the substantive content of the topic, as has been done previously (Hong and Davison, 2010; Steinskog et al., 2017; Maier et al., 2018).

Focus Groups and Interviews With Instagram Influencers

The focus group participants were recruited in March-April, 2019 among undergraduate students of the University of California, Berkeley, and Berkeley City College and among other Berkeley residents who were not students. We included a racially-diverse group of male (N = 4) and female (N = 4) participants between 18 and 25 years of age who reported that they used social media daily. Although e-cigarette consumption was not an inclusion criterion, four of eight focus group participants reported vaping. The participants were asked to identify their preferred social media platform and the frequency of its use, as well as whether they often see social media posts related to vaping, including the FDA anti-vaping campaign images and videos. The participants were asked to share their impressions of a selection of images and videos related to vaping and the FDA campaign and were asked to describe what content they found most engaging.

We contacted ~100 influencers with public Instagram accounts to request an interview. The list of potential interviewees was seeded with popular influencers referenced in the literature and then expanded via algorithmic Instagram suggestions. Five influencers agreed to be interviewed. The group was comprised of three men and two women; one participant was from the U.K. and the other four were from the U.S. Group member followings ranged from 2,000 to over 200,000 Instagram users (Mean = 73,000, SD = 74,000). During the semi-structured interviews (Robert Wood Johnson Foundation, 2008) the participants were asked about their vaping habits, the motivation to promote vaping products, knowledge of influencers’ marketing strategies and collaboration with vaping brands. They were also asked to share Instagram analytics data, which provided information on the age distribution of their followers.

RESULTS

As expected, our manual review of the posts and text analysis of the corresponding captions indicated that nearly all of the posts we collected by tracking #ejuice and #eliquid promoted or endorsed vaping. In contrast, the FDA posts featuring #TheRealCost hashtag were the only posts which we identified in our sample that contained anti-vaping sentiments.
Number of “Likes” on Instagram
Since August 2018, the FDA-sponsored “anti-vaping” hashtag #TheRealCost has been used about 50 times per month on Instagram, whereas “pro-vaping” hashtags like #ejuice or #eliquid were used 1,000 times more often. Comparing the pre-intervention (2017, 2018) and post-intervention (2019) #e-juice and #e-liquid samples, we found a three-fold increase in the median like count (10 vs. 28 likes) (FIGURE 2) and a 6-fold increase in the proportion of posts with more than 100 likes (2 vs. 15%). The median like count for the FDA campaign posts was comparable (23 likes) although, again, the volume of posts was much smaller.

Image Analysis
Quantitative Image Analysis
We performed a deep learning image classification analysis of Instagram posts with captions containing hashtags #ejuice or #eliquid from the samples collected in 2017 (N = 14,810), 2018 (N = 14,907) and June 2019 (N = 14,982, Table 1). Over 85% of Instagram vaping images featured Devices, and the sub-category E-juice was the most prevalent subject in all three samples. The proportion of E-juice images remained relatively consistent in 2017 (36%), 2018 (41%), and 2019 (40%). The proportion of Mod images decreased in 2019 (21%) compared to 2018 (27%) and 2017 (30%); correspondingly, Pod images became more popular, increasing from 2017 (0.9%), to 2018 (2%), to 2019 (9%). We observed a 3-fold increase in the median like count in the 2019 sample compared to the 2017 and 2018 samples for each class of images, which was consistent with the overall 3-fold increase in the median like count presented in Figure 2. Images of women had the highest median like count in all three samples (Table 1).

Qualitative Image Analysis
Warning labels
Despite the 2018 FDA requirement to add warning labels to tobacco-product advertising on social media, we found that most of the images with the highest like count analyzed in our June 2019 sample (N = 1,958 posts, likes > 100) did not contain warning labels in compliance with the FDA requirements (The U.S. Food and Drug Administration, 2019c). The images featuring e-juice had the highest prevalence of warning labels (11%), followed by images of women and pod devices (5%), mod devices (4%) and men (3%). We found fewer than 1% of images with warning labels in both 2017 and 2018 samples, before the warning requirement was introduced.

Sexually-explicit imagery
Overall, we found that – among Instagram posts featuring women - about 1 in 8 posts in the June 2019 and 1 in 4 posts in the 2017 and 2018 samples contained sexually-explicit imagery. The median like count for sexually-explicit imagery in the June 2019 sample (106 likes) were twice as high as the median like count for images with no sexually-explicit features (47 likes). In posts from 2017 and 2018, we found no difference in the median like count for sexually-explicit imagery compared to fully clothed women.

Text Analysis
Several E-juice-related words were among the most frequently used in Instagram captions from the 2018 and March 2019 samples, with words like “juice,” “strawberry,” “flavor,” “liquid,” “sweet,” “eliquid,” and “60 ml” all used at least 500 times. Other words that were frequently used in both samples included “mod” and “kit.” The words “Nicotine,” “pod,” “salt,” (Innes, 2018) and “nic” appeared to grow in popularity from 2018 to March 2019. A comparative analysis of words that were used in the #TheRealCost campaign (46 posts, including the FDA and users’ comments), vs. words that were used in the #e-juice and #e-liquid posts showed very little overlap in the March 2019 sample (21,906 posts). Even in instances where a common lexicon could be identified (e.g., with frequently-used words like “Nicotine,” “time,” “brain,” “addictive,” “crave,” and “stop”), the context was different. In captions from the #TheRealCost posts these words...
TABLE 1 | Predicted deep learning image classification for Instagram posts using #e-juice or #e-liquid collected in 2017 (N = 14,810), 2018 (N = 14,907), and 2019 (N = 14,982).

<table>
<thead>
<tr>
<th>Classification of image/video</th>
<th>Number (% of posts in each image/video classification)</th>
<th>Number (% of high-engagement posts (i.e., with 100+ “likes”)</th>
<th>Median “like” count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FACIAL IMAGES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>1,153 (8%)</td>
<td>1,096 (7%)</td>
<td>1,118 (7%)</td>
</tr>
<tr>
<td>Women</td>
<td>825 (5%)</td>
<td>775 (5%)</td>
<td>829 (6%)</td>
</tr>
<tr>
<td><strong>DEVICES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-juice</td>
<td>5,316 (36%)</td>
<td>6,049 (41%)</td>
<td>6,043 (40%)</td>
</tr>
<tr>
<td>Mods</td>
<td>4,404 (30%)</td>
<td>4,070 (27%)</td>
<td>3,102 (21%)</td>
</tr>
<tr>
<td>Pods</td>
<td>130 (0.9%)</td>
<td>292 (2%)</td>
<td>1,335 (9%)</td>
</tr>
</tbody>
</table>

Class “Other” is not included in the table.

TABLE 2 | Commonly used words in captions of Instagram posts related to vaping from the March 2019 sample (N = 21,906) and the U.S. Federal Food and Drug Administration anti-vaping campaign “The Real Cost” (N = 46).

<table>
<thead>
<tr>
<th>Commonly used words</th>
<th>#TheRealCost posts examples</th>
<th>Vaping posts examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine</td>
<td>“Vaping can put nicotine in your brain, which can change the way your brain works, causing you to crave more and more.”</td>
<td>“No nicotine” (in posts advertising e-juice without nicotine); nicotine level: 30 mg bottle.</td>
</tr>
<tr>
<td>Time</td>
<td>“Don’t be a guinea pig in an experiment … only time will tell what the true effects.”</td>
<td>“Giveaway time”; “Get ready for a great time…”</td>
</tr>
<tr>
<td>Addictive</td>
<td>“Nicotine—the highly addictive drug in most vapes—can create powerful cravings that make it hard to think about anything else.”</td>
<td>“Warning: This product is intended to be used with e-liquid that may contain nicotine. Nicotine is an addictive chemical.”</td>
</tr>
<tr>
<td>Crave</td>
<td>“Over time, nicotine can change the way your brain works, causing you to crave more nicotine and vape more frequently.”</td>
<td>“Crave salt nic now available.” The post also describes craving e-juice.</td>
</tr>
<tr>
<td>Brain</td>
<td>“An epidemic is spreading. It can harm your brain.”</td>
<td>“… this “brain coffee” is perfect!”</td>
</tr>
<tr>
<td>Stop</td>
<td>In reaction to one of the #TheRealCost posts, one Instagram user urged the campaign to “stop” the ads because they were making the user “cringe.”</td>
<td>“Stop and stare.” (in reaction to e-juice) “Stop smoking today” (as opposed to vaping.)</td>
</tr>
</tbody>
</table>

were used to warn of health consequences; whereas in captions from the #e-juice and #e-liquid posts these words promoted vaping content, promising a “high” and fun experience. The word “nicotine” was used both as a warning label and as a promotion in the pro-vaping captions (Table 2). The March 2019 sample included twice as many non-English-language topics (13 out of 50) compared to the 2018 sample (6 out of 50), including topics in German, Spanish, Italian, French, Malay, Indonesian, Japanese.

Based on the most commonly-used words from each of 50 caption topics detected via the latent Dirichlet Allocation analysis (LDA) we identified four themes among the posts of March 2019: (1) promotions; (2) flavors; (3) devices; and (4) user experience (Figure 3). The themes in the May 2018 sample were very similar, except for the absence of Pod system-related and nicotine salts-related topics. LDA detected only pro-vaping topics. No anti-vaping topics were detected by LDA, presumably due to the relatively small number of anti-vaping posts (N = 46, Figure 3) identified in the #TheRealCost sample only.

**Focus Groups and Interviews With Instagram Influencers**

Some focus group participants described e-cigarette users who follow vaping brands and influencers on Instagram as representatives of a sub-culture, different from mainstream e-cigarette users. They also viewed e-cigarette consumption as distinct from vaping saying that those who smoke e-cigarettes use more consumer-oriented, small, “low key” devices like JUUL, which is “cool” and not as “in your face” as vaping (Table 3). However, Instagram videos featuring smoke-cloud exhalation, aka vaping tricks, presented during the focus groups elicited the most positive reaction, while several videos and images related to vaping tricks, presented during the focus groups elicited the most positive reaction, while several videos and images related to the FDA intervention were perceived more negatively (Table 3).

Vaping Influencers reinforce the tobacco industry’s sales pitch that e-cigarette use is a healthier alternative to conventional combustion-cigarette smoking. We inferred from their answers (Table 4) that vaping youth are motivated to become influencers and promote vaping products on Instagram by financial incentives. The interviews also suggested an increasing growth of vaping content on Instagram, confirming the findings of our quantitative analysis. In addition, the influencers we interviewed shared their Instagram analytics (Canning, 2018) data revealing that underage users comprised as much as 16% of their followings (Mean = 9%, SD = 7%, Range = 15%).

**DISCUSSION**

This is the first study to apply large-scale deep learning image classification to social media posts about e-cigarettes. These deep learning methods allow for a fast, automated identification of
Instagram images, which offers savings of time and money. This is also the first study focused on e-cigarettes to combine quantitative and qualitative Instagram content analysis with interviews of vaping influencers and focus groups of young social media users.

The analysis from different time periods (2017–2019) allowed us to assess the change of vaping content on social media during a period of time when both Instagram and e-cigarettes use were growing in popularity among youth (Wang et al., 2019). This study design also allowed us to draw an inference about the initial impact of the FDA’s Real Cost campaign on Instagram.

Assessing the Apparent Impact of the FDA Anti-vaping Campaign on Instagram

Low Frequency of Posts

The FDA’s Real Cost campaign was initially launched in 2014 to discourage smoking and the new anti-vaping focus was announced in September 2018 (The U.S. Food and Drug Administration, 2019a). Since then, pro-vaping Instagram hashtags like #vape were used up to 10,000 times more often than the FDA-sponsored hashtag #TheRealCost. Historically, the pro-vaping hashtags we tracked for this study have accumulated as much as 10 million posts, whereas there have been only 3,129
TABLE 3 | Quotes from focus groups with 18 to 25-year-old Berkeley residents (N = 8).

1.1 [They are] particular kind of people that vape. Not all vapers are the vapers that engage in the vaping sub-culture on social media. [They wear] certain kind of clothing, speak in a certain way. They are usually men, in their teens or 20s. Vapers have skateboard, [they are] skinny.

1.2 JUUL is a new thing. It is like e-cigarettes, it is different than vaping. I see a lot of them on social media and it is not seen in the same way as vapers. JUUL is so ubiquitous, it is everywhere. It becomes normalized, it is like a cool new thing and everyone does it. When people look at you when you smoke a cigarette, they think that's bad for you and it is going to give you cancer. JUUL I guess is supposed to be healthier. JUUL is a different device, which produces less smoke and less vape. Design in general. JUUL is like slick. Not like a giant, really weird-looking devices. The design makes JUUL look low key. That is probably what draws people to it.

1.3 [The quote describes a video featuring a vaping influencer making a bubble out of e-liquid] With a bubble is a cool video, like a magic show.

1.4 I do not think this message is effective. It is super like a fancy way of reminding us that nicotine is addictive. I imagine myself scrolling on my phone, trying to enjoy myself and [the FDA anti-vaping campaign] is trying to tell me what to do.

#TheRealCost posts, including all of the anti-vaping and anti-smoking images and videos ever posted from the official FDA campaign account (~16%) as well as from other users (~84%). This stark imbalance in the volume of posts has caused the FDA message to be overwhelmed by direct and sponsored marketing from the vaping brands.

Low Impact on User Interaction With Vaping Images and Low Engagement

When comparing the user interaction with the #e-juice and #e-liquid Instagram posts from before and after the initiation of the FDA Real Cost campaign, we found a large increase in the median like count and in the proportion of posts with more than 100 likes. Our results indicate that the number of Instagram users exposed to vaping images and videos could be still growing, despite the FDA’s intervention efforts on social media. Despite accumulating a large amount of followers during the four years of its existence (62,000), the most recent (2017–2019) anti-smoking and anti-vaping images and videos posted by the TheRealCost account have had a low engagement rate (Canning, 2018; Plann, 2019) of just ~ 0.8% per post. For comparison, a good engagement rate on Instagram is considered to be between 3 and 6% (Plann, 2019). Infrequent posting and low engagement have the potential to seriously limit the impact of the FDA’s efforts on social media.

Persistence of Predatory Themes

There has been criticism of the predatory practice of e-cigarette and e-juice manufacturers to promote flavored nicotine products that appeal to youth on social media (directly or through influencers) (Associated Press, 2019; Kong et al., 2019). In 2017, Laestadius et al. (Laestadius et al., 2019) conducted a qualitative-content analysis of Instagram posts featuring e-liquid to identify common themes, claims and product promotions. The study found that about 60% of the 1,000 images and videos analyzed contained promotions of e-liquids. We found that e-juice remained the most prevalent topic in our samples before and after the FDA campaign, and the number of images featuring pod devices (commonly used by beginner e-cigarette users) has been growing. Aesthetically pleasing images of male and female models that could alter young users’ perceptions (Harris and Bardley, 2019) were also frequent among the posts featuring vaping products in our samples. Moreover, Instagram analytics data collected from vaping influencers showed considerable proportions of underage (13–17 year-old) followers, indicating that youth will likely continue to be exposed to vaping content marketed on Instagram. This finding is consistent with a recent Kim et al. (Kim et al., 2019a) which demonstrated that over 40 percent of JUUL Twitter account followers are underage (13–17 years old). Exposure to potentially harmful social media content is even more concerning, as previous studies here demonstrated that teenagers often relate to Instagram influencers more than to their physical friends (Mañas-Viniegra et al., 2019).

Non-compliance With Warning Label Requirements

Despite the 2018 FDA requirement that all ENDS “bear the addictiveness warning statements on product packages and advertisements” on social media, we found that, overall, only about 7% of the posts in our June 2019 sample contained warnings in compliance with the FDA requirements (The U.S. Food and Drug Administration, 2019c). Posts uploaded from locations within the U.S. had the highest prevalence of warning...
labels, while posts uploaded from other countries were less likely to include warnings. Most of the international posts featured vaping products distributed in the U.S. and would therefore still be subject to compliance with the FDA warning-label regulations (The U.S. Food and Drug Administration, 2019c). This finding indicates that there should be increased enforcement of the warning-label regulation, especially among the international network of influencers, distributors and retailers.

**Participatory Strategies for Discouraging Youth Vaping**

One major challenge facing the FDA’s anti-vaping campaign is the common perception among youth that vaping is a harmless activity (Kim et al., 2019b; Wang et al., 2019), a misconception perpetuated by tobacco-industry marketing (Huang et al., 2019). In an attempt to disabuse teenagers of this “cost-free” mentality toward vaping (The U.S. Food Drug Administration, 2018a), the FDA campaign features images and videos of distorted faces and brains that are meant to reveal the real (but hard to see) detrimental health effects (The U.S. Department of Health Human Services, 2016, 2017; American Cancer Society, 2017; Chung et al., 2018; Centers for Disease Control and Preventions, 2019; Gentzke et al., 2019; Wang et al., 2019) of e-cigarette consumption. Most of our focus-group participants found these images and videos repulsive and scary; however, seeing them did not motivate any e-cigarette users in our group (N = 4 of 8) to quit vaping. Generally, appealing to fear in order to raise awareness about health concerns such as smoking can be a valid approach if the messaging is based on evidence or reason (Simpson, 2017). However, fear-inducing tactics can only be effective when an intervention target is perceived as a threat (Albarracin et al., 2005). While smoking is viewed by many consumers as a risky behavior, vaping is not. Some Instagram users responded to the FDA warnings about the danger of vaping aerosol with comments disputing the FDA claims of damaging health effects from nicotine or by asking public health officials to provide a list of toxic chemicals that are present in e-cigarettes as a proof of their harmfulness. The users also referred to the FDA campaign as “propaganda” that people should not take “seriously” and suggested that the campaign’s anti-vaping ads just scared people without actually encouraging them to quit vaping.

Previous research (Albarracin et al., 2005) indicates that participatory, active intervention strategies could be more effective than passive educational campaigns. Indeed, our focus-group participants suggested that sharing vaping experiences in group discussions might be an alternative cessation strategy. Similar interventions were described as effective elsewhere (Ramo et al., 2014). Vaping brands are already using participatory strategies to effectively engage both legal-age and underage vapers as social-media promoters and brand ambassadors. In exchange for posting images featuring vaping products on social media, brands offer influencers commissions on sales of vaping products (VaporDNA, 2019), promotional giveaways and prospects of online exposure. Our interviews indicate that vaping enthusiasts and influencers view these incentives as alluring. Perhaps, public health officials could use participatory interventions to thwart the vaping brands’ marketing strategies and engage youth in developing and market-testing anti-vaping messages.

**Legislative Intervention for Discouraging Youth Vaping**

National, state, and local programs have been shown to reduce and prevent youth tobacco use (Centers for Disease Control and Prevention, 2019), for example by raising taxes for tobacco products or by raising the minimum age of sale to 21 years. The legal minimum age to purchase e-cigarettes differs by state, ranging from 18 to 21, but a majority of states have no legislative restrictions in place prohibiting the use of e-cigarettes by youth who have not yet reached the legal minimum age of sale. Businesses violating restrictions on the sale of e-cigarettes to youth can face a range of minor penalties including a simple warning (in 3 states), a fine (in 31 states), or a misdemeanor criminal charge (in 16 states) (Centers for Disease Control and Prevention, 2019). Only a handful of states have excise tax on e-cigarette sales (Centers for Disease Control and Prevention, 2019c). Youth E-cigarette use could be further discouraged by raising the legal age for e-cigarette purchase to 21 in all states, by introducing stricter penalties for underage sales or use, and by increasing taxes on products.

**LIMITATIONS AND FUTURE RESEARCH**

Although the classification accuracy of the deep learning image analysis was sufficient for descriptive content analysis, it was not perfectly accurate. For device classification, the model was only trained to recognize one class per image, whereas some images had two classes (e.g., “e-juice” and “pod”). Distinguishing pod and mod systems by machine algorithm was also a challenging task as some traditional mod devices are being redesigned to resemble smaller modern pod devices. Additional model training would be required to enable further deep learning image analyses to conduct the following tasks: more precise gender detection of blurred images and recognition of full-body background, identification of faces obscured by smoke, prediction of more than one class in a single image, and integration of post image pixels and post texts to evaluate compliance with the FDA requirements to add warning labels and sponsorship disclosures.

To assess Instagram-user engagement with vaping posts we focused on “like” count as a surrogate for Instagram-user engagement with vaping posts; however a “like” does not necessarily indicate a user’s approval of or support for e-cigarette use. Still, since “likes” are often perceived by adolescent users as determinants of appropriate social behavior (Sherman et al., 2017), the exposure to social media vaping images with many “likes” could be interpreted by youth as a signal of approval of a risky behavior, e.g., vaping.

We did not calculate engagement rates (Canning, 2018; Plann, 2019). Engagement rate per post depends on the follower count of the poster, data which were not available in our samples.
due to Instagram’s data-access restriction policy. Similarly, data-access restrictions prohibited us from identifying the geographic locations for ~80% of the posts. As data-access policies on social media platforms grow increasingly restricted, collaborations between platforms like Instagram and academic institutions will be necessary to conduct ethical, responsible, and useful research about the impacts of social media.

Our interviews and focus groups indicate that the followers of Instagram vaping accounts might represent a subculture of avid enthusiasts, who enjoy watching vape tricks and monitoring the latest models of vaping devices (mostly mods that produce vaping clouds). This group of enthusiasts may not be representative of most young e-cigarette users (including the teenagers targeted by the FDA campaign) who tend to prefer consumer-oriented devices like JUUL pods (and other non-sub ohm devices) (Matt, 2018; Tolentino, 2018). Further study is warranted to characterize the broader influence of social media marketing on youth e-cigarette use: by measuring the attention that youth pay to vaping advertising, by analyzing the emotional intensity of young people reacting to these stimuli, and by conducting focus groups and surveys among diverse groups of adolescents to gauge their perceptions of this content. Likewise, because our analysis of the initial impact of the FDA campaign was based on a limited number of Instagram comments and responses from a small number of focus group participants from one location of Berkeley, CA, a more comprehensive study of the effect of the campaign in middle and high schools (The U.S. Food Drug Administration, 2018a) is warranted. Finally, further study is warranted to include interviews with a larger number of vaping influencers.

DATA AVAILABILITY STATEMENT

The 2019 raw data supporting the conclusions of this manuscript will be made available by the authors, without undue reservation and in compliance with the IRB protocol, to any qualified researcher. The 2017 and 2018 data analyzed in this study was obtained from the University of Wisconsin-Milwaukee. Requests to access these datasets should be directed to Linnea Irina Laestadius, llaestad@uwm.edu.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Internal Review Board of the University of California, Berkeley Committee for Protection of Human Subjects (CPHS). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JV developed the study idea and design, collected and analyzed the social media data, conducted the deep learning image classification and text analysis, organized and conducted the focus groups and interviews, wrote the manuscript. CM provided guidance in the IRB application process, reviewed the study and provided critical feedback. CK assisted with the deep learning text and image classification. TW collaborated on developing the study idea, supervised the data analysis, edited the manuscript, and designed Figures 1, 3.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fcomm.2019.00075/full#supplementary-material
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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Increased Risk of Late-onset Streptococcus pneumoniae Meningitis in Adults With Prior Head or Spine Surgeries

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In a case-control study within the Kaiser Permanente Northern California adult population, prior head or spine surgery was associated with increased Streptococcus pneumoniae meningitis outside of the postoperative period (no prior head or spine surgery; odds ratio, 6.0 [95% confidence interval, 1.9–18.6]). Among the cases, only 33.3% had received any prior pneumococcal vaccinations.

Keywords. meningitis; Streptococcus pneumoniae; neurosurgery; spine surgery; vaccines.

Streptococcus pneumoniae meningitis is a severe illness with changing epidemiology over the last 2 decades as a result of the introduction of pneumococcal vaccines. Currently, 57% of bacterial meningitis cases are caused by Streptococcus pneumoniae [1]. Although there are >90 S. pneumoniae serotypes, much of invasive pneumococcal disease (IPD) is due to a small subset of serotypes included in the 2 pneumococcal vaccines used in the United States [2].

Known risk factors for IPD among adults that are also indications for pneumococcal vaccination include immunocompromising conditions; asplenia; chronic heart, lung, liver, or renal disease; cigarette smoking; cochlear implants; and cerebrospinal fluid (CSF) leaks [3]. However, there are a number of case reports of pneumococcal meningitis occurring in patients many years after a head injury (HI), presumably as a result of an injury-related cranial defect [4–6]. A retrospective review of 2013–2014 California hospital discharge data found that individuals with prior HI or brain surgery had an increased risk of pneumococcal meningitis [7].

In the United States, 13-valent pneumococcal conjugate vaccine (PCV13) is a routine childhood vaccination, and PCV13 and 23-valent pneumococcal polysaccharide vaccine (PPSV23) are routinely recommended for all persons ≥65 years of age [8].

Adults aged 19–64 years with specific risk factors are also recommended to receive 1 or both pneumococcal vaccines [3, 6].

The objective of this study was to determine whether prior HI or head or spine surgery (H/SS) is associated with pneumococcal meningitis among adults. Healthy US children have been recommended to receive 7-valent pneumococcal conjugate vaccine since it was introduced in 2000; PCV13 was recommended in 2010. Therefore, most of the current healthy adult population is unvaccinated against pneumococcal disease. Pneumococcal vaccination coverage among high-risk adults aged 19–64 years old is suboptimal. In 2016, coverage in this group was estimated at 24%; coverage among adults ≥65 years old was 67% [9].

METHODS

This case-control study was conducted within Kaiser Permanente Northern California (KPNC). Potential cases were patients ≥18 years of age with an International Classification of Diseases, Ninth Revision or Tenth Revision diagnosis of bacterial or pneumococcal meningitis between 1 January 2008 and 31 October 2017. Cases were included if they had (1) a positive CSF culture for S. pneumoniae, or (2) CSF white blood cell count >10 leukocytes/μL and a positive blood culture or polymerase chain reaction (PCR) for S. pneumoniae within the same hospitalization. Exclusion criteria included oncologic or rheumatologic conditions with immunosuppressive treatment within 3 months prior to the date of the positive culture or PCR, asplenia, human immunodeficiency virus infection, the presence or history of cochlear implants, or the presence or history of an intracranial shunt. Controls were matched 2:1 to cases by age, sex, KPNC facility, and KPNC membership length.

A blinded medical record review was performed for cases and controls to identify HI and H/SS history, comorbidities, and pneumococcal vaccination history. HIs were defined as concussions, facial fractures, and skull fractures. H/SSs were defined as any surgical history involving the skull or the spine such as nasal surgery, mastoidectomy, or posterior spinal fusions. Patients aged 19–64 years with clinical indications for pneumococcal vaccination were considered “high-risk” patients.

The association between each individual demographic characteristic, clinical characteristic, and history of HI or H/SS and case (pneumococcal meningitis) status was evaluated using separate bivariate conditional logistic regression models. Statistical analysis was performed using SAS version 9.3 (SAS Institute, Cary, North Carolina).

RESULTS

Eighty-four patients ≥18 years of age with pneumococcal meningitis were identified and matched with 168 controls. The
The median age was 60 years (range, 19–86 years); 32 (38.1%) were male (Table 1). Comorbidities did not differ significantly among cases and controls. Two of the 84 (2.4%) cases had recurrent episodes of meningitis. One patient had 2 episodes of otogenic meningitis, both occurring >20 years prior, and a more recent mastoidectomy 6 years prior to the meningitis episode in 2013. The other patient had 2 episodes of meningitis during the study period, and was found to have chronic right CSF otorrhea with multiple skull base defects in the middle fossa floor, thought to be secondary to repeat episodes of mastoiditis.

Fifteen of the 84 (17.9%) cases and 6 of the 168 (3.6%) controls had prior HI or H/SS (Table 1). Cases had 5.6 times higher odds of having a history of HI or H/SS (95% confidence interval [CI], 1.94–12.89). Separately, the odds remained significantly elevated for H/SS (odds ratio [OR], 6.0 [95% CI, 1.94–18.60]), but not for HI (OR, 3.0 [95% CI, .50–17.95]). HI consisted of concussions only as no facial or skull fractures were identified.

Table 1. Unadjusted Odds Ratios for Associations Between Clinical and Demographic Characteristics, Vaccine History, and Prior Head Injury or Head/Spine Surgery With Streptococcus pneumoniae Meningitis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Streptococcus pneumoniae Case (n = 84)</th>
<th>Control (n = 168)</th>
<th>Unadjusted OR (95% CI)</th>
<th>PValue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age, y (range)</td>
<td>60 (19–86)</td>
<td>60 (19–86)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Patient sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>32 (38.1)</td>
<td>64 (38.1)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Comorbiditiesa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>6 (7.1)</td>
<td>15 (8.9)</td>
<td>0.8 (0.3–2.1)</td>
<td>.618</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>12 (14.3)</td>
<td>29 (17.3)</td>
<td>0.8 (0.4–1.7)</td>
<td>.533</td>
</tr>
<tr>
<td>CSF leak</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Heart disease</td>
<td>12 (14.3)</td>
<td>16 (9.5)</td>
<td>1.7 (0.7–4.1)</td>
<td>.232</td>
</tr>
<tr>
<td>Liver disease</td>
<td>0 (0.0)</td>
<td>1 (0.6)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Lung disease</td>
<td>15 (17.9)</td>
<td>22 (13.1)</td>
<td>1.4 (0.7–2.9)</td>
<td>.327</td>
</tr>
<tr>
<td>Renal failure</td>
<td>2 (2.4)</td>
<td>1 (0.6)</td>
<td>4.0 (0.4–41.1)</td>
<td>.258</td>
</tr>
<tr>
<td>Injury or surgery typesb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head injury or surgery</td>
<td>15 (17.9)</td>
<td>6 (3.6)</td>
<td>5.6 (1.9–12.9)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>All head injuries</td>
<td>3 (3.6)</td>
<td>2 (1.2)</td>
<td>3.0 (1.5–18.0)</td>
<td>.229</td>
</tr>
<tr>
<td>Concussion</td>
<td>3 (3.6)</td>
<td>2 (1.2)</td>
<td>3.0 (1.5–18.0)</td>
<td>.229</td>
</tr>
<tr>
<td>All head/spinal surgeries</td>
<td>12 (14.3)</td>
<td>4 (2.4)</td>
<td>6.0 (1.9–18.6)</td>
<td>.002</td>
</tr>
<tr>
<td>Spinal surgery</td>
<td>5 (6.0)</td>
<td>1 (0.6)</td>
<td>10.0 (1.2–85.6)</td>
<td>.036</td>
</tr>
<tr>
<td>Mastoidectomy</td>
<td>2 (2.4)</td>
<td>1 (0.6)</td>
<td>4.0 (4–41.1)</td>
<td>.258</td>
</tr>
<tr>
<td>Nasal surgery</td>
<td>3 (3.6)</td>
<td>1 (0.6)</td>
<td>6.0 (6–57.7)</td>
<td>.121</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>4 (4.8)</td>
<td>1 (0.6)</td>
<td>8.0 (1.9–71.6)</td>
<td>.063</td>
</tr>
<tr>
<td>Immunization historyd</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any pneumococcal vaccination</td>
<td>28 (33.3)</td>
<td>70 (41.7)</td>
<td>0.6 (0.3–1.1)</td>
<td>.107</td>
</tr>
<tr>
<td>≥1 polysaccharide vaccine dose received</td>
<td>28/84 (33.3)</td>
<td>69/168 (41.1)</td>
<td>0.6 (0.3–1.2)</td>
<td>.134</td>
</tr>
<tr>
<td>High-risk ‘19–64 y old</td>
<td>7/18 (38.9)</td>
<td>15/58 (39.5)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>≥65 y old</td>
<td>19/31 (61.3)</td>
<td>47/161 (77.0)</td>
<td>0.4 (1.1–1.4)</td>
<td>.152</td>
</tr>
<tr>
<td>≥1 conjugate vaccine dose received</td>
<td>2 (2.4)</td>
<td>7 (4.2)</td>
<td>0.4 (0.4–3.4)</td>
<td>.360</td>
</tr>
</tbody>
</table>

Data are presented as No. (%) unless otherwise indicated. Bolded P values are statistically significant (<.05).

Abbreviations: CI, confidence interval; CSF, cerebrospinal fluid; OR, odds ratio.

*aFor each comparison by comorbidity, the referent is not having that comorbidity.

*bFor each comparison by injury or surgery type, the referent is not having that injury or surgery type.

*cNo facial or skull fractures were noted.

*dFor each comparison by immunization, the referent is not having that immunization.
the time of the nasal surgeries and 1 of the 2 mastoidectomies. The second mastoidectomy was performed 8 years prior to the meningitis incident, and additional information regarding the surgical indication and presence of active infection at the time of that surgery was unavailable.

Twenty-eight (33.3%) cases and 70 (41.7%) controls had received at least 1 dose of a pneumococcal vaccine; almost all doses were PPSV23 (Table 1). Among high-risk patients 19–64 years old, 7 of 18 cases (38.9%) and 15 of 38 (39.5%) controls received at least 1 dose of a pneumococcal vaccine. Among those ≥65 years old, 19 of 31 (61.3%) cases and 47 of 61 (77.0%) controls received at least 1 dose of PPSV23. Two case patients (1 high-risk patient between the ages of 19 and 64 years, and 1 patient ≥65 years old) received PPSV23 vaccine <2 weeks prior to their meningitis diagnosis. There was no significant difference in pneumococcal vaccination status between cases and controls when stratified by age and vaccination indication. Because *S. pneumoniae* serotyping was not performed, it is unclear if any vaccinated cases had vaccine-preventable infections.

**DISCUSSION**

A history of H/SS was associated with significantly increased odds of developing pneumococcal meningitis among this adult population. Large studies for neurosurgery and SS have identified acute, postoperative central nervous system infection rates to be approximately 1%–10% and 0.2%–2.1%, respectively [10, 11]. In our study, 1 (1.2%) case who underwent H/SS developed postoperative pneumococcal meningitis, consistent with the incidence rate from the literature. Our results suggest that a history of H/SS increases the pneumococcal meningitis risk far beyond the postoperative period. Traumatic injury to the blood-brain barrier (BBB) has been shown to lead to BBB dysfunction years after the initiating event [12]. A direct anatomic connection from the nasopharynx to the intracranial compartment resulting from prior head surgery, and transient bacteremia leading to meningitis via a dysfunctional BBB, could explain the increased risk of pneumococcal meningitis seen in patients with prior H/SS. Concussion was not found to be significantly associated with the development of meningitis.

While pneumococcal meningitis is a rare condition, our sample size was adequate for many statistical comparisons. However, the study was underpowered for a close analysis of HI and H/SS types. No patients had a history of facial and skull fractures; therefore, it was not possible to evaluate the risk of these types of HIs. Childhood concussions may not have been documented, although incomplete documentation should have been similar for cases and controls.

This is the first published study demonstrating an association between a history of H/SS and pneumococcal meningitis outside the 30-day postoperative period. IPD, including meningitis, is largely a vaccine-preventable disease [2]. Among both cases and controls aged 19–64 years with clinical indications for pneumococcal vaccination, less than half of the patients had been vaccinated. This study emphasizes the need for provider education to improve overall adult pneumococcal vaccination rates. Given the significantly increased OR, H/SS should be considered as a potential risk factor for pneumococcal meningitis among adults. Additional investigations are needed to confirm these results, as this was a relatively small study. Future investigations are also needed to explore the risk of facial and skull fractures, as well as the risk of developing other neuroinfectious diseases in persons with prior H/SS. In the meantime, pneumococcal vaccination is a safe and efficacious intervention, and we would recommend vaccinating patients with prior or upcoming elective H/SS, particularly if they are in a risk group already recommended for vaccination.

**Notes**

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**Potential conflicts of interest.** All authors: No reported conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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