22nd Annual Summer Program in Population Health: *Data for Action: Examples from Pandemics, Epidemics, and Other Public Health Crises*

Course Syllabus

INSTRUCTOR

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COURSE DESCRIPTION

Currently there is no shortage of public health crises. Data-informed decision-making during times of crises is critical for public health departments, health care systems and payers. In this course, two examples—the COVID-19 pandemic and the opioid epidemic—will serve as case studies on collecting, processing, integrating, and using data for action. Additional case studies may include infant mortality and food insecurity. By the end of the course, participants will be able to develop a dynamic and sustainable data-for-action strategy, to assemble and analyze data for action, and to translate data for actions that are impactful and equitable.

The method of instruction will involve short lectures on data for action frameworks, guest lectures from local public health professionals and other stakeholders implementing data for action initiatives in Ohio, and hands-on training with software and other tools to catalyze data for action, such as use cases for community engagement, open data platforms and data commons, and data visualization/analytics.

COURSE FORMAT

This course will be delivered asynchronously between June 21 – October 29, 2021 as part of the 22nd Annual Summer Program in Population Health. The course will consist of a mix of recorded videos (lectures and hands-on tutorials) and online modules involving individual and group-
based assignments and writing activities. While the majority of the course will be asynchronous there will be opportunities for synchronous learning, which will be dependent on number of course participants and their availability. Participants will complete the course via the Center’s learning management system, ScarletCanvas.

COURSE GOAL & LEARNING OBJECTIVES

Course goal
1) Participants will know the skills, software and open-source solutions needed to integrate and make sense of data from multiple sectors linked to a public health issue.
   a) **Identify** relevant people, projects, organizations, datasets and issues for a given public health issue.
   b) **Use** open source software and other tools to collect, clean, document, harmonize, analyze, visualize and share the variety of data collected by local health departments.
   c) **Build** internal and external capacity to share, analyze, interpret, communicate and translate data and data-informed decisions.
   d) **Analyze** qualitative and quantitative data from non-traditional sources (e.g., social media, business/marketing, dark web).
   e) **Assemble** an end-to-end workflow (i.e., a set of interconnected tasks) for integrating and making sense of data from multiple sectors linked to a public health issue.

2) Participants will understand how to use the Engagement-Analytics-Translation (EAT) Framework within their organization, including planning, surveillance, quality improvement, monitoring and evaluation, and health equity goals and activities.
   a) **Identify** activities within each component of the EAT framework.
   b) **Outline** how to use the EAT framework in daily public health practice and healthcare settings.
   c) **Apply** the EAT framework within your own organization/agency/department.
   d) **Criticate** each component of the EAT framework based on real-world experiences and simulated public health crises.
   e) **Modify** the EAT framework for future public health crises.

Upon completion of the course, students will be able to:

**Course Objectives**
1. **Identify** relevant people, projects, organizations, datasets and issues for a given public health issue

2. **Use** open source software and other tools to collect, clean, document, harmonize, analyze, visualize and share the variety of data collected by local health departments

3. **Build** internal and external capacity to share, analyze, interpret, communicate and translate data and data-informed decisions

4. **Analyze** qualitative and quantitative data from non-traditional sources (e.g., social media, business/marketing, dark web)

5. **Assemble** an end-to-end workflow for integrating and making sense of data from multiple sectors linked to a public health issue

6. **Identify** activities within each component of the EAT framework

7. **Outline** how to use the EAT framework in daily public health practice and healthcare settings

8. **Apply** the EAT framework within your own organization/agency/department

9. **Criticize** each component of the EAT framework based on real-world experiences and simulated public health crises

10. **Modify** the EAT framework for future public health crises

**REQUIRED COURSE MATERIALS & PRE-WORK**

Participants in this course will interface with the course content through the CPHP learning management system. Instructors will post materials in advance; participants are responsible for making copies of any handouts or other course-related materials as requested by the instructor.

**Course materials**
Please purchase or download the following materials and bring with you to class:

1. We will be using R* (free so no purchase required) for all data analytics activities in this course. Students will be able to access R via the online classroom provided by Ohio Supercomputing Center (OSC). Registered students will receive instructions on creating an OSC account and accessing R via an internet browser (Chrome is highly recommended) using their own computer. Students must have access to a laptop or desktop in order to use R on OSC via an internet browser.

*Previous knowledge or experience with R is NOT a requirement to take this course. Learning R is optional in this course and students may use this course as a motivation to learn R. Students with no or limited experience in R or who decided they do not want to learn R will be given alternative assignments to complete during the course and will have the same learning experience as those who choose to learn R during this course.

Pre-work
Please complete the following in advance of the course:

1. The following readings (please select up to 3 from the list below) are required reading prior to starting in the course:
Morgenstern JD, Rosella LC, Daley MJ, Goel V, Schünemann HJ, Piggott T. "AI's gonna have an impact on everything in society, so it has to have an impact on public health": a fundamental qualitative descriptive study of the implications of artificial intelligence for public health. BMC Public Health. 2021;21(1):40. Published 2021 Jan 6. doi:10.1186/s12889-020-10030-x

The System for Opioid Overdose Surveillance (SOS) (Full article will be available to registered students in ScarletCanvas.)

2. The following readings are recommended prior to starting in the course:
   - Improving Public Health Surveillance Through Interoperability, Data Standards, and Legislation

EXPECTATIONS ABOUT COURSE WORKLOAD

Continuing education
14 Continuing education credits will be available for nurses, certified health education specialists, registered sanitarians and those certified in public health.

Questions regarding continuing education credit should be directed to cph-practice@osu.edu.

Completion requirements
Completion of all modules and submission of an online quiz and course evaluation are required for continuing education credit.

RESOURCE LIST

1. Resources for learning R* (for beginners only).
   - If you CHOOSE to learn R as part of taking this course, then please read the chapters and selected sections in the online book below. You may want to go through the exercises for extra practice.
   - In order to follow along in this online book you will have to download and install R and RStudio on your computer. Instructions on how to do that are found in sections 1.4.1 and 1.4.2.

| Readings from "R for Data Science" (Links to an external site.) |
|-------------------------|-------------------------|
| Chapter 1 (1.1-1.5, 1.7) |
| Chapter 3 (3.1-3.5)    |
| Chapter 4              |
| Chapter 5 (5.1,5.2,5.4,5.5) |

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