



BASICS OF HEALTH DATA SCIENCE

Facilitator Guide

Ethiopia Public Health Institute, National Data Management Center for Health
NOVEMBER 10, 2021





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Participant Training Manual

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Course Description:

These 9 days basic Health Data Science training is designed to capacitate public health professionals on fundamental processes of data science, maintaining data quality through proper data management, utilizing statistical concepts of data analysis and inference, employing and effectively using algorithmic problem-solving skills to the problem at hand, and effectively communicate results and findings to a broad audience.

Course Goals:

To equip participants with basic knowledge, skills, and attitude to improve the means of utilizing health data through the process of data science and its applications by enriching problem analysis and decision-making practices for strengthening the public health sector.

Learning Objectives:

After the completion of this training module, the participants will be able to:

- Recognize the core principles and tools of health data science
- Access and use health data
- Perform pre-processing of health data
- Explore Health data using Python
- Apply Machine Learning models on health data
- Communicate evidences timely and effectively

Training/Learning Methods:

- Illustrated lecture
- Group discussions
- Practical individual and group exercises

- Reading Assignments
- Case studies
- Guided practice activities for implementing different classic statistical and machine learning methods, and programming exercises.
- Simulations
- Project work

Training Materials:

- Health Data Science participant manual
- facilitator guide
- Video Display Systems
- Flip charts and markers
- High Performance Computers
- Pens and Notebooks
- Fast internet access
- Online repositories
- Python Integrated Development Environments
- High definition Web camera, Microphones, and background lighting
- Various multimedia assets (Audio and videos)
- High computing power virtual machines
- Ethiopia Demographic and Health Survey child health-related dataset

Selection Criteria of Participants:

Participants for this training should be individuals who are currently working or are interested to work in areas of health data science. Participants for this course should be health professionals with:

- At least one year of experience in the public health sector;
- A minimum of first degree;
- At least have experience in basic processing and analytics tools like STATA, SPSS, SAS, R, and others for solving health-related research questions;
- At least have a basic knowledge of computer;

Trainers' Selection Criteria:

- Background in one of the following areas:
 - Computer Engineering and Software Engineering
 - Mathematics
 - Statistics
 - Computer Science and Information technology
 - Public health informatics
- Certified TOT in Data Science and its application for public health courses or training;
- Certified TOT in computer programming using statistical software.

Methods of Evaluation:

Participant

- Formative
 - Pre-test
 - Individual and Group practical exercises
 - Case study
 - Drills

- Summative
 - Knowledge assessment (25%) - Post test
 - DOP throughout the course (50%)
 - Presentation (25%)

Course:

- Daily Evaluation
- Trainers meeting
- End of Course Evaluation

Duration of the Course:

9 days

Course Venue:

Training center (classrooms and computer laboratories) containing essential training materials listed in above.

Composition of the Course:

- 1 to 3 trainers to trainees' proportion. Total of one theoretical trainer with three laboratory assistants.

Minimal Criteria for Certification:

- A score of 70% on the summative assessment.
- A portfolio and a presentation (project summary report)
- Attendance (100%)