Elevating
frontline
epidemiology

November 2023

Terms of Reference

Code and Curriculum Infrastructure Lead

Organisation background

Applied Epi is a global nonprofit organisation which supports frontline epidemiologists and public health practitioners with analytical and applied epidemiological training and support. Applied Epi is registered in Maryland, USA. Originally a grassroots movement of volunteers, Applied Epi now includes 170 consultant instructors, translators, writers, and other technicians located in over 40 countries. Applied Epi works closely with partners including local and national public health agencies, the World Health Organization, Doctors without Borders / Médecins sans frontières (MSF), the R Consortium, Training Programs in Epidemiology and Public Health Interventions (TEPHINET), national Field Epidemiology Training Programs (FETPs) worldwide, the US Council of State and Territorial Epidemiologists (CSTE), and academic partners.

Training pillar: Applied Epi is best known for its free Epidemiologist R Handbook, which has been used over 2 million times by 600,000 people since 2021 and is available in 8 languages. The organisation's 75 R instructors deliver synchronous introductory and advanced R training courses around-the-clock to local and national public health agencies, international and multinational organisations, and NGOs. Since 2022, Applied Epi has delivered its 40-hour synchronous introductory R course to 1,200 epidemiologists at 350 agencies worldwide, in English, French, Spanish, Ukrainian, Russian, and Khmer. The organisation also oversees a series of asynchronous, interactive R tutorials co-developed with MSF and TEPHINET. Applied Epi hosts an open-access repository of public health case studies, built in collaboration with national FETPs.

Support pillar: Applied Epi operates a 24/7 R Support Desk, leveraging its global network of experienced epidemiologist support technicians. The Desk services R code support requests from course participants and staff at public health agencies worldwide. Notable examples include extended technical support to the Uganda Ministry of Health during the recent Ebola epidemic (sponsored by WHO), and outbreak analytics support to MSF. Applied Epi also operates Applied Epi

Community, a forum with 3,000 users designed as a welcoming, beginner-friendly space for support on R code and epidemiologic methods in public health practice.

The Role

The Code and Curriculum Infrastructure Lead ("Infrastructure Lead") is responsible for professionalising and aligning the structure, version control, automation, documentation, and content across all Applied Epi training materials. They will perform an assessment of existing structure and version control workflows, suggest improvements to the same, and implement changes to result in a robust, sustainable, and well-documented system. Contents to be addressed include the Epidemiologist R Handbook, introductory and advanced R course materials, asynchronous R tutorials, R case studies, the forthcoming Applied Epidemiology Manual, and datasets utilised in the aforementioned materials. These contents are currently stored in several ways including language-specific Github repositories and editable text tables. They will furthermore update the existing Docker infrastructure. This position reports to the Executive Director and is expected to consult frequently with the Operations Manager, Epidemiology Lead, and other external consultants hired by Applied Epi. As for all Applied Epi personnel, the Epidemiology Lead must abide by and enforce the Applied Epi Code of Conduct.

Position type

The Infrastructure Lead is a deliverable-based, remote, consultant position for an anticipated duration of 3-4 months. Proposals for alternative work and engagement schedules can be considered.

Term of appointment

The desired start date is 15 January 2024. There is a 1-month probation period with a performance review. As per Maryland (USA) labour regulations, consultants work at-will and can be removed at-will of the employer. Applied Epi requests 4 weeks notice of early departure as a courtesy, and likewise will offer 4 weeks notice of early termination.

Work hours

The Infrastructure Lead position is permitted flexible work hours with minimal duties related to Applied Epi's routine operations.

Deliverables and corresponding compensation

The following deliverables are expected of the Infrastructure Lead. Applicants may indicate in their cover letter if they prefer to only complete some of these deliverables.

1. **Review of multi-language content infrastructure and version control**

a. In the initial two weeks of the contract, the consultant will coordinate with the Executive Director to conduct an assessment of weaknesses in Applied Epi's current content storage and version control infrastructure for multi-language content used across all training materials listed above. By the end of the second week of the contract, they will propose to Applied Epi leadership a plan for a new system that best leverages assets such as:
   i. Git repository structure
   ii. {renv} or equivalent for R package version control
   iii. Applied Epi's existing relational database
   iv. Github Actions for testing the rendering of materials
   v. Maintains accessibility to content for external translators
   vi. Implements use of Quarto or R Markdown as appropriate
   vii. Considers integration of R packages such as {babeldown} or tools such as DeepL for initial translation
   viii. Cooperates with the dockerfiles and containers used to host the materials
b. The plan will then be reviewed by Applied Epi leadership and agreed upon with the consultant
c. This deliverable is at Applied Epi's Specialist rate ($60/hour) with an expected duration of 2 weeks. Compensation will be provided as a lump sum of $4,800 upon completion.

2. **Implement the revised multi-language version control infrastructure**
   a. Implementation of the plan agreed upon for Deliverable 1. Exact tasks and duration depend on the outcome of deliverable 1, but could include:
      i. Creating structured multi-language Git repositories for each of the training materials, and/or refining existing database or spreadsheet-based content storage mechanisms
      ii. Testing and documenting the workflow for minor and major updates across languages
   b. Submission of robust documentation of the systems and workflows for the following audiences:
      i. Applied Epi internal technical personnel
      ii. A friendly user guide for external translator audiences
   c. The timeline and compensation for this deliverable will depend on the nature of the tasks, with deliverable-based payment according to Applied Epi's compensation framework: e.g. $45/hour for Senior-level tasks, or $60/hour for Specialist-level tasks).

3. **Training dataset assessment**
   a. Conduct a review of the training datasets used across Applied Epi materials. This consists primarily of slight variations of a simulated Ebola case linelist, with 3-5 other peripheral and unvarying datasets. R

scripts that modified the datasets for various specific training purposes will be provided.

    b. Present their differences, weaknesses, and documentation status in a brief report with suggestions for consolidation and standardisation.

    c. This deliverable is at Applied Epi's Senior rate ($45/hour) with an estimated duration of 3 days. Compensation will be provided as a lump sum of $1,080 upon completion. A separate deliverable can be offered to address alignment and other identified dataset issues.

4. **Improve packaging of training datasets**

    a. Improve upon the existing {epirhandbook} package that enables members of the public to download Epi R Handbook datasets, to include proper dataset documentation and internal tests.

    b. Documentation of the work in Applied Epi's technical documentation

    c. This deliverable is at Applied Epi's Specialist rate ($60/hour) with an estimated duration of 5 days. Compensation will be provided as a lump sum of $2,400 upon completion.

5. **Review the Epi R Handbook content**

    a. Complete a thorough review of the Epidemiologist R Handbook, and submit a document that addresses the following:

        i. Which chapters need cleanup of text content (clarity, typos, etc.)

        ii. Which chapters require updates to code syntax, arguments, etc

        iii. Which chapters utilise packages that should be replaced and major parts re-written

        iv. Which of the existing Github Issues align with the above points

        v. How to best store Epi R Handbook content within the new infrastructure designed in Deliverable 1.

    b. This deliverable is at Applied Epi's Senior rate ($45/hour) with an expected duration of 5 days. Compensation will be provided as a lump sum of $1,800 upon completion. Subsequent deliverables may be offered to update specific Epi R Handbook chapters.

6. **Update of the introductory R course content**

    a. Incorporating feedback from the instructor pool, revise the intro course to remove bugs, use updated packages, and refresh the content. We estimate this will require substantial revision to 4 of the 10 modules.

    b. Update the R version used in the intro course dockerfile.

    c. Compensation for this deliverable is at the Senior rate, for 5 days anticipated duration, for a total of US $1,800.

Possible extensions of this contract include:

- Adapting the introductory R course materials into an asynchronous video-based course, including working with video editors and other team members on semi-automated credentialing approaches.

Candidate profile

Candidates for the role of Infrastructure Lead must be able to prove:

Essential
1. Masters-level degree in public health or epidemiology or a related discipline
2. Commitment to completing the specified tasks by agreed-upon deadlines
3. Demonstrated expertise in R used for public health practice
4. Experience with professional approaches to version control of multi-language training materials
5. Comfort using Git and Github for advanced version control scenarios, and familiarity with Github Actions
6. Experience with R package development, dataset storage, and the accompanying documentation practices
7. Experience creating technical training materials and instructional content
8. Fluency and clear communication in English (written and spoken)

Desirable
1. Familiarity with the contents of Applied Epi materials.
2. Knowledge of other languages used in Applied Epi trainings and services
3. Expertise with Github Actions

Compensation

1. Payment:
   a. Payment will be as lump-sum for the above deliverables as outlined in the table below. Taxes are the responsibility of the consultant.

Deliverable	Consultant tier	Anticipated duration	Lump-sum payment
1. Review and proposal for multi-language content infrastructure	Specialist	10 days	$4,800
Implementation of multi-language infrastructure **TBD** - based on proposal from Deliverable 1	**TBD**	**TBD**	**TBD**
2. Assessment of training datasets	Senior	3 days	$1,080
Training dataset revisions TBD - based on assessment from Deliverable 2	TBD	TBD	TBD
3. Packaging of training datasets	Specialist	5 days	$2,400
4. Epi R Handbook review	Senior	5 days	$1,800
Epi R Handbook updates TBD - based on review from Deliverable 4	TBD	TBD	TBD

5. Intro course updates	Senior	5 days	$1,800
TOTAL	**-**	**28 days**	**$11,880**

2. Location: The candidate must have the right to work in their location. Applied Epi cannot at this time provide visa sponsorship.
3. Benefits: There are no other benefits provided.
4. Opportunities: The Infrastructure Lead can enrol in Applied Epi courses for free and may be offered opportunities to work on emergency responses and deliver in-person training courses, as they arise.

How to apply

The candidate's CV, cover letter, and contact details of two references should be sent to: **contact@appliedepi.org** by **1 January 2024.** Applications will be considered on a rolling basis. Questions can be addressed to the hiring manager: **staffing@appliedepi.org**

Applied Epi is committed to recruiting a team that reflects the experiential, geographic, linguistic, and cultural breadth of the global public health workforce. All candidates will be emailed with their application outcome, with short-listed candidates invited to interview.