

riycf Package

Independent Study Planning

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Background Information

The first 1,000 days of life (from pregnancy to a child's 2nd birthday) are critical for addressing childhood malnutrition, especially stunting. Infant and young child feeding practices (IYCF) largely overlap with this period as they cover breastfeeding and complementary feeding practices for the first two years of a child's life. They also have a significant impact on childhood health, nutrition outcomes, and child survival. It is, therefore, critical for countries to measure IYCF practices as part of their efforts to monitor their progress toward Sustainable Development Goal 2. It is also important for development agencies to be able to monitor and evaluate their programs aimed at improving infant and young child feeding practices towards improved overall childhood nutrition.

WHO and UNICEF released the first IYCF indicators definition and measurement guidelines in 2008. In 2021, these guidelines were updated along with a revised standard questionnaire to capture the information required to calculate the updated IYCF indicators since the first initial publication.

Although published in 2008 with many humanitarian organizations and country health ministries implementing these indicators, no comprehensive statistical programming package to calculate these indicators is yet available. This project aims to address this technical gap by providing an easy-to-use package for the R language for statistical computing to calculate these IYCF indicators. This project also aims to develop an IYCF questionnaire based on the recommendations of the current guidelines built using XLS-Form standard that can be deployed using any Open Data Kit platform for computer-assisted personal interviews (CAPI).

Objectives

- To develop an R package to generate IYCF indicators according to the indicators' definition provided by the WHO/UNICEF 2021 guideline.
- To develop a questionnaire using the XLSForm standard based on WHO/UNICEF IYCF indicators standard questionnaire.
- To publish the `riycf` package at The Comprehensive R Archive Network
- To deploy a package website that explains the IYCF indicators and demonstrates the application of the functions available in the package.
- To draft a concept note and flowchart for the development of a Shiny app that uses the `riycf` package and aims to provide a dashboard for reporting indicator results.

Project Organization

- Professor Rebecca Wolfe: Academic Supervisor

- Ernest Guevarra: Technical Resource Person
- Nicholus Tint Zaw: Student and Lead author of the package

Workflow Management

- A weekly update to share with the academic supervisor and technical resource person
- Hold regular bi-weekly meetings with the academic supervisor to update the project progress and other project-related issues
- Hold regular weekly meetings with technical resource person to review the codes
- Use GitHub platform for version control, coding task management, and publication

Timeline and Project Milestones

Duration: Spring Quarter (28th March 2022 - 4th June 2022)

Milestones

- Step 1: XLXForm development
- Step 2: Completion of breastfeeding-related indicators
- Step 3: Completion of complementary feeding-related indicators
- Step 4: Development of general user guidelines for using the `riycf` package
- Step 5: Submit package for publication to CRAN
- Step 6: Development of Shiny app (concept note and flowchart)

Project Plan

No.	Activity Description	Responsible Person	Time-line	Deadline
1	Project kick-off meeting	Professor Rebecca Wolfe Nicholus Tint Zaw	28th-31th March	TBC
	Step 1			
2	XLS form programming	Nicholus Tint Zaw	28th-30th March	1st April
3	Review XLS programming	Ernest Guevarra	31th March - 1st April	1st April
	Step 2			
4	Breastfeeding indicators development	Nicholus Tint Zaw	4th-6th April	6th April
5	Breastfeeding indicators code review	Ernest Guevarra	7th - 8th April	8th April
6	Project Progress Meeting	Professor Rebecca Wolfe Nicholus Tint Zaw	11th-15th April	TBC
	Step 3			
7	Complementary indicators development	Nicholus Tint Zaw	11th-13th April	13th April
8	Complementary indicators code review	Ernest Guevarra	14th - 15th April	15th April
	Step 4			

No.	Activity Description	Responsible Person	Time-line	Deadline
9	Development of R Documentation File (Vignettes)	Nicholus Tint Zaw	18th-22th April	22th April
10	Project Progress Meeting	Professor Rebecca Wolfe Nicholus Tint Zaw	25th-29th April	TBC
11	R Documentation File (Vignettes) review	Ernest Guevarra	25th-29th April	29th April
Step 5				
12	Final Review on R-package (prepare for CRAN submission)	Nicholus Tint Zaw	2nd-6th May	6th May
13	Project Progress Meeting	Professor Rebecca Wolfe Nicholus Tint Zaw	9th-13th May	TBC
14	Project Website Development	Nicholus Tint Zaw	9th-11th May	11th May
15	Project Website code review	Ernest Guevarra	12th - 13th May	13th May
Step 6				
16	Shiny App Development (concept note)	Nicholus Tint Zaw	16th-20th May	20th May
17	Project Progress Meeting	Professor Rebecca Wolfe Nicholus Tint Zaw	23th-27th May	TBC
18	Shiny App Development Concept note review	Ernest Guevarra	23th-27th May	27th May
19	R-package and Website Launching	All	30th-31th May	31th May

Project Outputs

Output-1: XLS programming form for standard IYCF indicators questionnaires

Ready to deploy XLS programming form for any XLS form supported platform (for example, SurveyCTO, ONA, ODK, KoboToolbox, etc.). A brief user guide will be provided as part of the output, and the form will be also published on the `riycf-package` website.

Output-2: `riycf-package`

The `r-function` package calculates all the IYCF indicators provided in the WHO guideline. Each function will be performed to check the type of input parameters variables are consistent with the kind of variable to calculate the IYCF indicator variable. If not, the error message will be provided to notify the user to check the input parameter variables. If there were no issues with the input parameters, the indicator calculation process would continue, and the respective IYCF indicator will be returned as the final output of each function.

The additional variables check function will be available for the user who uses the XLS form provided by our package. This function will check whether the required variables' names are present in the provided data frame or not, and those variables have the correct variable type to calculate the IYCF indicators.

Output-3: `r-package` Guideline Website

This website will host information about XLS form and **riycf-package** and articles which explain the step-by-step demonstration on the usage of the XLS form and r-package. The shiny app link will be provided on that website.

Output-4: riycf Shiny App Concept Note

This concept note will help map out the feature and function of the **riycf shiny app**, which continues to work after this project. The main idea of this shiny app is to provide the 'riycf-package to the user community who don't wish to use statistical softwareR' for their regular monitoring and evaluation work (especially the INGOs country office teams).

Reference Documents and Reading

- [the Indicators for assessing infant and young child feeding practices: definitions and measurement methods](#)
- [R Packages: Organize, Test, Document and Share your Code](#)