Community Health Workers As Key Providers of Easy-to-Use Contraceptive Injectables: Experimental Evidence from Rural Burundi

This folder contains the reproducibility package for the Working Paper "Community Health Workers As Key Providers of Easy-to-Use Contraceptive Injectables: Experimental Evidence from Rural Burundi" by Andreottola, Basenya, Orozco-Olvera, Reicher and Spinola.

Computational requirements

Software Requirements

- Stata (code was last run with version 15.1)
    - `rwolf2` (version 1.0.0)
    - `iefieldkit` (version 3.12
    - `ietoolkit` (version 7.2)
    - `outreg2` (version 2.3.2)
    - `fre` (version 1.2.5)
    - `estout` (version 3.31)
    - `rmiss2` (version 2.0.0)
    - `randtreat` (version 1.4)

    All dependency files are included in the folder "Code/ado". The program "`Master_DoFile_SayanaBurundiIE.do` " will load all dependencies locally in line 23.

Memory and Runtime Requirements

- The code was last run on a **Windows 11 laptop with 16GB of RAM**.
- Stata analysis code takes approximately 5 minutes to run.

Instructions to Replicators

1. In the folder `/Code`, you will see a Stata dofile called `Master_DoFile_SayanaBurundiIE.do`.
2. To run the Stata `Master_DoFile_SayanaBurundiIE.do`, open it and add your user-dependent project path in line 21 to reflect the path of the folder in your computer. This do-file creates all the tables and graphs included in the working paper, as well as in the appendix.

3. The outputs will be recreated in the `/Output` folder. Please note that the files are named after the Table/Figure number. Figures are saved as .png-files and Tables are saved as .xls or .csv-files. For some tables there are various .xls-files, additionally named with more information (e.g. Panel A-B, Romano-Wolf P values etc.).
4. The only output that cannot be reproduced is
   - figure1, as it is a timeline chart, which was not created through Stata.

List of analysis codes and outputs

The provided code reproduces all tables and figures in the paper, with the exception of those listed above at point 5.

All analysis code is stored in the `Code/Analysis` folder. All outputs are saved to the `Code/Output` folder. All the code can be run from the do-file called `Master_DoFile_SayanaBurundiIE.do`, but the code to recreate each exhibit can also be run independently, as long as the folder globals and the ado path are set using the master.

Exhibit	Input dataset	Program	Output file
Table 1	Data/02_cleaned/covariates.dta Data/03_final/ nfemcov_by_asc.dta	Code/Analysis/1_Paper/Tables/Table 1.do	Output/1_Paper/Tables/Table1_Panel_A.xls Output/1_Paper/Tables/Table1_Panel_B.xls
Figure 2	Data/03_final/qt_contraceptives.dta	Code/Analysis/1_Paper/Figures/Fig 2.do	Output/1_Paper/Figures/Figure 2.png
Table 2	Data/03_final/ qt_contraceptives.dta Data/01_raw/ study sample/hc_treatment_status.dta Data/02_cleaned/ covariates.dta	Code/Analysis/1_Paper/Tables/Tables_2a_2b.do	Output/1_Paper/Tables/Table2A.csv Output/1_Paper/Tables/Table2B.csv Output/1_Paper/Tables/Romano-Wolf P values.csv
Appendix			
Figure A1	Data/03_final/ qt_contraceptives.dta	Code/Analysis/2_Appendix/Figures/Figure A1.do	Output/2_Appendix/Figures/Figure A1.png

Exhibit	Input dataset	Program	Output file
	Data/01_raw/ study sample/hc_treatment_status.dta		
Table B1	Data/03_final/ qt_contraceptives.dta Data/01_raw/ study sample/hc_treatment_status.dta Data/02_cleaned/ covariates.dta	Code/Analysis/2_Appendix/ Tables/Table B1.do	Output/2_Appendix/Table s/TableB1.csv
Table B2	Data/03_final/ nfemcov_by_asc.dta Data/01_raw/ study sample/hc_treatment_status.dta Data/02_cleaned/ covariates.dta	Code/Analysis/2_Appendix/ Tables/Table B2.do	Output/2_Appendix/Table s/TableB2.csv

Data Availability Statement

We list the raw data sources here. We describe where one can retrieve the data, and under which names they are called in. We keep the folder structure in data/raw, to make it easier for a full replication. Raw data are provided as part of the replication package, except for data on contraceptive delivery.

DATA ON CONTRACEPTIVE DELIVERY

The data were sourced from the National Health Information System (NHIS). This system provides monthly data at the health center level on the quantity of each contraceptive method distributed by the Burundian government as well as the number of CHW referrals to health centers. The dataset is downloadable from:

https://dhis-burundi-ecascade.fhi360.org/dhis-web-commons/security/login.action

However, authorization from the Burundi Ministry of Health is necessary to access the dataset.

The dataset used in this study was downloaded in January 2024. Our file is named "DONNEES PF-DSNIS-BM.xls" and is be placed under "Data/01_raw/"

DATA ON POPULATION OF WOMEN AGED 15-49

We use data on population of women between 15 and 49 years old in the catchment area of each health center in our sample. This dataset was provided by the Burundi Ministry of Health and it is included in the reproducibility package.

The file is named "Population et nombre de femmes âgées de15 à 49 ans par CDS en 2023.xls"and is placed under " Data/01_raw/Population". This dataset was shared in December 2023.

DATA ON NUMBER of COMMUNITY HEALTH VOLUNTEERS (CHW) and HEALTH PROMOTION OFFICERS (TPS)

Data on CHW and TPS working in each province and in each specific health center from the sample were provided by the Burundi Ministry of Health and it is included in the reproducibility package.

The file are named :

- "ASC non encore formés dans les centres de sante Burundi EI échantillonés.xls", shared in February 2022
- "Effectifs des ASC, des TPS, des CDS et des GASC dans les 18 Provinces Sanitaires du Burundi (2).ods", shared in January 2024
- "Liste_CDS avec TPS et ASC.xlsx", , shared in April 2024

and are placed under "Data/01_raw/Providers".

DATA RURAL/URBAN STATUS of HEALTH CENTER

Data on the urban or rural status of the health centers in the sample were provided by the Burundi Ministry of Health and is included in the reproducibility package.

The file is named :

- " STATUT URBAIN OU RURAL DES 138 CDS ET KMs ESTIMES ENTRE LES ENTITES PAR RAPPORT AUX CDS.xlsx"

and are placed under "Data/01_raw/rural_vs_urban".

This dataset was shared in February 2024.

LIST OF NATIONAL HEALTH CENTERS INCLUDED IN THE NATIONAL HEALTH INFORMATION SYSTEM (NHIS) DATASET

This list was provided by the government counterparts in 2020 and is placed under "Data/00_preliminary/DHIS_health_centers_2020.xlsx".

DATA ON SELF-INJECTABLE CONTRACEPTIVES AVAILABILITY FOR HEALTH CENTERS and TRAINING of COMMUNITY HEALTH VOLUNTEERS (CHW)

The Ministry of Heath provided the list of health centers where the new self-injectable was already offered as part of the contraceptives (202), including indication of whether health volunteers had been already trained by the government to deliver Sayana Press. This list was provided by the government counterparts in January 2022 and is placed under "Data/00_preliminary/ FOSA PUBLIQUES OFFRANT SAYANA PRESS.xls".

DATA ON CONTRACEPTIVE DELIVERY USED TO RANDOMIZE THE SAMPLE

The dataset used to randomize the sample into treatment and control was provided by the government counterparts in January 2022 and was limited to the selected sample (see above). The data were sourced from the National Health Information System (NHIS).

The file is named "data_sample_2018_2019_2020_2021.dta" and is placed under "Replication Package/Data/00_preliminary"

DATA ON NATIONAL HEALTH CENTERS LOCATION

This list was provided by Burundi Ministry of Health in February 2022 and is placed under "Data/00_preliminary/health_cent_GPS.dta".

Sample Selection and Randomization

SAMPLE DEFINITION of HEALTH CENTERS

The starting point for the health centers selection process was the list of all national health centers included in the NHIS dataset. While the original plan was to sample from a list of health centers spread across the entire country, we were forced to restrict the study to 6 provinces due to funding reasons (410 health centers). As a second step, the Ministry of Heath provided the list of health centers where the new self-injectable was already offered as part of the contraceptives (202) (see DATA ON SELF-INJECTABLE CONTRACEPTIVES AVAILABILITY FOR HEALTH CENTERS and TRAINING of COMMUNITY HEALTH VOLUNTEERS (CHW) in section above). Finally, only health centers where Community Health Volunteers had not yet been trained to deliver the new self-injectable were eligible (138 out of 202).

TREATMENT ASSIGNMENT of HEALTH CENTER

The randomization was conducted using STATA and specifically, the randtreat command (Alvaro Carril, 2015). Three strata were used during the randomization: province, share of injectables over total contraceptives administered (low, high), tot contraceptives administered (low, high). Randomization was performed in February 2022.