Supplementary Material

Calculating contraceptive use and unmet need for family planning with the Moldovan Generations and Gender Survey

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Introduction

In this paper contraceptive prevalence and unmet need for family planning are calculated using data of the Generations and Gender Survey (GGS) collected in the Republic of Moldova in 2020. This data was collected via Computer-Assisted Personal Interviewing. Estimates are based on self-reported information of 2,963 women aged 15-49. The operationalization developed by the Demographic and Health Surveys (DHS) program and used by the United Nations Population Division in their calculation of contraceptive prevalence and unmet need for family planning is followed as closely as possible. Because this paper includes all code that leads to the calculation of contraceptive prevalence and unmet need for family planning, the estimates are fully reproducible, even by those with limited knowledge of R or GGS.

Data access

GGS data is made available to employees of recognized research institutes who use the data for research purposes and agree with GGP's Terms of Acceptable Usage. This tutorial uses Moldovan GGS wave 1 data version 0.2. It is recommended to base the estimates on the latest data version available in your GGP User Space. The data collected in the Republic of Moldova in 2020 can be requested by following these steps:

1. Register/ login as a GGP User via the orange button *"Login to GGP User Space"* in the top right of the homepage https://www.ggp-i.org/.
2. Scroll down and click on the green button *"Submit new form"*.
3. Scroll down and click on the green button *"Continue to form"*.
4. Scroll down to *"Data from GGP 2020 - Wave 1"* and select *"Moldova"*. Fill in the Applicant information and submit your request.
5. Your submission will be reviewed. You will receive further instructions via e-mail.
6. After access to the data is granted, the data can be downloaded via the website https://www.ggp-i.org/form/. Questions can be directed to ggp@nidi.nl.

R / RStudio

The document is prepared in R Markdown, using R version 4.0.2, a free software environment for statistical computing and graphics. R is an open-source statistical analysis software (R Core Team 2021). You can download R directly from the Comprehensive R Archive Network (CRAN). This installation may take 20 to 30 minutes to complete. https://resources.rstudio.com/products/rstudio/download/. After R or RStudio is installed, copy-pasting the code below to the R-Console will produce the estimates for contraceptive prevalence and unmet need for family planning. If you use RStudio you can also open a new R Script (File -> New File -> R Script), copy-paste the code to this script and run the whole script at once. The following R packages are used: dplyr (Wickham et al. 2023), tidyr (Wickham, Vaughan, and Girlich 2023), knitr (Xie 2023b), formatR (Xie 2023a), glue (Hester and Bryan 2022), arsenal (Heinzen et al. 2021), tibble (Müller and Wickham 2023), survey (Lumley 2023), and gt (Iannone et al. 2023).

```
setwd("//ChangeToDirectoryWhereTheDataIsStored")
install.packages(c("dplyr", "tidyr", "knitr", "formatR", "glue", "arsenal",
"tibble",
    "survey", "gt"), repos = "http://cran.us.r-project.org")
library(dplyr)
library(tidyr)
library(knitr)
library(formatR)
library(glue)
library(arsenal)
library(tibble)
library(survey)
library(gt)
```

Sampling design

The Moldovan data is based on a multistage sampling design. The primary sampling units intersect 4 geographical regions (North, South, Center and Chisinau) with residence area (rural and urban). This resulted in 8 strata: North rural, North urban, Center rural, Center urban, South rural, South urban, Municipality Chisinau rural and Municipality Chisinau urban. The strata are used to calculate the standard errors of the estimates using the Taylor Linearization Method (see Tables 2-8).

Contraceptive Prevalence

The UN defines contraceptive prevalence as:

"The percentage of women who are currently using, or whose sexual partner is currently using, at least one method of contraception, regardless of the method being used. It is reported as a percentage of the women of the respective marital status and age group" (United Nations Department of Economic and Social Affairs Population Division 2022b).

$$CP = \frac{Women\ of\ respective\ marital\ status\ and\ age\ group\ who\ are\ currently\ using\ a\ method\ of\ contraception}{Number\ of\ women\ of\ respective\ martial\ status\ and\ age\ group} \text{ x } 100$$

Variables used to calculate the estimate

The following variables are used to calculate contraceptive prevalence (Gauthier et al. 2021):

dem01 *"What is your gender?"*

- *Male*
- *Female*
- *Refusal*

dem28a *"Are you and your partner legally married?"*

- *Yes*
- *No*
- *Refusal*

dem30a *"Does your partner live with you in the same household?"*

- *Yes*
- *No*
- *Refusal*

fer01a *"Are you currently pregnant?"*

- *Yes*
- *No*
- *Maybe, do not know yet*
- *Refusal*
- *Don't know*

fer06 *"Have you been sterilised, or have you had an operation that makes it impossible for you to have a child/ more children?"*

- *Yes*
- *No*
- *Refusal*
- *Don't know*

fer09 *"Has your partner ever been sterilised or had an operation that makes it impossible for him/her to have a child/ more children?"*

- *Yes*
- *No*
- *Refusal*

- *Don't know*

fer12_ *"Are you or your partner using or doing any of these things to prevent pregnancy at this time? Please name all of the things you use or do."*

- *Condom*
- *Pills*
- *Intrauterine device (coil, loop)*
- *Diaphragm/ cervical cap*
- *Foam/cream/jelly/suppository*
- *Injectables (e.g. Depo Provera)*
- *Implants (e.g. Norplant)*
- *Persona*
- *Hormonal emergency contraception afterwards (morning after pill)*
- *Withdrawal*
- *Safe period method (rhythm)*
- *Vaginal ring*
- *Female condom*
- *Sponge*
- *Patch*
- *LAM*
- *None of the above*
- *Refusal*
- *Don't know*

age *Age of the respondent*

intdatey *Year of interview*

intdatem *Month of interview*

respid *Respondent ID*

weight *Poststratification weight based on gender and 5-year age-groups*

Calculating Contraceptive Prevalence

Variable and sample selection

The family planning estimates are calculated for women of reproductive age (15-49).

```
mld <- as_tibble(read.csv(file = "GGP2020_WAVE1_MLD_V_0_2.csv"))

### Create strata variable Region (Chisinau, North, Center, South)
Encoding(mld$region) <- "latin1"
mld$region <- iconv(mld$region, "latin1", "ASCII", sub = "")
mld <- mld %>%
```

```
    mutate(regioncat = case_when(region == "Mun.Chiinu" ~ "Mun.Chisinau",
region ==
        "Briceni" ~ "North", region == "Ocnia" ~ "North", region ==
"Dondueni" ~
        "North", region == "Edine" ~ "North", region == "Rcani" ~ "North",
region ==
        "Drochia" ~ "North", region == "Soroca" ~ "North", region ==
"Floreti" ~
        "North", region == "Glodeni" ~ "North", region == "Fleti" ~ "North",
region ==
        "Mun.Bli" ~ "North", region == "Sngerei" ~ "North", region == "Anenii
Noi" ~
        "Center", region == "Streni" ~ "Center", region == "Rezina" ~
"Center", region ==
        "Teleneti" ~ "Center", region == "Orhei" ~ "Center", region ==
"Clrai" ~
        "Center", region == "Ungheni" ~ "Center", region == "Dubsari" ~
"Center",
        region == "Criuleni" ~ "Center", region == "Streni" ~ "Center",
region ==
            "Nisporeni" ~ "Center", region == "Hnceti" ~ "Center", region ==
"Ialoveni" ~
            "Center", region == "oldneti" ~ "Center", region == "tefan Vod" ~
"South",
        region == "Leova" ~ "South", region == "Cantemir" ~ "South", region
== "Cahul" ~
            "South", region == "Taraclia" ~ "South", region == "Basarabeasca"
~ "South",
        region == "Cueni" ~ "South", region == "Cimilia" ~ "South", region ==
"UTA Gagauzia" ~
            "South"))
# Create 8 strata by combining region and urban
mld <- mld %>%
    mutate(strata = case_when(regioncat == "Mun.Chisinau" & urban == "Rural"
~ 1,
        regioncat == "Mun.Chisinau" & urban == "Urban" ~ 2, regioncat ==
"Center" &
            urban == "Rural" ~ 3, regioncat == "Center" & urban == "Urban" ~
4, regioncat ==
            "South" & urban == "Rural" ~ 5, regioncat == "South" & urban ==
"Urban" ~
            6, regioncat == "North" & urban == "Rural" ~ 7, regioncat ==
"North" &
            urban == "Urban" ~ 8))

mld_subset <- mld %>%
    select(respid, weight, age, intdatey, intdatem, dem01, dem28a, dem30a,
starts_with("lhi26_"),
        starts_with("lhi29_"), fer01a, fer03, starts_with("fer04"), fer05,
fer06,
```

```
        fer08, fer09, starts_with("fer12_"), fer13, fer14, fer15, fer21,
fer24, strata) %>%
    filter(age > 14 & age < 50 & dem01 == "Female")
```

Independent variables

Information of variable dem28a and dem30a is used to distinguish between women who are married or in a co-residential union (*"Married/In-union"*) and women who are not married or in a co-residential union (*"Single"*). Information on age is used to create 5-year age categories.

```
mld_subset$unionstatus <- ""

mld_subset <- mld_subset %>%
    mutate(unionstatus = ifelse((dem28a == "Yes" | dem30a == "Yes"),
"Married/In-union",
        "Single"))
mld_subset$agecat <- cut(mld_subset$age, breaks = c(14, 19, 24, 29, 34, 39,
44, 49),
    labels = c("15-19", "20-24", "25-29", "30-34", "35-39", "40-44", "45-
49"))
```

Create Any contraceptive method (cc_any)

Any contraceptive method (*cc_any*) distinguishes between women who use at least one modern or traditional method of contraception (*"Uses contraception"*) and those who do not use any modern or traditional method (*"No use"*)

```
method <- c("Condom", "Diaphragm/ cervical cap", "Female condom",
"Foam/cream/jelly/suppository",
    "Hormonal emergency contraception afterwards (morning after pill)",
"Injectables (e.g. Depo Provera)",
    "Intra uterine device (coil, loop)", "LAM", "Patch", "Pills", "Implants",
"Safe period method (rhythm)",
    "Sponge", "Vaginal ring", "Withdrawal")
mld_subset <- mld_subset %>%
    mutate(cc_any = ifelse(fer06 == "Yes" | fer09 == "Yes" | fer12_1 %in%
method,
        "Uses contraception", "No use"))
```

Create Most effective method used (cc_method) and Contraceptive method (cc_iud, cc_inject, etc.)

The GGS allows reporting of multiple contraceptive methods per individual. In accordance with the DHS, the variable *"cc_method"* reflects the most effective method used to prevent pregnancy. For example, someone who reported using condoms and IUDs is an IUD user, because IUDs are more effective in preventing pregnancies than condoms. The order of contraceptives by effectiveness to prevent pregnancy is based on information of the World Health Organization (World Health Organization 2020). Effectiveness of methods not included in the list of the World Health Organization (Diaphragm, Cervical cap, Sponge,

Persona, Foam, Cream, and Jelly) is obtained from the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention 2014). Some traditional methods, such as the safe period method and withdrawal, are more effective than some modern methods. After the variable Most effective method is created, the variable is used to create the variables reflecting Contraceptive method (*"cc_iud"*, *"cc_inject"*, etc.). Contraceptive method is only coded as *"Yes"* when it is the most effective method used by this person. All other variables are set to *"No"*.

Order of contraceptives by effectiveness to prevent pregnancy:

1. Implants (*cc_implant*)
2. Male sterilization (*cc_femst*)
3. Female sterilization (*cc_mst*)
4. IUD (*cc_iud*)
5. Injectable (*cc_inject*)
6. LAM (*cc_lam*)
7. Pill (*cc_pill*)
8. Patch (*cc_patch*)
9. Vaginal ring (*cc_ring*)
10. Diaphragm Cervical cap (*cc_dia_cap*)
11. Male condoms (*cc_condom*)
12. Safe period method (traditional method) (*cc_spm*)
13. Withdrawal (traditional method) (*cc_withdrawal*)
14. Female condoms (*cc_femcondom*)
15. Sponge (*cc_sponge*)
16. Persona (traditional method) (*cc_persona*)
17. Foam Cream Jelly (*cc_foam*)
18. Emergency contraception (*cc_emergency*)

```
mld_subset$cc_method <- "No use"
mld_subset$cc_condom <- "No"
mld_subset$cc_pill <- "No"
mld_subset$cc_iud <- "No"
mld_subset$cc_dia_cap <- "No"
mld_subset$cc_foam <- "No"
mld_subset$cc_inject <- "No"
mld_subset$cc_implant <- "No"
mld_subset$cc_persona <- "No"
mld_subset$cc_emergency <- "No"
mld_subset$cc_withdrawal <- "No"
mld_subset$cc_spm <- "No"
mld_subset$cc_ring <- "No"
mld_subset$cc_femcondom <- "No"
mld_subset$cc_sponge <- "No"
mld_subset$cc_patch <- "No"
mld_subset$cc_lam <- "No"
```

```r
fer <- c("fer12_1", "fer12_2", "fer12_3", "fer12_4", "fer12_5")

mld_subset <- mld_subset %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Hormonal emergency
contraception afterwards (morning after pill)",
        1, any), "Emergency contraception", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] ==
"Foam/cream/jelly/suppository",
        1, any), "Foam Cream Jelly", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Persona", 1, any),
"Persona",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Sponge", 1, any),
"Sponge",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Female condom", 1,
any),
        "Female condom", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Withdrawal", 1,
any), "Withdrawal",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Safe period method
(rhythm)",
        1, any), "Save Period Method", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Condom", 1, any),
"Male condom",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Diaphragm/ cervical
cap",
        1, any), "Diaphragm Cervical cap", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Vaginal ring", 1,
any),
        "Vaginal ring", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Patch", 1, any),
"Patch",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Pills", 1, any),
"Pill",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "LAM", 1, any),
"LAM", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Injectables (e.g.
Depo Provera)",
        1, any), "Injectables", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Intra uterine
device (coil, loop)",
        1, any), "Intrauterine Device", cc_method)) %>%
    mutate(cc_method = ifelse(fer06 == "Yes", "Female sterilization",
cc_method)) %>%
    mutate(cc_method = ifelse(fer09 == "Yes", "Male sterilization",
```

```
cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Implants (e.g.
Norplant)",
        1, any), "Implants", cc_method))

mld_subset <- mld_subset %>%
    mutate(cc_emergency = ifelse(cc_method == "Emergency contraception",
"Yes", "No")) %>%
    mutate(cc_foam = ifelse(cc_method == "Foam Cream Jelly", "Yes", "No"))
%>%
    mutate(cc_persona = ifelse(cc_method == "Persona", "Yes", "No")) %>%
    mutate(cc_sponge = ifelse(cc_method == "Sponge", "Yes", "No")) %>%
    mutate(cc_femcondom = ifelse(cc_method == "Female condom", "Yes", "No"))
%>%
    mutate(cc_withdrawal = ifelse(cc_method == "Withdrawal", "Yes", "No"))
%>%
    mutate(cc_spm = ifelse(cc_method == "Save Period Method", "Yes", "No"))
%>%
    mutate(cc_condom = ifelse(cc_method == "Male condom", "Yes", "No")) %>%
    mutate(cc_dia_cap = ifelse(cc_method == "Diaphragm Cervical cap", "Yes",
"No")) %>%
    mutate(cc_ring = ifelse(cc_method == "Vaginal ring", "Yes", "No")) %>%
    mutate(cc_patch = ifelse(cc_method == "Patch", "Yes", "No")) %>%
    mutate(cc_pill = ifelse(cc_method == "Pill", "Yes", "No")) %>%
    mutate(cc_lam = ifelse(cc_method == "LAM", "Yes", "No")) %>%
    mutate(cc_inject = ifelse(cc_method == "Injectables", "Yes", "No")) %>%
    mutate(cc_iud = ifelse(cc_method == "Intrauterine Device", "Yes", "No"))
%>%
    mutate(cc_femst = ifelse(cc_method == "Female sterilization", "Yes",
"No")) %>%
    mutate(cc_mst = ifelse(cc_method == "Male sterilization", "Yes", "No"))
%>%
    mutate(cc_implant = ifelse(cc_method == "Implants", "Yes", "No"))
```

Create Any modern method (cc_modern), Any traditional method (cc_traditional) and Type of method (cc_type)

Any modern method (*cc_modern*) distinguishes between women who use a modern contraceptive as most effective method (*"Yes"*) and women who do not (*"No"*). Any traditional method (*cc_traditional*) distinguishes between women who use a traditional contraceptive as most effect method (*"Yes"*) and women who do not (*"No"*). Type of method (*cc_type*) distinguishes between women who use a modern contraceptive as most effective method (*"Modern"*), women who use a traditional contraceptive method as most effective method (*"Traditional"*), and women who do not use any contraception (*"No use"*).

```
mod <- c("Implants", "Male sterilization", "Female sterilization",
"Intrauterine Device",
    "Injectables", "Pill", "Patch", "Vaginal ring", "Male condom", "Diaphragm
Cervical cap",
    "Female condom", "Sponge", "LAM", "Foam Cream Jelly", "Emergency
```

```
contraception")
trad <- c("Save Period Method", "Withdrawal", "Persona")

mld_subset$cc_modern <- "No"
mld_subset$cc_traditional <- "No"
mld_subset$cc_type <- "No use"

mld_subset <- mld_subset %>%
    mutate(cc_modern = ifelse(cc_method %in% mod, "Yes", cc_modern)) %>%
    mutate(cc_type = ifelse(cc_method %in% mod, "Modern", cc_type)) %>%
    mutate(cc_traditional = ifelse(cc_method %in% trad, "Yes",
cc_traditional)) %>%
    mutate(cc_type = ifelse(cc_method %in% trad, "Traditional", cc_type))
```

Contraceptive methods distinguished by the UN

Table 1 shows an overview of the contraceptive methods distinguished by the UN, GGS-II and DHS. Some contraceptive methods are taken together in the World Contraceptive Use data of the UN (United Nations Department of Economic and Social Affairs Population Division 2022a). Methods distinguished by the UN (*cc_method_un*) is based on the variable *cc_method* but reflects this adaptation. Three extra contraceptive methods groups are created:

- *cc_barrier* = Vaginal barrier methods: Diaphragm, Cervical cap, and Sponge
- *cc_other_mod* = Other modern methods: Patch, Vaginal ring, and Foam, cream, or jelly
- *cc_other_trad* = Other traditional methods: Persona

```
mld_subset$cc_method_un <- mld_subset$cc_method
mld_subset$cc_barrier <- "No"
mld_subset$cc_other_mod <- "No"
mld_subset$cc_other_trad <- "No"

mld_subset <- mld_subset %>%
    mutate(cc_method_un = ifelse(cc_method %in% c("Diaphragm Cervical cap",
"Sponge"),
        "Vaginal barrier methods", cc_method_un)) %>%
    mutate(cc_barrier = ifelse(cc_method %in% c("Diaphragm Cervical cap",
"Sponge"),
        "Yes", cc_barrier)) %>%
    mutate(cc_method_un = ifelse(cc_method %in% c("Patch", "Vaginal ring",
"Foam Cream Jelly"),
        "Other modern methods", cc_method_un)) %>%
    mutate(cc_other_mod = ifelse(cc_method %in% c("Patch", "Vaginal ring",
"Foam Cream Jelly"),
        "Yes", cc_other_mod)) %>%
    mutate(cc_method_un = ifelse(cc_method %in% c("Persona"), "Other
traditional methods",
        cc_method_un)) %>%
```

```
    mutate(cc_other_trad = ifelse(cc_method %in% c("Persona"), "Yes",
cc_other_trad))
```

Table 1. Overview of contraceptive methods distinguished by the UN, GGS-II (questions fer12_), and DHS round 8 (question 307).

UN	GGS-II Republic of Moldova	DHS round 8
Male condom	Condom	Condom
Intrauterine Device	Intrauterine device (coil, loop)	IUD
Pill	Pills	Pill
Female sterilization	(Questions fer06)	Female sterilization
LAM	LAM	Lactational amenorrhea method
Vaginal barrier methods	Sponge Diaphragm/ cervical cap	
Injectables	Injectables (e.g. Depo Provera)	Injectables
Emergency contraception	Hormonal emergency contraception afterwards (morning after pill)	Emergency contraception
Male sterilization	(Question fer09)	Male sterilization
Female condom	Female condom	Female condom
Implants	Implants (e.g. Norplant)	Implants
Withdrawal	Withdrawal	Withdrawal
Save Period Method	Safe period method (rhythm)	Standard days method Rhythm method
Other modern methods	Foam/cream/jelly/suppository Patch Vaginal ring	Other modern method
Other traditional methods	Persona	Other traditional method

Reliability of Contraceptive Prevalence

A factor which could potentially influence the reliability of the estimate is the addition of the response option *No use* to the question capturing contraceptive use, halfway fieldwork. Fieldwork in the Republic of Moldova took place in 2020. Data was collected via face-to-face interviews using tablets, also known as Computer-Assisted Personal Interviewing. Fieldwork was paused halfway March due to the implementation of COVID-19 restrictions and recommenced at the start of July. During this fieldwork break, it was decided to add the response option *No use* to the variable FER12 which captures contraceptive use. As a result the number *Don't know's* and *Refusal's* decreased considerably, namely from 36% to 7%. This demonstrates that before the introduction of *No use* as a response option, most interviewers did not skip the question when no contraception was used, but instead used the answer options *Don't know* or *Refusal*. To not overestimate contraceptive use, *Don't know* and *Refusal* were recoded to *No use* in data version GGP2020_WAVE1_MLD_V_0_2

which is used in this paper. Because of this strategy, it is likely that a proportion of women who did use a contraceptive method, but did not want to report it, are recoded mistakenly as not using any method. Assuming that 7% of all women did not know or wanted to refuse to answer question FER12, and assuming that half of these women used contraception while the other half did not, this means that 95 women (3.5% of 2701) are wrongly assigned to the no contraceptive use group. To correct for this factor, without having to impute contraceptive method and thereby potentially affecting the distribution of contraceptive method used, I have randomly deleted 181 women who were classified as not using contraception. For a more detailed explanation of this strategy see Appendix A.

```
set.seed(54652)
mld_subset2 <- mld_subset[-sample(which(mld_subset$cc_any == "No use"), 181),
]
```

The DHS specifically asks about the use of sterilization for contraceptive purposes. The GGS asks about sterilization in combination with other operations that make it impossible to have (more) children, which potentially includes sterilization for medical reasons. This could overestimate contraceptive prevalence. About 4% of all Moldovan women aged 15-49 indicate that they are sterile (N=106), or their partner is sterile (N=2). Without a proper reference it is difficult to deduce what the division could be between sterilization for contraceptive and medical purposes. However, comparing sterilization practices between single women and women who are married or in a union can shed some light into this issue. I focus on female sterilization because male sterilization is very uncommon. In order to use this information, I make two assumptions. The first assumption is that sterility for medical reasons is low among young women (aged 15-29), and larger among older women (aged 30-49). The second assumption is that the proportion of women who are sterile for medical reasons is the same for single women and for women who are married or in a union, while the proportion of women who are sterile for contraceptive purposes is higher among women who are married or in a union than single women.

In total 0 single women aged 15-29 are sterile. In the same age-categories, 3 women who are married or in a union report being sterile. Assuming that sterility for medical reasons is similar among these two groups, I expect that the 3 women are accurately categorized as using sterilization for contraceptive purposes. 18 single women aged 30-49 reported being sterile. By a lack of more information, I assume that half of these women are sterile for medical reasons and the other half use it for contraceptive purposes. This means that a total of 9 out of 771 (1.1%) single women are erroneously added to the numerator of contraceptive prevalence. Assuming that sterility for medical reasons also occurs among 1.1% of women who are married or in a union, I expect that in this group, 21 women are erroneously added to the numerator of the estimate. To correct the estimate, 9 sterilized single women and 21 sterilized married or in-union women are randomly selected and recoded to not using any contraception.

```
selectSingle <- mld_subset2 %>%
    select(respid, cc_method_un, unionstatus) %>%
    filter(cc_method_un == "Female sterilization" & unionstatus == "Single")
set.seed(24465)
selectSingle <- selectSingle[sample(nrow(selectSingle), 9), ]
```

```r
selectSingle$changeSingle <- "No use"
selectSingle <- selectSingle %>%
    select(respid, changeSingle)

selectMarried <- mld_subset2 %>%
    select(respid, cc_method_un, unionstatus) %>%
    filter(cc_method_un == "Female sterilization" & unionstatus ==
"Married/In-union")
set.seed(53587)
selectMarried <- selectMarried[sample(nrow(selectMarried), 21), ]
selectMarried$changeMarried <- "No use"
selectMarried <- selectMarried %>%
    select(respid, changeMarried)

mld_subset2 <- merge(mld_subset2, selectSingle, all.x = TRUE)
mld_subset2 <- merge(mld_subset2, selectMarried, all.x = TRUE)

mld_subset2 <- mld_subset2 %>%
    mutate(cc_any = ifelse(!is.na(changeSingle == "No use") |
!is.na(changeMarried ==
        "No use"), "No use", cc_any), cc_type = ifelse(!is.na(changeSingle ==
"No use") |
        !is.na(changeMarried == "No use"), "No use", cc_type), cc_method_un =
ifelse(!is.na(changeSingle ==
        "No use") | !is.na(changeMarried == "No use"), "No use",
cc_method_un), cc_method = ifelse(!is.na(changeSingle ==
        "No use") | !is.na(changeMarried == "No use"), "No use", cc_method),
cc_modern = ifelse(!is.na(changeSingle ==
        "No use") | !is.na(changeMarried == "No use"), "No", cc_modern))

data_design <- svydesign(id = ~respid, weights = ~weight, strata = ~strata,
data = mld_subset2)
# Table for married / single Compute survey statistics
calc <- svyby(~cc_any + cc_type + cc_method_un, ~unionstatus, data_design,
svymean,
    na.rm = TRUE)
coef <- round(coef(calc) * 100, digits = 1)
int <- round(confint(calc) * 100, digits = 1)
# Merge mean and confidence interval and prepare table
bind <- cbind(coef, int)
bind[is.na(bind) | bind < 0] <- 0
MarSin <- bind %>%
    as.data.frame(bind) %>%
    mutate(var = rownames(bind)) %>%
    as_tibble() %>%
    mutate_at(c("coef", "2.5 %", "97.5 %"), as.character) %>%
    mutate(val = paste0(coef, "% (", `2.5 %`, "-", `97.5 %`, ")")) %>%
    select(c(var, val)) %>%
    separate_wider_delim(var, ":", names = c("group", "variable")) %>%
    pivot_wider(names_from = group, values_from = val)
```

```r
# Table for total Compute survey statistics
calc <- svymean(~cc_any + cc_type + cc_method_un, data_design, na.rm = TRUE)
coef <- round(coef(calc) * 100, digits = 1)
int <- round(confint(calc) * 100, digits = 1)
# Merge mean and confidence interval and prepare table
bind <- cbind(coef, int)
bind[is.na(bind) | bind < 0] <- 0
Tot <- bind %>%
    as.data.frame(bind) %>%
    mutate(variable = rownames(bind)) %>%
    as_tibble() %>%
    mutate_at(c("coef", "2.5 %", "97.5 %"), as.character) %>%
    mutate(Total = paste0(coef, "% (", `2.5 %`, "-", `97.5 %`, ")")) %>%
    select(c(variable, Total))

# Merge information and order rows
Table <- tibble(variable = c("cc_anyUses contraception", "cc_anyNo use",
"cc_typeModern",
    "cc_typeTraditional", "cc_typeNo use", "cc_method_unMale condom",
"cc_method_unIntrauterine Device",
    "cc_method_unPill", "cc_method_unFemale sterilization",
"cc_method_unLAM", "cc_method_unVaginal barrier methods",
    "cc_method_unInjectables", "cc_method_unEmergency contraception",
"cc_method_unMale sterilization",
    "cc_method_unFemale condom", "cc_method_unImplants", "cc_method_unOther
modern methods",
    "cc_method_unWithdrawal", "cc_method_unSave Period Method",
"cc_method_unOther traditional methods",
    "cc_method_unNo use"))
Table <- as_tibble(merge(Table, MarSin, by.x = "variable", all = TRUE))
Table <- as_tibble(merge(Table, Tot, by.x = "variable", all = TRUE))
Table[is.na(Table)] <- "0.0% (0-0)"
order <- c("cc_anyUses contraception", "cc_anyNo use", "cc_typeModern",
"cc_typeTraditional",
    "cc_typeNo use", "cc_method_unMale condom", "cc_method_unIntrauterine
Device",
    "cc_method_unPill", "cc_method_unFemale sterilization",
"cc_method_unLAM", "cc_method_unVaginal barrier methods",
    "cc_method_unInjectables", "cc_method_unEmergency contraception",
"cc_method_unMale sterilization",
    "cc_method_unFemale condom", "cc_method_unImplants", "cc_method_unOther
modern methods",
    "cc_method_unWithdrawal", "cc_method_unSave Period Method",
"cc_method_unOther traditional methods",
    "cc_method_unNo use")

# Create table
Table2 <- Table %>%
    arrange(match(variable, order)) %>%
```

```
    mutate(variable = gsub("cc_any|cc_method_un|cc_type", "", variable)) %>%
    gt() |>
    tab_header(title = md("**Table 2.** Contraceptive Prevalence women aged
15-49 - weighted")) |>
    opt_align_table_header(align = "left") |>
    cols_label(variable = "") |>
    tab_row_group(label = md("**Method**"), rows = 6:21) |>
    tab_row_group(label = md("**Type**"), rows = 3:5) |>
    tab_row_group(label = md("**Contraceptive use**"), rows = 1:2) |>
    cols_align(align = "center", columns = 2:4)
```

Table 2 shows the estimate of Contraceptive Prevalence among women aged 15-49. The estimates are weighted, using the post-stratification weight based on gender and 5-year age groups. Unweighted frequencies and percentages are shown in Appendix B Table 10. Tables 11-13 of Appendix B show contraceptive prevalence per 5-year age-groups for all women, women who are married or in a union, and single women.

```
Table2
```

Table 2. Contraceptive Prevalence women aged 15-49 - weighted

	Married/In-union	Single	Total
Contraceptive use			
Uses contraception	57.3% (55.1-59.6)	36.1% (32.6-39.7)	51.2% (49.2-53.1)
No use	42.7% (40.4-44.9)	63.9% (60.3-67.4)	48.8% (46.9-50.8)
Type			
Modern	44.6% (42.4-46.9)	29.7% (26.3-33)	40.3% (38.4-42.2)
Traditional	12.7% (11.2-14.2)	6.4% (4.6-8.2)	10.9% (9.7-12.1)
No use	42.7% (40.4-44.9)	63.9% (60.3-67.4)	48.8% (46.9-50.8)
Method			
Male condom	20.2% (18.3-22)	18% (15.1-20.8)	19.5% (18-21.1)
Intrauterine Device	11.8% (10.3-13.3)	3.8% (2.4-5.1)	9.5% (8.3-10.6)
Pill	7.2% (6-8.4)	6.2% (4.4-8)	6.9% (5.9-7.9)
Female sterilization	3.5% (2.7-4.3)	1.1% (0.4-1.8)	2.8% (2.2-3.4)
LAM	0.8% (0.3-1.2)	0.1% (0-0.4)	0.6% (0.3-0.9)
Vaginal barrier methods	0.2% (0-0.3)	0.2% (0-0.5)	0.2% (0-0.3)
Injectables	0.3% (0-0.5)	0% (0-0)	0.2% (0-0.3)
Emergency contraception	0.1% (0-0.3)	0.3% (0-0.7)	0.2% (0-0.3)
Male sterilization	0.1% (0-0.3)	0% (0-0)	0.1% (0-0.2)
Female condom	0.1% (0-0.2)	0% (0-0)	0% (0-0.1)
Implants	0.0% (0-0)	0.0% (0-0)	0.0% (0-0)
Other modern methods	0.5% (0.2-0.9)	0% (0-0)	0.4% (0.1-0.6)
Withdrawal	10.8% (9.4-12.2)	5.8% (4.1-7.5)	9.3% (8.2-10.5)
Save Period Method	1.9% (1.3-2.5)	0.7% (0.1-1.3)	1.5% (1.1-2)
Other traditional methods	0.0% (0-0)	0.0% (0-0)	0.0% (0-0)
No use	42.7% (40.4-44.9)	63.9% (60.3-67.4)	48.8% (46.9-50.8)

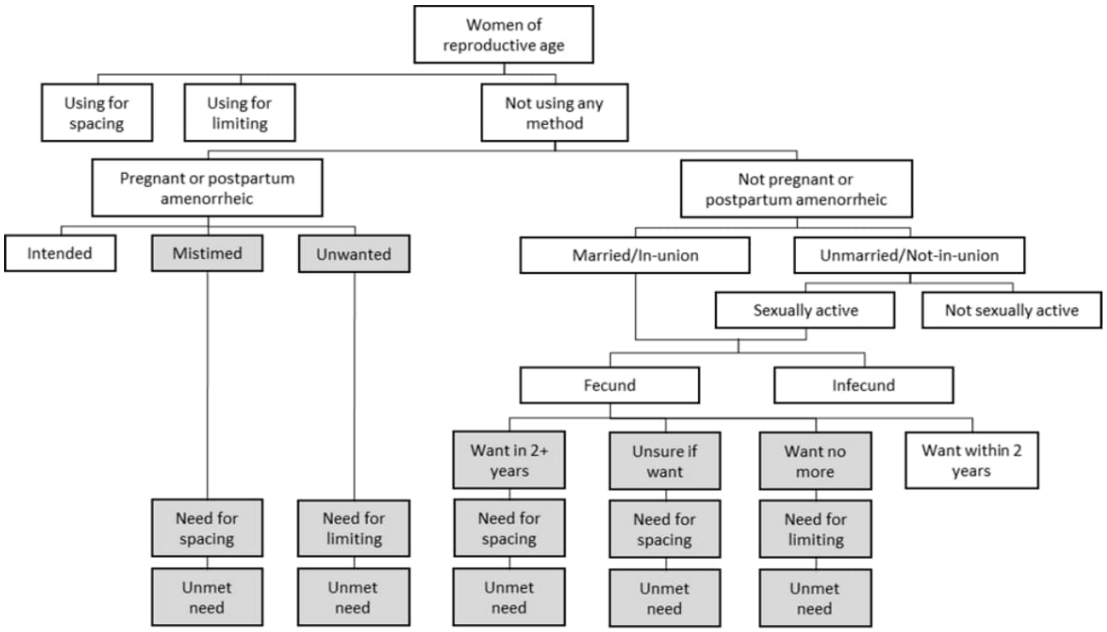
Unmet Need for Family Planning

The UN defines unmet need for family planning as: *"The proportion of women who want to stop or delay childbearing but are not using any method of contraception. It is reported as a percentage of the women of the respective marital status and age group."* (United Nations Department of Economic and Social Affairs Population Division 2022b).

$$UFP = \frac{Women\ of\ respective\ marital\ status\ and\ age\ group\ who\ have\ an\ unmet\ need\ for\ family\ planning}{Number\ of\ women\ of\ respective\ martial\ status\ and\ age\ group} \text{ x } 100$$

The scheme in Figure 1 is followed to define women's family planning need.

Figure 1. Definition of unmet need for family planning for women of reproductive age.



Source: Bradley et al. (2012) and United Nations Department of Economic and Social Affairs Population Division (2022a).

The following groups of women are distinguished:

1. Women who have their family planning need met, consisting of

- Family planning need met for limiting: non-pregnant and non-postpartum women who 1) use contraception and do not want a(nother) child or 2) are not fertile or their partner is not fertile
- Family planning need met for spacing: other non-pregnant and non-postpartum women who use contraception

2. Women who have no need for family planning, consisting of

- No need for family planning - is pregnant/PPA with intended child: 1) currently pregnant women whose pregnancy was intended and came at the right time and 2) postpartum women whose recent pregnancy was intended and came at the right time
- No need for family planning - not sexually active single women: non-pregnant and non-postpartum single women who are not using contraception, but have not been sexually active in the past 4 weeks
- No need for family planning - infecund or menopausal: non-pregnant and non-postpartum women 1) who are menopausal, 2) who never menstruated, 3) whose last birth was more than 5 years ago and whose menstrual cycle has not yet returned or 4) are not using contraception and are infecund or their partner is infecund
- No need for family planning - want a child in the next three years: women who are not using contraception and probably or definitely want to have a child in the next 3 years

3. Women with an unmet need for family planning, consisting of

- Unmet need for spacing: 1) currently pregnant women whose pregnancy came sooner than intended, 2) postpartum women whose pregnancy came sooner than intended, and 3) women who are not using contraception and probably or definitely do not want a(nother) child in the next three years or are unsure
- Unmet need for limiting: 1) currently pregnant women whose pregnancy was not intended, 2) postpartum women whose pregnancy was not intended, and 3) women who are not using contraception and probably or definitely do not want a(nother) child ever

$$Unmet\ need = \frac{Unmet\ need\ for\ family\ planning}{Unmet\ need\ for\ family\ planning + Family\ planning\ need\ met + No\ need\ for\ family\ planning}$$

Demand for Family Planning = Family planning need met + Unmet need for family planning

$$Demand\ Satisfied\ by\ Modern\ Methods = \frac{Family\ planning\ need\ met\ with\ modern\ contraceptives}{Family\ planning\ need\ met\ +\ Unmet\ need\ for\ family\ planning}$$

The following variables of the GGS are used to calculate unmet need for family planning (Gauthier et al. 2021):

unionstatus This variable was created previously, see *Independent variables*.

cc_any This variable was created previously, see *Create Most effective method used*.

cc_type This variable was created previously, see *Create Any modern method, Any traditional method and Type of method*.

intdatem intdatey Timing of interview (month and year).

lhi26_* *"Please indicate if [name household member] is…"*

- *Biological Child*
- *Adopted Child*
- *Step Child*
- *Refusal*
- *Not Applicable*

lhi29_*m lhi29_*y *"When was [name household member] born?" (month and year)*

- *Refusal*
- *Don't know*

fer01a *"Are you currently pregnant?"*

- *Yes*
- *No*
- *Maybe, do not know yet*
- *Refusal*
- *Don't know*

fer03 *"Just before this pregnancy began, did you yourself intend to have a/another baby at some time?"*

- *Yes*
- *No*
- *Didn't mind either way*
- *Refusal*
- *Don't know*

fer04 *"Did this pregnancy occur sooner than you wanted, later than you wanted, or at about the right time?"*

- *Sooner*
- *Later*
- *About the right time*
- *Refusal*
- *Don't know*

fer04b *When your youngest child was conceived, did you yourself intend to have a/another baby?*

- *Yes*
- *No*
- *Didn't mind either way*
- *Refusal*
- *Don't know*

fer04c *Did this pregnancy occur sooner than you wanted, later than you wanted, or at about the right time?*

- *Sooner*
- *Later*
- *About the right time*
- *Refusal*
- *Don't know*

fer04e *Has your menstrual cycle been restored since the last pregnancy?*

- *Yes*
- *No*
- *Refusal*
- *Don't know*

fer05 *Some people are not physically able to have children. As far as you know, is it physically possible for you, yourself, to have a/another baby?*

- *Definitely not*
- *Probably not*
- *Probably yes*
- *Definitely yes*
- *Refusal*
- *Don't know*

fer08 *As far as you know, is it physically possible for your current partner to have a child of his/her own if he/she wanted to?*

- *Definitely not*
- *Probably not*
- *Probably yes*
- *Definitely yes*
- *Refusal*
- *Don't know*

fer13 *Did you have sexual intercourse in the past 4 weeks?*

- *Yes*
- *No*
- *Refusal*
- *Don't know*

fer14 *Do you intend to have a/another child during the next three years? Please take into account only biological children.*

- *Definitely not*

- *Probably not*
- *Unsure*
- *Probably yes*
- *Definitely yes*
- *Refusal*
- *Don't know*

fer15 *Supposing you do not have a/another child during the next three years, do you intend to have any (more) children at all?*

- *Definitely not*
- *Probably not*
- *Unsure*
- *Probably yes*
- *Definitely yes*
- *Refusal*
- *Don't know*

fer21 *How old were you when your menstruation started?*

- *Refusal*
- *Don't know*
- *Not applicable*

fer24 *How old were you when you started menopause? If you have not started menopause, select not applicable.*

- *Refusal*
- *Don't know*
- *Not applicable*

Calculating Unmet Need for Family Planning

In order to determine family planning the following variables are created

- *tsincb* = Years since most recent biological birth
- *pregPPA* = Pregnant or postpartum women
- *wantedlast* = Indicating if current pregnancy or last birth (< 24 months ago) was wanted and if timing was not too soon

```
# Change month and year variables from string to numeric
monthlist <- names(mld_subset2 %>%
    select(intdatem, starts_with("lhi29_")) %>%
    select(-ends_with("y")))
yearlist <- names(mld_subset2 %>%
    select(intdatey, ends_with("y")) %>%
    select(-cc_any, -cc_emergency))
changemonth <- function(x) {
```

```
    x = as.integer(factor(x, levels = month.name))
}
mld_subset2 <- mld_subset2 %>%
    mutate(across(.cols = all_of(monthlist), .fns = ~changemonth(.x)))
mld_subset2 <- mld_subset2 %>%
    mutate(across(.cols = all_of(yearlist), .fns = ~as.numeric(.x)))
# Change variable names birth year and month household members
mld_births <- mld_subset2 %>%
    select(c("respid", "intdatey", "intdatem", starts_with("lhi26_"),
starts_with("lhi29_")))
names(mld_births)[which(colnames(mld_births) ==
"lhi29_1m"):which(colnames(mld_births) ==
    "lhi29_20y")] <- c("lhi29m_1", "lhi29y_1", "lhi29m_2", "lhi29y_2",
"lhi29m_3",
    "lhi29y_3", "lhi29m_4", "lhi29y_4", "lhi29m_5", "lhi29y_5", "lhi29m_6",
"lhi29y_6",
    "lhi29m_7", "lhi29y_7", "lhi29m_8", "lhi29y_8", "lhi29m_9", "lhi29y_9",
"lhi29m_10",
    "lhi29y_10", "lhi29m_11", "lhi29y_11", "lhi29m_12", "lhi29y_12",
"lhi29m_13",
    "lhi29y_13", "lhi29m_14", "lhi29y_14", "lhi29m_15", "lhi29y_15",
"lhi29m_16",
    "lhi29y_16", "lhi29m_17", "lhi29y_17", "lhi29m_18", "lhi29y_18",
"lhi29m_19",
    "lhi29y_19", "lhi29m_20", "lhi29y_20")
# Calculate tsinceb - time in years since most recent biological birth
mld_births_long <- mld_births %>%
    pivot_longer(cols = c("lhi26_1":"lhi29y_20"), names_to = c(".value",
"rank"),
        names_pattern = "(\\w+)_(\\d+)") %>%
    mutate(tsinceb = ((intdatey * 12 + intdatem) - (lhi29y * 12 -
lhi29m))/12) %>%
    mutate(tsinceb = ifelse(tsinceb > 80 | tsinceb < 0, NA, tsinceb)) %>%
    mutate(tsinceb = ifelse(lhi26 == "Adopted" | lhi26 == "Step", NA,
tsinceb)) %>%
    group_by(respid) %>%
    top_n(-1, tsinceb) %>%
    select("respid", "tsinceb")
# Delete duplicates due to twins or reporting mistakes
mld_births_long <- mld_births_long[!duplicated(mld_births_long), ]
# Merge information
mld_subset2 <- merge(mld_subset2, mld_births_long, all.x = TRUE)

mld_subset2$pregPPA <- 0
mld_subset2$wantedlast <- "Empty"

## Create pregPPA & wantedlast
mld_subset2 <- mld_subset2 %>%
    # Identify pregnant women
mutate(pregPPA = ifelse(fer01a == "Yes", 1, pregPPA)) %>%
```

```
    # Identify PPA for <24 months
mutate(pregPPA = ifelse(tsinceb < 2 & !is.na(tsinceb) & fer04e != "Yes" &
pregPPA ==
    0, 1, pregPPA)) %>%
    # wantedlast for currently pregnant
mutate(wantedlast = ifelse((fer04 == "About the right time" | fer04 ==
"Later") &
    pregPPA == 1, "Child intended and right time", wantedlast)) %>%
    mutate(wantedlast = ifelse(fer04 == "Sooner" & pregPPA == 1, "Sooner than
intended",
        wantedlast)) %>%
    mutate(wantedlast = ifelse(fer03 == "No" & pregPPA == 1, "Not intended",
wantedlast)) %>%
    # wantedlast for PPA
mutate(wantedlast = ifelse((fer04c == "About the right time" | fer04c ==
"Later") &
    pregPPA == 1 & wantedlast == "Empty", "Child intended and right time",
wantedlast)) %>%
    mutate(wantedlast = ifelse(fer04c == "Sooner" & pregPPA == 1 & wantedlast
==
        "Empty", "Sooner than intended", wantedlast)) %>%
    mutate(wantedlast = ifelse(fer04b == "No" & pregPPA == 1 & wantedlast ==
"Empty",
        "Not intended", wantedlast)) %>%
    # Missing
mutate(wantedlast = ifelse(pregPPA == 1 & wantedlast == "Empty", "Missing",
wantedlast))
```

Determine family planning need among women who are using contraception

```
mld_subset2$ufp_group <- "Empty"

mld_subset2 <- mld_subset2 %>%
    # Wants no more children = Using to limit births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception" &
    (fer15 == "Definitely not" | fer15 == "Probably not"), "Family planning
need met for limiting",
    ufp_group)) %>%
    # Can't get pregnant = Using to limit births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception" &
    (fer05 == "Definitely not" | fer05 == "Probably not"), "Family planning
need met for limiting",
    ufp_group)) %>%
    # Partner can't get pregnant = Using to limit births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception" &
    (fer08 == "Definitely not" | fer08 == "Probably not"), "Family planning
need met for limiting",
    ufp_group)) %>%
```

```
    # All others = Using to space births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception",
    "Family planning need met for spacing", ufp_group))
```

Determine family planning need among pregnant or postpartum women

```
mld_subset2 <- mld_subset2 %>%
    # Child intended and at that time = No unmet need
mutate(ufp_group = ifelse(wantedlast == "Child intended and right time" &
ufp_group ==
    "Empty", "No need for family planning (is pregnant/PPA with intended
child)",
    ufp_group)) %>%
    # Child sooner than intended = Need for spacing
mutate(ufp_group = ifelse(wantedlast == "Sooner than intended" & ufp_group ==
"Empty",
    "Unmet need for spacing", ufp_group)) %>%
    # Did not want child = Need for limiting
mutate(ufp_group = ifelse(wantedlast == "Not intended" & ufp_group ==
"Empty", "Unmet need for limiting",
    ufp_group))
missing = missing
# Missing
mld_subset2 <- mld_subset2 %>%
    mutate(ufp_group = ifelse(wantedlast == "Missing" & ufp_group == "Empty",
"Missing",
        ufp_group))
```

Determine family planning need among single women who are not using contraception, are not pregnant or postpartum and who are not sexually active

```
mld_subset2 <- mld_subset2 %>%
    # Unmarried women who were not sexually active in the last 4 weeks = No
    # need
mutate(ufp_group = ifelse(unionstatus == "Single" & fer13 == "No" & ufp_group
==
    "Empty", "No need (not sexually active single women)", ufp_group))
```

Determine family planning need among women who are infecund

```
mld_subset2$fer24_num <- as.numeric(mld_subset2$fer24)
mld_subset2$fecundity <- "Fecund"

mld_subset2 <- mld_subset2 %>%
    # Declared self or partner infecund
mutate(fecundity = ifelse(fer05 == "Definitely not" | fer08 == "Definitely
not",
    "Infecund", fecundity)) %>%
    # Menopausal
mutate(fecundity = ifelse(fer24_num > 19 & !is.na(fer24_num), "Infecund",
fecundity)) %>%
    # Never menstruated
```

```
mutate(fecundity = ifelse(fer21 == "Not Applicable" & age > 14 & age < 20,
"Infecund",
    fecundity)) %>%
    # Postpartum and birth was 5+ years ago
mutate(fecundity = ifelse(fer04e == "No" & tsinceb > 5 & !is.na(tsinceb),
"Infecund",
    fecundity)) %>%
    # Infecund = No need
mutate(ufp_group = ifelse(fecundity == "Infecund" & ufp_group == "Empty", "No
need for family planning (infecund or menopausal)",
    ufp_group))
```

Determine family planning need among women not using contraception and not pregnant, postpartum, or infecund

```
mld_subset2 <- mld_subset2 %>%
    # Wants within 3 years - No need
mutate(ufp_group = ifelse((fer14 == "Probably yes" | fer14 == "Definitely
yes") &
    ufp_group == "Empty", "No need for family planning (want child in next
three years)",
    ufp_group)) %>%
    # Wants in 3+ years, wants but undecided timing, or unsure if wants =
Unmet
    # need for spacing
mutate(ufp_group = ifelse((fer14 == "Unsure" | fer14 == "Don't know") &
ufp_group ==
    "Empty", "Unmet need for spacing", ufp_group)) %>%
    mutate(ufp_group = ifelse((fer15 == "Unsure" | fer15 == "Probably yes" |
fer15 ==
        "Definitely yes" | fer15 == "Don't know") & ufp_group == "Empty",
"Unmet need for spacing",
        ufp_group)) %>%
    # Wants no more = Unmet need for limiting
mutate(ufp_group = ifelse((fer15 == "Definitely not" | fer15 == "Probably
not") &
    ufp_group == "Empty", "Unmet need for limiting", ufp_group)) %>%
    # Missing or contraceptive use unknown
mutate(ufp_group = ifelse(ufp_group == "Empty", "Missing", ufp_group))
```

Reliability of Family planning need

In a few places the GGS questionnaire differs from the DHS questionnaire, which may influence calculation of unmet need for family planning need. The DHS captures intention to have a(nother) child in the *next 2 years*. The GGS is a longitudinal survey with a follow-up questionnaire every 3 years. For this reason, GGS asks if women intend to have a(nother) child in the *next 3 years*. As a result women who are not using contraception and who plan to have a child in 2 till 3 years from the moment of interview are now categorized as having their family planning need met, while with the DHS questionnaire they would have been categorized as having an unmet need for spacing.

Another difference between GGS' and DHS' questionnaires is how they capture fecundity. Similarly to DHS, GGS captures if women are menopausal, never menstruated, or are postpartum with the last birth longer than 5 years ago. However, information if women ever used contraception, had a hysterectomy, or time since last menstruation are not captured with GGS. Instead, the GGS asks women if they are physically able to have a(nother) child and if their partner is physically able to have a child. If women respond any of these two questions with *Definitely not*, they are considered to be infecund. This may affect the size of the group of women who have no need for family planning for women aged 35-49 for whom infecundity is more common.

It is difficult to establish which percentage of women would want a child in 2 till 3 years from the moment of interview or to establish the difference in capturing fecundity between the two questionnaires. I have therefore not adjusted the family planning need estimates to correct for these issues.

Estimates Family Planning Need

```
mld_subset2 <- mld_subset2 %>%
    mutate(unmettot = case_when(ufp_group == "Unmet need for spacing" |
ufp_group ==
        "Unmet need for limiting" ~ "Unmet need", ufp_group != "Unmet need
for spacing" &
        ufp_group != "Unmet need for limiting" & ufp_group != "Missing" ~ "No
unmet need")) %>%
    mutate(unmet = case_when(ufp_group == "Unmet need for spacing" ~ "Unmet
need for spacing",
        ufp_group == "Unmet need for limiting" ~ "Unmet need for limiting",
ufp_group !=
            "Unmet need for spacing" & ufp_group != "Unmet need for limiting"
& ufp_group !=
            "Missing" ~ "No unmet need")) %>%
    mutate(withmodern = case_when((ufp_group == "Family planning need met for
spacing" |
        ufp_group == "Family planning need met for limiting") & cc_modern ==
"Yes" ~
        "With modern", (ufp_group == "Family planning need met for spacing" |
ufp_group ==
        "Family planning need met for limiting") & cc_traditional == "Yes" ~
"With traditional",
        ufp_group == "Unmet need for spacing" | ufp_group == "Unmet need for
limiting" ~
            "Unmet need"))

mld_subset2 %>%
    write.csv("data.csv")

data_design <- svydesign(id = ~respid, weights = ~weight, strata = ~strata,
data = mld_subset2)
# Table for married / single Compute survey statistics (separately for Demand
# satisfied by modern methods, because of differences in missing values)
```

```r
calc <- svyby(~unmettot + unmet, ~unionstatus, data_design, svymean, na.rm =
TRUE)
coef <- round(coef(calc) * 100, digits = 1)
int <- round(confint(calc) * 100, digits = 1)
bind <- cbind(coef, int)
bind[is.na(bind) | bind < 0] <- 0

calc1 <- svyby(~withmodern, ~unionstatus, data_design, svymean, na.rm = TRUE)
coef1 <- round(coef(calc1) * 100, digits = 1)
int1 <- round(confint(calc1) * 100, digits = 1)
bind1 <- cbind(coef1, int1)
bind1[is.na(bind1) | bind1 < 0] <- 0

bind <- rbind(bind, bind1)

# Prepare table
MarSin <- bind %>%
    as.data.frame(bind) %>%
    mutate(var = rownames(bind)) %>%
    as_tibble() %>%
    mutate_at(c("coef", "2.5 %", "97.5 %"), as.character) %>%
    mutate(val = paste0(coef, "% (", `2.5 %`, "-", `97.5 %`, ")")) %>%
    select(c(var, val)) %>%
    separate_wider_delim(var, ":", names = c("group", "variable")) %>%
    pivot_wider(names_from = group, values_from = val)

# Table for total Compute survey statistics
calc <- svymean(~unmettot + unmet, data_design, na.rm = TRUE)
coef <- round(coef(calc) * 100, digits = 1)
int <- round(confint(calc) * 100, digits = 1)
bind <- cbind(coef, int)
bind[is.na(bind) | bind < 0] <- 0

calc1 <- svymean(~withmodern, data_design, na.rm = TRUE)
coef1 <- round(coef(calc1) * 100, digits = 1)
int1 <- round(confint(calc1) * 100, digits = 1)
bind1 <- cbind(coef1, int1)
bind[is.na(bind1) | bind1 < 0] <- 0

bind <- rbind(bind, bind1)

# Prepare table
Tot <- bind %>%
    as.data.frame(bind) %>%
    mutate(variable = rownames(bind)) %>%
    as_tibble() %>%
    mutate_at(c("coef", "2.5 %", "97.5 %"), as.character) %>%
    mutate(Total = paste0(coef, "% (", `2.5 %`, "-", `97.5 %`, ")")) %>%
    select(c(variable, Total))
```

```r
# Merge information and order rows
Table <- tibble(variable = c("unmettotUnmet need", "unmettotNo unmet need",
"unmetUnmet need for spacing",
    "unmetUnmet need for limiting", "unmetNo unmet need", "withmodernWith
modern",
    "withmodernWith traditional", "withmodernUnmet need"))
Table <- as_tibble(merge(Table, MarSin, by.x = "variable", all = TRUE))
Table <- as_tibble(merge(Table, Tot, by.x = "variable", all = TRUE))
Table[is.na(Table)] <- "0.0% (0-0)"

order <- c("unmettotUnmet need", "unmettotNo unmet need", "unmetUnmet need
for spacing",
    "unmetUnmet need for limiting", "unmetNo unmet need", "withmodernWith
modern",
    "withmodernWith traditional", "withmodernUnmet need")

Table3 <- Table %>%
    arrange(match(variable, order)) %>%
    mutate(variable = gsub("unmettot|unmet|withmodern", "", variable)) %>%
    gt() |>
    tab_header(title = md("**Table 3.** Family planning need women aged 15-49
- weighted")) |>
    opt_align_table_header(align = "left") |>
    cols_label(variable = "") |>
    tab_row_group(label = md("**Demand satisfied by modern
contraceptives**"), rows = 6:8) |>
    tab_row_group(label = md("**Unmet need for spacing and limiting**"), rows
= 3:5) |>
    tab_row_group(label = md("**Unmet need total**"), rows = 1:2) |>
    cols_align(align = "center", columns = 2:4)
```

Table 3 shows the estimate of need for family planning among women aged 15-49. The number of missings on demand satisfied by modern contraceptives is higher because women without a need for family planning are not included in the calculation. The estimates are weighted, using the post-stratification weight based on gender and 5-year age groups. Unweighted frequencies and percentages are shown in Appendix B Table 14. Tables 15-17 of Appendix B show unmet need for family planning per 5-year age-groups for all women, women who are married or in a union, and single women.

```
Table3
```

Table 3. Family planning need women aged 15-49 - weighted

	Married/In-union	Single	Total
Unmet need total			
Unmet need	21% (19.1-22.9)	5.6% (3.9-7.2)	16.5% (15-17.9)
No need	79% (77.1-80.9)	94.4% (92.8-96.1)	83.5% (82.1-85)
Unmet need for spacing and limiting			
Unmet need for spacing	8% (6.7-9.2)	2.9% (1.6-4.1)	6.5% (5.5-7.5)
Unmet need for limiting	13% (11.5-14.5)	2.7% (1.5-3.8)	10% (8.8-11.1)
No need	79% (77.1-80.9)	94.4% (92.8-96.1)	83.5% (82.1-85)
Demand satisfied by modern contraceptives			
With modern	57.2% (54.6-59.8)	71.3% (66.2-76.4)	59.7% (57.4-62)
With traditional	16.3% (14.3-18.2)	15.5% (11.4-19.6)	16.1% (14.4-17.9)
Unmet need	26.5% (24.3-28.8)	13.2% (9.4-17.1)	24.2% (22.1-26.2)

Examining influence of decision tree

Throughout the calculation of unmet need several decisions are made which influence the estimate. For example, contraceptive is defined as the most effective instead of the least effective method used. In this section unmet need is recalculated using five different approaches. This can be used to derive a minimum and maximum estimate of unmet need as was previous done for estimates based on the Fertility and Family Survey (Klijzing 2000) and the Demographic and Health Surveys (Bradley and Casterline 2014). Using the approaches below, the estimates of unmet need range between 79-87%, for unmet need for spacing between 5-15%, for unmet need for limiting between 7-10%, and for demand satisfied by modern contraceptives between 54-63%. Overall level of unmet need are substantially affected by a different definition of sexual activity and short- and long-term fertility intentions. Unmet need for limiting and spacing are mostly affected by a different definition of short- and long-term fertility intentions. And demand satisfied by modern contraceptives is mostly affected by a different definition of effective contraceptives and short- and long-term fertility intentions. To keep the output parsimonious, I only report on the lines in the code which have to be changed.

1. Defining contraceptive use as the least effective method used

Substitute code under subsection Create Most effective method used (cc_method) and Contraceptive method (cc_iud, cc_inject, etc.) with:

```
mld_subset$cc_method <- "No use"
mld_subset$cc_condom <- "No"
mld_subset$cc_pill <- "No"
mld_subset$cc_iud <- "No"
mld_subset$cc_dia_cap <- "No"
mld_subset$cc_foam <- "No"
mld_subset$cc_inject <- "No"
mld_subset$cc_implant <- "No"
mld_subset$cc_persona <- "No"
mld_subset$cc_emergency <- "No"
mld_subset$cc_withdrawal <- "No"
mld_subset$cc_spm <- "No"
mld_subset$cc_ring <- "No"
mld_subset$cc_femcondom <- "No"
mld_subset$cc_sponge <- "No"
mld_subset$cc_patch <- "No"
mld_subset$cc_lam <- "No"

fer <- c("fer12_1", "fer12_2", "fer12_3", "fer12_4", "fer12_5")

mld_subset <- mld_subset %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Implants (e.g.
Norplant)",
        1, any), "Implants", cc_method)) %>%
    mutate(cc_method = ifelse(fer09 == "Yes", "Male sterilization",
cc_method)) %>%
```

```
    mutate(cc_method = ifelse(fer06 == "Yes", "Female sterilization",
cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Intra uterine
device (coil, loop)",
        1, any), "Intrauterine Device", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Injectables (e.g.
Depo Provera)",
        1, any), "Injectables", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "LAM", 1, any),
"LAM", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Pills", 1, any),
"Pill",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Patch", 1, any),
"Patch",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Vaginal ring", 1,
any),
        "Vaginal ring", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Diaphragm/ cervical
cap",
        1, any), "Diaphragm Cervical cap", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Condom", 1, any),
"Male condom",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Safe period method
(rhythm)",
        1, any), "Save Period Method", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Withdrawal", 1,
any), "Withdrawal",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Female condom", 1,
any),
        "Female condom", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Sponge", 1, any),
"Sponge",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Persona", 1, any),
"Persona",
        cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] ==
"Foam/cream/jelly/suppository",
        1, any), "Foam Cream Jelly", cc_method)) %>%
    mutate(cc_method = ifelse(apply(mld_subset[, fer] == "Hormonal emergency
contraception afterwards (morning after pill)",
        1, any), "Emergency contraception", cc_method))

mld_subset <- mld_subset %>%
    mutate(cc_implant = ifelse(cc_method == "Implants", "Yes", "No")) %>%
    mutate(cc_mst = ifelse(cc_method == "Male sterilization", "Yes", "No"))
```

```
%>%
    mutate(cc_femst = ifelse(cc_method == "Female sterilization", "Yes",
"No")) %>%
    mutate(cc_iud = ifelse(cc_method == "Intrauterine Device", "Yes", "No"))
%>%
    mutate(cc_inject = ifelse(cc_method == "Injectables", "Yes", "No")) %>%
    mutate(cc_lam = ifelse(cc_method == "LAM", "Yes", "No")) %>%
    mutate(cc_pill = ifelse(cc_method == "Pill", "Yes", "No")) %>%
    mutate(cc_patch = ifelse(cc_method == "Patch", "Yes", "No")) %>%
    mutate(cc_ring = ifelse(cc_method == "Vaginal ring", "Yes", "No")) %>%
    mutate(cc_dia_cap = ifelse(cc_method == "Diaphragm Cervical cap", "Yes",
"No")) %>%
    mutate(cc_condom = ifelse(cc_method == "Male condom", "Yes", "No")) %>%
    mutate(cc_spm = ifelse(cc_method == "Save Period Method", "Yes", "No"))
%>%
    mutate(cc_withdrawal = ifelse(cc_method == "Withdrawal", "Yes", "No"))
%>%
    mutate(cc_femcondom = ifelse(cc_method == "Female condom", "Yes", "No"))
%>%
    mutate(cc_sponge = ifelse(cc_method == "Sponge", "Yes", "No")) %>%
    mutate(cc_persona = ifelse(cc_method == "Persona", "Yes", "No")) %>%
    mutate(cc_foam = ifelse(cc_method == "Foam Cream Jelly", "Yes", "No"))
%>%
    mutate(cc_emergency = ifelse(cc_method == "Emergency contraception",
"Yes", "No"))

Table4
```

Table 4. Family planning need women aged 15-49 - weighted

	Married/In-union	Single	Total
Unmet need total			
Unmet need	21% (19.2-22.9)	5.7% (4-7.4)	16.6% (15.1-18)
No need	79% (77.1-80.8)	94.3% (92.6-96)	83.4% (82-84.9)
Unmet need for spacing and limiting			
Unmet need for spacing	8% (6.7-9.2)	2.9% (1.6-4.1)	6.5% (5.5-7.5)
Unmet need for limiting	13.1% (11.5-14.6)	2.8% (1.6-4)	10.1% (8.9-11.2)
No need	79% (77.1-80.8)	94.3% (92.6-96)	83.4% (82-84.9)
Demand satisfied by modern contraceptives			
With modern	52.1% (49.5-54.7)	61.4% (55.9-66.9)	53.7% (51.4-56.1)
With traditional	21.3% (19.2-23.5)	25.1% (20.2-30.1)	22% (20-24)
Unmet need	26.6% (24.3-28.9)	13.5% (9.6-17.3)	24.2% (22.2-26.2)

In GGS-II, respondents can report about multiple contraceptive methods. Thus far, contraceptive use is defined as the most effective method used. Changing this to the least effective method used affects the Demand satisfied by modern contraceptives. Demand satisfied by modern contraceptives decreased for all women from 60% to 54%.

2. Define women in a union who did not have sex in the past 4 weeks as having no need

Substitute code under subsection Determine family planning need among single women who are not using contraception, are not pregnant or postpartum and who are not sexually active with:

```
mld_subset2 <- mld_subset2 %>%
    # Women who were not sexually active in the last 4 weeks = No need
mutate(ufp_group = ifelse(fer13 == "No" & ufp_group == "Empty", "No need (not
sexually active single women)",
    ufp_group))

Table5
```

Table 5. Family planning need women aged 15-49 - weighted

	Married/In-union	Single	Total
Unmet need total			
Unmet need	16.6% (14.9-18.3)	5.6% (3.9-7.2)	13.4% (12-14.7)
No need	83.4% (81.7-85.1)	94.4% (92.8-96.1)	86.6% (85.3-88)
Unmet need for spacing and limiting			
Unmet need for spacing	6.3% (5.1-7.4)	2.9% (1.6-4.1)	5.3% (4.4-6.2)
Unmet need for limiting	10.3% (8.9-11.7)	2.7% (1.5-3.8)	8.1% (7-9.1)
No need	83.4% (81.7-85.1)	94.4% (92.8-96.1)	86.6% (85.3-88)
Demand satisfied by modern contraceptives			
With modern	60.6% (57.9-63.2)	71.3% (66.2-76.4)	62.6% (60.3-64.9)
With traditional	17.2% (15.2-19.3)	15.5% (11.4-19.6)	16.9% (15.1-18.7)
Unmet need	22.2% (20-24.4)	13.2% (9.4-17.1)	20.5% (18.6-22.5)

Thus far, all women in a union are considered to be sexually active. Changing this to only defining women as sexually active when they report to have had sex in the past 4 weeks, changes the unmet need the estimates for women in a union. Unmet need for spacing reduced from 8% to 6% and unmet need for limiting from 13% to 10%. This approach also has a limited effect on the demand satisfied by modern methods.

3. Define women who report that they or their partner are probably not able to have children as infecund

Substitute code under subsection Determine family planning need among women who are infecund with:

```
mld_subset2$fer24_num <- as.numeric(mld_subset2$fer24)
mld_subset2$fecundity <- "Fecund"

mld_subset2 <- mld_subset2 %>%
    # Declared self or partner infecund
mutate(fecundity = ifelse(fer05 == "Probably not" | fer05 == "Definitely not"
```

```
| fer08 ==
    "Probably not" | fer08 == "Definitely not", "Infecund", fecundity)) %>%
    # Menopausal
mutate(fecundity = ifelse(fer24_num > 19 & !is.na(fer24_num), "Infecund",
fecundity)) %>%
    # Never menstruated
mutate(fecundity = ifelse(fer21 == "Not Applicable" & age > 14 & age < 20,
"Infecund",
    fecundity)) %>%
    # Postpartum and birth was 5+ years ago
mutate(fecundity = ifelse(fer04e == "No" & tsinceb > 5 & !is.na(tsinceb),
"Infecund",
    fecundity)) %>%
    # Infecund = No need
mutate(ufp_group = ifelse(fecundity == "Infecund" & ufp_group == "Empty", "No
need for family planning (infecund or menopausal)",
    ufp_group))

Table6
```

Table 6. Family planning need women aged 15-49 - weighted

	Married/In-union	Single	Total
Unmet need total			
Unmet need	19.7% (17.8-21.5)	5.3% (3.7-7)	15.5% (14.1-16.9)
No need	80.3% (78.5-82.2)	94.7% (93-96.3)	84.5% (83.1-85.9)
Unmet need for spacing and limiting			
Unmet need for spacing	7.6% (6.4-8.9)	2.9% (1.6-4.1)	6.2% (5.3-7.2)
Unmet need for limiting	12% (10.5-13.5)	2.4% (1.3-3.5)	9.2% (8.1-10.3)
No need	80.3% (78.5-82.2)	94.7% (93-96.3)	84.5% (83.1-85.9)
Demand satisfied by modern contraceptives			
With modern	58.2% (55.6-60.7)	71.7% (66.6-76.8)	60.6% (58.3-62.9)
With traditional	16.5% (14.6-18.5)	15.6% (11.5-19.7)	16.4% (14.6-18.1)
Unmet need	25.3% (23-27.6)	12.7% (8.9-16.5)	23% (21-25)

Thus far, women are defined as being infecund, when they declare that they themselves or their partner are definitely not able to have (more) children. Adding women who declare themselves or their partner as probably not able to have children reduces the number of women considered in need for family planning. Overall, estimates are similar between this approach and the standard approach.

4. Define women differently on the basis of their short- and long-term fertility intentions

Substitute code under subsection Determine family planning need among women who are using contraception with:

```
mld_subset2$ufp_group <- "Empty"

mld_subset2 <- mld_subset2 %>%
    # Wants no more children = Using to limit births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception" &
    fer15 == "Definitely not", "Family planning need met for limiting",
ufp_group)) %>%
    # Can't get pregnant = Using to limit births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception" &
    (fer05 == "Definitely not" | fer05 == "Probably not"), "Family planning
need met for limiting",
    ufp_group)) %>%
    # Partner can't get pregnant = Using to limit births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception" &
    (fer08 == "Definitely not" | fer08 == "Probably not"), "Family planning
need met for limiting",
    ufp_group)) %>%
    # All others = Using to space births
mutate(ufp_group = ifelse(ufp_group == "Empty" & cc_any == "Uses
contraception",
    "Family planning need met for spacing", ufp_group))
```

Substitute code under subsection Determine family planning need among women not using contraception and not pregnant, postpartum, or infecund with:

```
mld_subset2 <- mld_subset2 %>%
    # Wants within 3 years - No need
mutate(ufp_group = ifelse(fer14 == "Definitely yes" & ufp_group == "Empty",
"No need for family planning (want child in next three years)",
    ufp_group)) %>%
    # Wants in 3+ years, wants but undecided timing, or unsure if wants =
Unmet
    # need for spacing
mutate(ufp_group = ifelse((fer14 == "Probably yes" | fer14 == "Unsure" |
fer14 ==
    "Don't know") & ufp_group == "Empty", "Unmet need for spacing",
ufp_group)) %>%
    mutate(ufp_group = ifelse((fer15 == "Probably not" | fer15 == "Unsure" |
fer15 ==
        "Probably yes" | fer15 == "Definitely yes" | fer15 == "Don't know") &
ufp_group ==
        "Empty", "Unmet need for spacing", ufp_group)) %>%
    # Wants no more = Unmet need for limiting
mutate(ufp_group = ifelse(fer15 == "Definitely not" & ufp_group == "Empty",
"Unmet need for limiting",
    ufp_group)) %>%
```

```
    # Missing or contraceptive use unknown
mutate(ufp_group = ifelse(ufp_group == "Empty", "Missing", ufp_group))

Table7
```

Table 7. Family planning need women aged 15-49 - weighted

	Married/In-union	Single	Total
Unmet need total			
Unmet need	27.1% (25-29.1)	7.9% (5.9-9.9)	21.5% (19.9-23.1)
No need	72.9% (70.9-75)	92.1% (90.1-94.1)	78.5% (76.9-80.1)
Unmet need for spacing and limiting			
Unmet need for spacing	18.3% (16.5-20)	5.8% (4.1-7.6)	14.6% (13.2-16)
Unmet need for limiting	8.8% (7.5-10.1)	2% (1-3)	6.8% (5.9-7.8)
No need	72.9% (70.9-75)	92.1% (90.1-94.1)	78.5% (76.9-80.1)
Demand satisfied by modern contraceptives			
With modern	53.1% (50.6-55.6)	67.6% (62.4-72.8)	55.7% (53.4-57.9)
With traditional	15.1% (13.3-16.9)	14.7% (10.8-18.6)	15% (13.4-16.7)
Unmet need	31.8% (29.5-34.1)	17.7% (13.5-22)	29.3% (27.2-31.4)

Short- and long-term fertility intention questions are measured on a scale with answer options *Definitely not / Probably not / Unsure / Probably yes / Definitely yes*. Thus far, *Definitely not* and *Probably not* are grouped together to define unmet need for limiting and family planning need met for limiting. While *Definitely yes* and *Probably yes* are grouped together to define no need for family planning. Changing this by only using the most extreme answer options *Definitely not* or *Definitely yes*, affects the estimates of unmet need. With this approach unmet need for all women reduces from 84% to 79%. In addition, unmet need for spacing increases from 7% to 15%, unmet need for limiting diminishes from 10% to 7%, and demand satisfied with modern contraceptives decreases from 60% to 56%.

5. Change definition of Postpartum Amenorrhea

Substitute code under subsection Create pregPPA & wantedlast with:

```
## Create pregPPA & wantedlast
mld_subset2 <- mld_subset2 %>%
    # Identify pregnant women
mutate(pregPPA = ifelse(fer01a == "Yes", 1, pregPPA)) %>%
    # Identify PPA for <24 months
mutate(pregPPA = ifelse(tsinceb < 0.5 & !is.na(tsinceb) & fer04e != "Yes" &
pregPPA ==
    0, 1, pregPPA)) %>%
    # wantedlast for currently pregnant
mutate(wantedlast = ifelse((fer04 == "About the right time" | fer04 ==
"Later") &
    pregPPA == 1, "Child intended and right time", wantedlast)) %>%
```

```
    mutate(wantedlast = ifelse(fer04 == "Sooner" & pregPPA == 1, "Sooner than
intended",
        wantedlast)) %>%
    mutate(wantedlast = ifelse(fer03 == "No" & pregPPA == 1, "Not intended",
wantedlast)) %>%
    # wantedlast for PPA
mutate(wantedlast = ifelse((fer04c == "About the right time" | fer04c ==
"Later") &
    pregPPA == 1 & wantedlast == "Empty", "Child intended and right time",
wantedlast)) %>%
    mutate(wantedlast = ifelse(fer04c == "Sooner" & pregPPA == 1 & wantedlast
==
        "Empty", "Sooner than intended", wantedlast)) %>%
    mutate(wantedlast = ifelse(fer04b == "No" & pregPPA == 1 & wantedlast ==
"Empty",
        "Not intended", wantedlast)) %>%
    # Missing
mutate(wantedlast = ifelse(pregPPA == 1 & wantedlast == "Empty", "Missing",
wantedlast))

Table8
```

Table 8. Family planning need women aged 15-49 - weighted

	Married/In-union	Single	Total
Unmet need total			
Unmet need	21.3% (19.4-23.2)	5.6% (3.9-7.2)	16.7% (15.2-18.1)
No need	78.7% (76.8-80.6)	94.4% (92.8-96.1)	83.3% (81.9-84.8)
Unmet need for spacing and limiting			
Unmet need for spacing	8.3% (7-9.6)	3% (1.8-4.3)	6.8% (5.8-7.7)
Unmet need for limiting	13% (11.5-14.5)	2.5% (1.4-3.6)	9.9% (8.8-11.1)
No need	78.7% (76.8-80.6)	94.4% (92.8-96.1)	83.3% (81.9-84.8)
Demand satisfied by modern contraceptives			
With modern	57% (54.4-59.5)	71.3% (66.2-76.4)	59.5% (57.2-61.8)
With traditional	16.2% (14.3-18.1)	15.5% (11.4-19.6)	16.1% (14.3-17.8)
Unmet need	26.8% (24.5-29.1)	13.2% (9.4-17.1)	24.4% (22.4-26.4)

For women who are postpartum amenorrheic, intendedness of last pregnancy is used instead of the current situation. Women are defined as postpartum amenorrheic if they had a child in the past 2 years. Previous research suggest that this period exceeds most clinical guidelines which advice contraceptives use after 6 months of postpartum (Bradley and Casterline 2014). Changing the definition of postpartum from 2 years to 6 months, does not affect the estimated.

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Appendix

A. Correcting for underestimation of contraceptive prevalence by deleting 181 cases

Section *Reliability of Contraceptive Prevalence* explains why about 95 women are wrongly assigned to the 1375 women not using contraceptives, while they should have been assigned to the 1326 women using contraceptives. To avoid adding random error to the use of contraceptive method by assigning 95 women to the group of contraceptive users, instead, the number of non-users is reduced by randomly deleted 181 cases.

$$1375 = \left(\frac{1326}{1421 \,/\, 2701} - 1326\right) = 181$$

Table 9 below shows that the unweighted estimate of Contraceptive prevalence is the same when 181 cases are deleted from the No use group (column 4) and when 95 cases would have been moved from the No use group to the Contraceptive use group (column 3).

Table 9	Unadjusted	Corrected	Corrected without changing numerator
Contraceptive use	1326 = 49.1%	1421 = 52.6%	1326 = 52.6%
No use	1375	1280	1194
Total	2701	2701	2520

B. Additional tables

```
# Unweighted estimates
tab10 <- tableby(unionstatus ~ cc_any + cc_type + cc_method_un, data =
mld_subset2,
    control = tableby.control(test = FALSE))
tab14 <- tableby(unionstatus ~ unmettot + unmet + withmodern, data =
mld_subset2,
    control = tableby.control(test = FALSE))
# Estimates for 5-year age groups - all women; Note: weighting is not needed
# because the data is already split by age and 5-year groups.
tab11 <- tableby(agecat ~ cc_any + cc_type + cc_method_un, data =
mld_subset2, total = FALSE,
    control = tableby.control(test = FALSE))
tab15 <- tableby(agecat ~ unmettot + unmet + withmodern, data = mld_subset2,
total = FALSE,
    control = tableby.control(test = FALSE))
# Estimates for 5-year age groups - married / in-union women; Note: weighting
# is not needed because the data is already split by age and 5-year groups.
mld_subset2_union <- mld_subset2 %>%
    filter(unionstatus == "Married/In-union")
tab12 <- tableby(agecat ~ cc_any + cc_type + cc_method_un, data =
mld_subset2_union,
    total = FALSE, control = tableby.control(test = FALSE))
tab16 <- tableby(agecat ~ unmettot + unmet + withmodern, data =
mld_subset2_union,
    total = FALSE, control = tableby.control(test = FALSE))
# Estimates for 5-year age groups - single women; Note: weighting is not
needed
# because the data is already split by age and 5-year groups.
mld_subset2_single <- mld_subset2 %>%
    filter(unionstatus == "Single")
tab13 <- tableby(agecat ~ cc_any + cc_type + cc_method_un, data =
mld_subset2_single,
    total = FALSE, control = tableby.control(test = FALSE))
tab17 <- tableby(agecat ~ unmettot + unmet + withmodern, data =
mld_subset2_single,
    total = FALSE, control = tableby.control(test = FALSE))
```

```
summary(tab10, title = "Contraceptive Prevalence women aged 15-49 -
unweighted",
    labelTranslations = labCP)
```

Table 10. *Contraceptive Prevalence women aged 15-49 - unweighted*

	Married/In-union (N=1814)	Single (N=706)	Total (N=2520)
Contraceptive use			
Uses contraception	1037 (57.2%)	259 (36.7%)	1296 (51.4%)
No use	777 (42.8%)	447 (63.3%)	1224 (48.6%)
Type			
Modern	809 (44.6%)	212 (30.0%)	1021 (40.5%)
Traditional	228 (12.6%)	47 (6.7%)	275 (10.9%)
No use	777 (42.8%)	447 (63.3%)	1224 (48.6%)
Method			
Male condom	361 (19.9%)	126 (17.8%)	487 (19.3%)
Intrauterine Device	217 (12.0%)	29 (4.1%)	246 (9.8%)
Pill	128 (7.1%)	44 (6.2%)	172 (6.8%)
Female sterilization	67 (3.7%)	9 (1.3%)	76 (3.0%)
LAM	13 (0.7%)	1 (0.1%)	14 (0.6%)
Vaginal barrier methods	3 (0.2%)	1 (0.1%)	4 (0.2%)
Injectables	5 (0.3%)	0 (0.0%)	5 (0.2%)
Emergency contraception	2 (0.1%)	2 (0.3%)	4 (0.2%)
Male sterilization	2 (0.1%)	0 (0.0%)	2 (0.1%)
Female condom	1 (0.1%)	0 (0.0%)	1 (0.0%)
Implants	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other modern methods	10 (0.6%)	0 (0.0%)	10 (0.4%)
Withdrawal	194 (10.7%)	42 (5.9%)	236 (9.4%)
Save Period Method	34 (1.9%)	5 (0.7%)	39 (1.5%)
Other traditional methods	0 (0.0%)	0 (0.0%)	0 (0.0%)
No use	777 (42.8%)	447 (63.3%)	1224 (48.6%)

```
summary(tab11, title = "Contraceptive prevalence all women  - unweighted", labelTranslations = labCP)
```

Table 11. *Contraceptive prevalence all women - unweighted*

	15-19 (N=187)	20-24 (N=259)	25-29 (N=332)	30-34 (N=493)	35-39 (N=480)	40-44 (N=395)	45-49 (N=374)
Contraceptive use							
Uses contraception	50 (26.7%)	138 (53.3%)	180 (54.2%)	281 (57.0%)	278 (57.9%)	210 (53.2%)	159 (42.5%)
No use	137 (73.3%)	121 (46.7%)	152 (45.8%)	212 (43.0%)	202 (42.1%)	185 (46.8%)	215 (57.5%)
Type							
Modern	43 (23.0%)	107 (41.3%)	132 (39.8%)	229 (46.5%)	207 (43.1%)	172 (43.5%)	131 (35.0%)
Traditional	7 (3.7%)	31 (12.0%)	48 (14.5%)	52 (10.5%)	71 (14.8%)	38 (9.6%)	28 (7.5%)
No use	137 (73.3%)	121 (46.7%)	152 (45.8%)	212 (43.0%)	202 (42.1%)	185 (46.8%)	215 (57.5%)
Method							
Male condom	34 (18.2%)	74 (28.6%)	61 (18.4%)	106 (21.5%)	91 (19.0%)	77 (19.5%)	44 (11.8%)
Intrauterine Device	1 (0.5%)	10 (3.9%)	31 (9.3%)	61 (12.4%)	61 (12.7%)	46 (11.6%)	36 (9.6%)
Pill	7 (3.7%)	19 (7.3%)	33 (9.9%)	36 (7.3%)	32 (6.7%)	24 (6.1%)	21 (5.6%)
Female sterilization	0 (0.0%)	0 (0.0%)	3 (0.9%)	13 (2.6%)	14 (2.9%)	20 (5.1%)	26 (7.0%)
LAM	0 (0.0%)	1 (0.4%)	3 (0.9%)	7 (1.4%)	2 (0.4%)	1 (0.3%)	0 (0.0%)
Vaginal barrier methods	1 (0.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	1 (0.3%)	1 (0.3%)
Injectables	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	3 (0.6%)	1 (0.3%)	0 (0.0%)
Emergency contraception	0 (0.0%)	3 (1.2%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Male sterilization	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)
Female condom	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)
Implants	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other modern methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (0.8%)	3 (0.6%)	1 (0.3%)	2 (0.5%)
Withdrawal	6 (3.2%)	27 (10.4%)	41 (12.3%)	43 (8.7%)	62 (12.9%)	35 (8.9%)	22 (5.9%)
Save Period Method	1 (0.5%)	4 (1.5%)	7 (2.1%)	9 (1.8%)	9 (1.9%)	3 (0.8%)	6 (1.6%)
Other traditional methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
No use	137 (73.3%)	121 (46.7%)	152 (45.8%)	212 (43.0%)	202 (42.1%)	185 (46.8%)	215 (57.5%)

```
summary(tab12, title = "Contraceptive prevalence married/in-union women  - unweighted",
    labelTranslations = labCP)
```

Table 12. *Contraceptive prevalence married/in-union women - unweighted*

	15-19 (N=21)	20-24 (N=146)	25-29 (N=273)	30-34 (N=412)	35-39 (N=385)	40-44 (N=304)	45-49 (N=273)
Contraceptive use							
Uses contraception	11 (52.4%)	88 (60.3%)	157 (57.5%)	246 (59.7%)	236 (61.3%)	175 (57.6%)	124 (45.4%)
No use	10 (47.6%)	58 (39.7%)	116 (42.5%)	166 (40.3%)	149 (38.7%)	129 (42.4%)	149 (54.6%)
Type							
Modern	11 (52.4%)	62 (42.5%)	115 (42.1%)	198 (48.1%)	176 (45.7%)	143 (47.0%)	104 (38.1%)
Traditional	0 (0.0%)	26 (17.8%)	42 (15.4%)	48 (11.7%)	60 (15.6%)	32 (10.5%)	20 (7.3%)
No use	10 (47.6%)	58 (39.7%)	116 (42.5%)	166 (40.3%)	149 (38.7%)	129 (42.4%)	149 (54.6%)
Method							
Male condom	9 (42.9%)	40 (27.4%)	52 (19.0%)	93 (22.6%)	76 (19.7%)	59 (19.4%)	32 (11.7%)
Intrauterine Device	1 (4.8%)	8 (5.5%)	30 (11.0%)	54 (13.1%)	52 (13.5%)	40 (13.2%)	32 (11.7%)
Pill	1 (4.8%)	12 (8.2%)	26 (9.5%)	28 (6.8%)	26 (6.8%)	20 (6.6%)	15 (5.5%)
Female sterilization	0 (0.0%)	0 (0.0%)	3 (1.1%)	11 (2.7%)	13 (3.4%)	19 (6.2%)	21 (7.7%)
LAM	0 (0.0%)	1 (0.7%)	3 (1.1%)	6 (1.5%)	2 (0.5%)	1 (0.3%)	0 (0.0%)
Vaginal barrier methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	1 (0.3%)	1 (0.4%)
Injectables	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	3 (0.8%)	1 (0.3%)	0 (0.0%)
Emergency contraception	0 (0.0%)	1 (0.7%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Male sterilization	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.4%)
Female condom	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)
Implants	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other modern methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (1.0%)	3 (0.8%)	1 (0.3%)	2 (0.7%)
Withdrawal	0 (0.0%)	23 (15.8%)	35 (12.8%)	40 (9.7%)	51 (13.2%)	29 (9.5%)	16 (5.9%)
Save Period Method	0 (0.0%)	3 (2.1%)	7 (2.6%)	8 (1.9%)	9 (2.3%)	3 (1.0%)	4 (1.5%)
Other traditional methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
No use	10 (47.6%)	58 (39.7%)	116 (42.5%)	166 (40.3%)	149 (38.7%)	129 (42.4%)	149 (54.6%)

```
summary(tab13, title = "Contraceptive prevalence single women - unweighted", labelTranslations = labCP)
```

Table 13. *Contraceptive prevalence single women - unweighted*

	15-19 (N=166)	20-24 (N=113)	25-29 (N=59)	30-34 (N=81)	35-39 (N=95)	40-44 (N=91)	45-49 (N=101)
Contraceptive use							
Uses contraception	39 (23.5%)	50 (44.2%)	23 (39.0%)	35 (43.2%)	42 (44.2%)	35 (38.5%)	35 (34.7%)
No use	127 (76.5%)	63 (55.8%)	36 (61.0%)	46 (56.8%)	53 (55.8%)	56 (61.5%)	66 (65.3%)
Type							
Modern	32 (19.3%)	45 (39.8%)	17 (28.8%)	31 (38.3%)	31 (32.6%)	29 (31.9%)	27 (26.7%)
Traditional	7 (4.2%)	5 (4.4%)	6 (10.2%)	4 (4.9%)	11 (11.6%)	6 (6.6%)	8 (7.9%)
No use	127 (76.5%)	63 (55.8%)	36 (61.0%)	46 (56.8%)	53 (55.8%)	56 (61.5%)	66 (65.3%)
Method							
Male condom	25 (15.1%)	34 (30.1%)	9 (15.3%)	13 (16.0%)	15 (15.8%)	18 (19.8%)	12 (11.9%)
Intrauterine Device	0 (0.0%)	2 (1.8%)	1 (1.7%)	7 (8.6%)	9 (9.5%)	6 (6.6%)	4 (4.0%)
Pill	6 (3.6%)	7 (6.2%)	7 (11.9%)	8 (9.9%)	6 (6.3%)	4 (4.4%)	6 (5.9%)
Female sterilization	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (2.5%)	1 (1.1%)	1 (1.1%)	5 (5.0%)
LAM	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Vaginal barrier methods	1 (0.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Injectables	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Emergency contraception	0 (0.0%)	2 (1.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Male sterilization	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Female condom	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Implants	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other modern methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Withdrawal	6 (3.6%)	4 (3.5%)	6 (10.2%)	3 (3.7%)	11 (11.6%)	6 (6.6%)	6 (5.9%)
Save Period Method	1 (0.6%)	1 (0.9%)	0 (0.0%)	1 (1.2%)	0 (0.0%)	0 (0.0%)	2 (2.0%)
Other traditional methods	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
No use	127 (76.5%)	63 (55.8%)	36 (61.0%)	46 (56.8%)	53 (55.8%)	56 (61.5%)	66 (65.3%)

```
# The number of missings on Demand satisfied by modern contraceptives is
higher
# because women without a need for family planning are not included in the
# calculation.
summary(tab14, title = "Family planning need all women - unweighted",
labelTranslations = labUFP)
```

Table 14. *Family planning need all women - unweighted*

	Married/In-union (N=1814)	Single (N=706)	Total (N=2520)
Unmet need total			
N-Miss	26	8	34
Unmet need	382 (21.4%)	40 (5.7%)	422 (17.0%)
No unmet need	1406 (78.6%)	658 (94.3%)	2064 (83.0%)
Unmet need for spacing and limiting			
N-Miss	26	8	34
Unmet need for spacing	140 (7.8%)	20 (2.9%)	160 (6.4%)
Unmet need for limiting	242 (13.5%)	20 (2.9%)	262 (10.5%)
No unmet need	1406 (78.6%)	658 (94.3%)	2064 (83.0%)
Demand satisfied by modern contraceptives			
N-Miss	395	407	802
With modern	809 (57.0%)	212 (70.9%)	1021 (59.4%)
With traditional	228 (16.1%)	47 (15.7%)	275 (16.0%)
Unmet need	382 (26.9%)	40 (13.4%)	422 (24.6%)

```
# The number of missings on Demand satisfied by modern contraceptives is higher
# because women without a need for family planning are not included in the
# calculation.
summary(tab15, title = "Family planning need all women - unweighted", labelTranslations = labUFP)
```

Table 15. *Family planning need all women - unweighted*

	15-19 (N=187)	20-24 (N=259)	25-29 (N=332)	30-34 (N=493)	35-39 (N=480)	40-44 (N=395)	45-49 (N=374)
Unmet need total							
N-Miss	1	0	0	0	0	0	33
Unmet need	5 (2.7%)	24 (9.3%)	53 (16.0%)	83 (16.8%)	92 (19.2%)	102 (25.8%)	63 (18.5%)
No unmet need	181 (97.3%)	235 (90.7%)	279 (84.0%)	410 (83.2%)	388 (80.8%)	293 (74.2%)	278 (81.5%)
Unmet need for spacing and limiting							
N-Miss	1	0	0	0	0	0	33
Unmet need for spacing	3 (1.6%)	17 (6.6%)	33 (9.9%)	38 (7.7%)	29 (6.0%)	26 (6.6%)	14 (4.1%)
Unmet need for limiting	2 (1.1%)	7 (2.7%)	20 (6.0%)	45 (9.1%)	63 (13.1%)	76 (19.2%)	49 (14.4%)
No unmet need	181 (97.3%)	235 (90.7%)	279 (84.0%)	410 (83.2%)	388 (80.8%)	293 (74.2%)	278 (81.5%)
Demand satisfied by modern contraceptives							
N-Miss	132	97	99	129	110	83	152
With modern	43 (78.2%)	107 (66.0%)	132 (56.7%)	229 (62.9%)	207 (55.9%)	172 (55.1%)	131 (59.0%)
With traditional	7 (12.7%)	31 (19.1%)	48 (20.6%)	52 (14.3%)	71 (19.2%)	38 (12.2%)	28 (12.6%)
Unmet need	5 (9.1%)	24 (14.8%)	53 (22.7%)	83 (22.8%)	92 (24.9%)	102 (32.7%)	63 (28.4%)

```
# The number of missings on Demand satisfied by modern contraceptives is higher
# because women without a need for family planning are not included in the
# calculation.
summary(tab16, title = "Family planning need married/in-union women - unweighted",
    labelTranslations = labUFP)
```

Table 16. *Family planning need married/in-union women - unweighted*

	15-19 (N=21)	20-24 (N=146)	25-29 (N=273)	30-34 (N=412)	35-39 (N=385)	40-44 (N=304)	45-49 (N=273)
Unmet need total							
N-Miss	0	0	0	0	0	0	26
Unmet need	3 (14.3%)	17 (11.6%)	47 (17.2%)	77 (18.7%)	89 (23.1%)	93 (30.6%)	56 (22.7%)
No unmet need	18 (85.7%)	129 (88.4%)	226 (82.8%)	335 (81.3%)	296 (76.9%)	211 (69.4%)	191 (77.3%)
Unmet need for spacing and limiting							
N-Miss	0	0	0	0	0	0	26
Unmet need for spacing	2 (9.5%)	11 (7.5%)	29 (10.6%)	34 (8.3%)	27 (7.0%)	25 (8.2%)	12 (4.9%)
Unmet need for limiting	1 (4.8%)	6 (4.1%)	18 (6.6%)	43 (10.4%)	62 (16.1%)	68 (22.4%)	44 (17.8%)
No unmet need	18 (85.7%)	129 (88.4%)	226 (82.8%)	335 (81.3%)	296 (76.9%)	211 (69.4%)	191 (77.3%)
Demand satisfied by modern contraceptives							
N-Miss	7	41	69	89	60	36	93
With modern	11 (78.6%)	62 (59.0%)	115 (56.4%)	198 (61.3%)	176 (54.2%)	143 (53.4%)	104 (57.8%)
With traditional	0 (0.0%)	26 (24.8%)	42 (20.6%)	48 (14.9%)	60 (18.5%)	32 (11.9%)	20 (11.1%)
Unmet need	3 (21.4%)	17 (16.2%)	47 (23.0%)	77 (23.8%)	89 (27.4%)	93 (34.7%)	56 (31.1%)

```
# The number of missings on Demand satisfied by modern contraceptives is higher
# because women without a need for family planning are not included in the
# calculation.
summary(tab17, title = "Family planning need single women - unweighted", labelTranslations = labUFP)
```

Table 17. *Family planning need single women - unweighted*

	15-19 (N=166)	20-24 (N=113)	25-29 (N=59)	30-34 (N=81)	35-39 (N=95)	40-44 (N=91)	45-49 (N=101)
Unmet need total							
N-Miss	1	0	0	0	0	0	7
Unmet need	2 (1.2%)	7 (6.2%)	6 (10.2%)	6 (7.4%)	3 (3.2%)	9 (9.9%)	7 (7.4%)
No unmet need	163 (98.8%)	106 (93.8%)	53 (89.8%)	75 (92.6%)	92 (96.8%)	82 (90.1%)	87 (92.6%)
Unmet need for spacing and limiting							
N-Miss	1	0	0	0	0	0	7
Unmet need for spacing	1 (0.6%)	6 (5.3%)	4 (6.8%)	4 (4.9%)	2 (2.1%)	1 (1.1%)	2 (2.1%)
Unmet need for limiting	1 (0.6%)	1 (0.9%)	2 (3.4%)	2 (2.5%)	1 (1.1%)	8 (8.8%)	5 (5.3%)
No unmet need	163 (98.8%)	106 (93.8%)	53 (89.8%)	75 (92.6%)	92 (96.8%)	82 (90.1%)	87 (92.6%)
Demand satisfied by modern contraceptives							
N-Miss	125	56	30	40	50	47	59
With modern	32 (78.0%)	45 (78.9%)	17 (58.6%)	31 (75.6%)	31 (68.9%)	29 (65.9%)	27 (64.3%)
With traditional	7 (17.1%)	5 (8.8%)	6 (20.7%)	4 (9.8%)	11 (24.4%)	6 (13.6%)	8 (19.0%)
Unmet need	2 (4.9%)	7 (12.3%)	6 (20.7%)	6 (14.6%)	3 (6.7%)	9 (20.5%)	7 (16.7%)