

# IPUMS PMA DATA WORKSHOP

Reasons for Unmet Need for Family Planning  
in PMA Panel Surveys



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# TODAY'S GOALS

- Introduce measures of Unmet Need in PMA Panel Surveys
- Open an IPUMS PMA data extract in **Stata**
- Explore women's reasons for Unmet Need in Phase 1 of the panel
- Predict women's Unmet Need in Phase 2 of the panel

Sample	Phase 1 Data Collection*	Now Available from IPUMS PMA		
		Phase 1	Phase 2	Phase 3
Burkina Faso	Dec 2019 - Mar 2020	x	x	
Kenya	Nov 2019 - Dec 2019	x	x	
Cote d'Ivoire	Sep 2020 - Dec 2020	x		
DRC - Kinshasa	Dec 2019 - Feb 2020	x	x	
DRC - Kongo Central	Dec 2019 - Feb 2020	x	x	
India - Rajasthan	Aug 2020 - Oct 2020	x		
Nigeria - Kano	Dec 2019 - Jan 2020	x	x	
Nigeria - Lagos	Dec 2019 - Jan 2020	x	x	
Uganda	Sep 2020 - Oct 2020	x		

\* Each data collection phase is spaced one year apart

# UNMET NEED

# WHAT IS UNMET NEED?

Women who are capable of becoming pregnant are said to have unmet need if they might want to **limit** or **space** births, but are not using a family planning method.

Examples:

- Layla wants to have a child someday, but she is not so sure she wants to have one soon. If neither she nor her husband are currently using any family planning method, Layla would have **unmet need for spacing** pregnancies.
- Yasmine is currently pregnant with her fourth child. She had planned to stop having children after her third child, so her fourth pregnancy indicates that Yasmine has **unmet need for limiting** pregnancies.
- At age 15, Fatimata is not using any family planning method because she is not sexually active. Fatimata has no unmet need because she is **not at risk** for becoming pregnant.

# HOW IS UNMET NEED MEASURED?

PMA uses several different survey questions to determine which women are:

- Sexually active (including non-married women who have had sex within 30 days)
- Neither infecund nor menopausal
- Express uncertainty or intentions to space or limit pregnancies (including their current pregnancy, or recent pregnancy if PPA)
- Not currently using a family planning method (including prior sterilization, emergency methods within the last year, traditional methods, and all modern methods)

# IPUMS PMA HARMONIZED VARIABLES

UNMETNEED  explains whether each female respondent has:

- unmet need for **spacing** births
- unmet need for **limiting** births
- is **not at risk** of becoming pregnant
- is currently using family planning for **spacing** births
- is currently using family planning for **limiting** births
- is not using family planning with **no unmet need**

UNMETYN  is binary:

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

# UNMET NEED IN STATA

# SETUP

Our extract includes data from two phases of the panel study in **Burkina Faso** and **Kenya** (female respondents only).

We drop women who only completed one of the two interviews, and those who are not members of the *de facto* population.

```
1 library(ipumsr)
2 library(tidyverse)
3 library(srvyr)
4 library(survey)
5 library(scales)
6 library(broom)
7 library(gtsummary)
8
9 # load pma longitudinal samples (wide format, female respondents only)
10 dat <- read_ipums_micro(
11   ddi = here::here("data/pma_00114.xml"),
12   data = here::here("data/pma_00114.dat.gz")
13 )
14
15 # keep only panel members in the de facto population
16 dat <- dat %>%
17   mutate(COUNTRY = COUNTRY %>% as_factor %>% as.character) %>%
18   filter(
19     RESULTFQ_1 == 1 & RESULTFQ_2 == 1,
20     RESIDENT_1 %in% c(11, 22) & RESIDENT_2 %in% c(11, 22)
21   )
```

# UNMET NEED BY COUNTRY AT PHASE 1

PANELWEIGHT ↗ is the sampling weight for panel members (controls for loss to follow-up).

EAID\_1 ↗ and STRATA\_1 ↗ are the sample clusters and strata used to select households at Phase 1.

```
1 dat %>%
2   as_survey_design(
3     weight = PANELWEIGHT,
4     id = EAID_1,
5     strata = STRATA_1
6   ) %>%
7   mutate(across(
8     c(UNMETNEED_1, UNMETYN_1),
9     ~.x %>% as_factor %>% fct_drop
10  )) %>%
11  tbl_svysummary(
12    by = COUNTRY,
13    include = c(UNMETNEED_1, UNMETYN_1),
14    statistic = list(everything() ~ "{p}%" )
15  ) %>%
16  modify_header(
17    update = list(
18      label ~ " ",
19      stat_1 ~ "Burkina Faso",
20      stat_2 ~ "Kenya"
21    )
22  ) %>%
23  modify_footnote(
24    c(stat_1, stat_2) ~ "Weighted Percent"
25  )
```

	Burkina Faso <sup>1</sup>	Kenya <sup>1</sup>
Unmet need		
Unmet need to space	17%	7.3%
Unmet need to limit	3.7%	4.9%
Using to space	22%	24%
Using to limit	6.6%	22%
Infecund or menopausal	8.8%	5.8%
Not sexually active	17%	27%
No unmet need	24%	9.7%
No response or missing	0.1%	<0.1%
NIU (not in universe)	<0.1%	<0.1%
Total unmet need		
No unmet need	79%	88%
Unmet need	21%	12%
NIU (not in universe)	<0.1%	<0.1%

<sup>1</sup>Weighted Percent

# UNMET NEED BY COUNTRY AT PHASE 2

`EAID_1` and `STRATA_1` can also be used for estimating Phase 2 outcomes.

Panel members were found in the same study area again at Phase 2.

```
1 dat %>%
2   as_survey_design(
3     weight = PANELWEIGHT,
4     id = EAID_1,
5     strata = STRATA_1
6   ) %>%
7   mutate(across(
8     c(UNMETNEED_2, UNMETYN_2),
9     ~.x %>% as_factor %>% fct_drop
10  )) %>%
11  tbl_svysummary(
12    by = COUNTRY,
13    include = c(UNMETNEED_2, UNMETYN_2),
14    statistic = list(everything() ~ "{p}%" )
15  ) %>%
16  modify_header(
17    update = list(
18      label ~ " ",
19      stat_1 ~ "Burkina Faso",
20      stat_2 ~ "Kenya"
21    )
22  ) %>%
23  modify_footnote(
24    c(stat_1, stat_2) ~ "Weighted Percent"
25  )
```

	Burkina Faso <sup>1</sup>	Kenya <sup>1</sup>
Unmet need		
Unmet need to space	14%	6.6%
Unmet need to limit	3.5%	3.7%
Using to space	26%	30%
Using to limit	7.3%	23%
Infecund or menopausal	9.7%	5.0%
Not sexually active	15%	23%
No unmet need	24%	8.9%
No response or missing	0.1%	0%
Total unmet need		
No unmet need	82%	90%
Unmet need	18%	10%
<sup>1</sup> Weighted Percent		

# RESEARCH QUESTION

How well can we predict **Phase 2 Unmet Need** if we only know whether a woman had **Phase 1 Unmet Need**?

# LOGISTIC REGRESSION

```
1 models <- dat %>%
2   mutate(across(matches("UNMETYN"), ~.x == 1)) %>%
3   group_by(COUNTRY) %>%
4   summarise(
5     glm = cur_data() %>%
6       as_survey_design(weight = PANELWEIGHT, id = EAID_1, strata = STRATA_1) %>%
7       svyglm(UNMETYN_2 ~ UNMETYN_1, design = ., family = "quasibinomial") %>%
8       list()
9   )
10
11 models
# A tibble: 2 × 2
  COUNTRY      glm
  <chr>      <list>
1 Burkina Faso <svyglm>
2 Kenya        <svyglm>
```

# RESULTS

```
1 models$glm %>%
2   map2(models$COUNTRY,
3     ~.x %>%
4       tbl_regression(
5         exponentiate = TRUE,
6         show_single_row = where(is.logical),
7         pvalue_fun = ~style_pvalue(.x, digits = 2),
8         label = list(UNMETYN_1 ~ "Phase 1 Unmet Need")
9       ) %>%
10      add_significance_stars(hide_se = TRUE) %>%
11      modify_header(update = list(label ~ " ", estimate = .y)) %>%
12      modify_footnote(estimate ~ NA, abbreviation = TRUE)
13    ) %>%
14   tbl_merge(tab_spacer = FALSE) %>%
15    modify_caption("### Odds Ratios for Phase 2 Unmet Need")
```

Phase 1 Unmet Need is a significant predictor of Unmet Need at Phase 2.

Women with Unmet Need at Phase 1 have about **four times** the odds of Phase 2 Unmet Need compared with women who had none.

## ODDS RATIOS FOR PHASE 2 UNMET NEED

	Burkina Faso <sup>1</sup>	Kenya <sup>1</sup>
Phase 1 Unmet Need	4.22***	3.94***
<sup>1</sup> *p<0.05; **p<0.01; ***p<0.001		

# REASONS FOR UNMET NEED

If we know **why** a woman had Phase 1 Unmet Need, does this improve our ability to predict her **Phase 2 Unmet Need?**

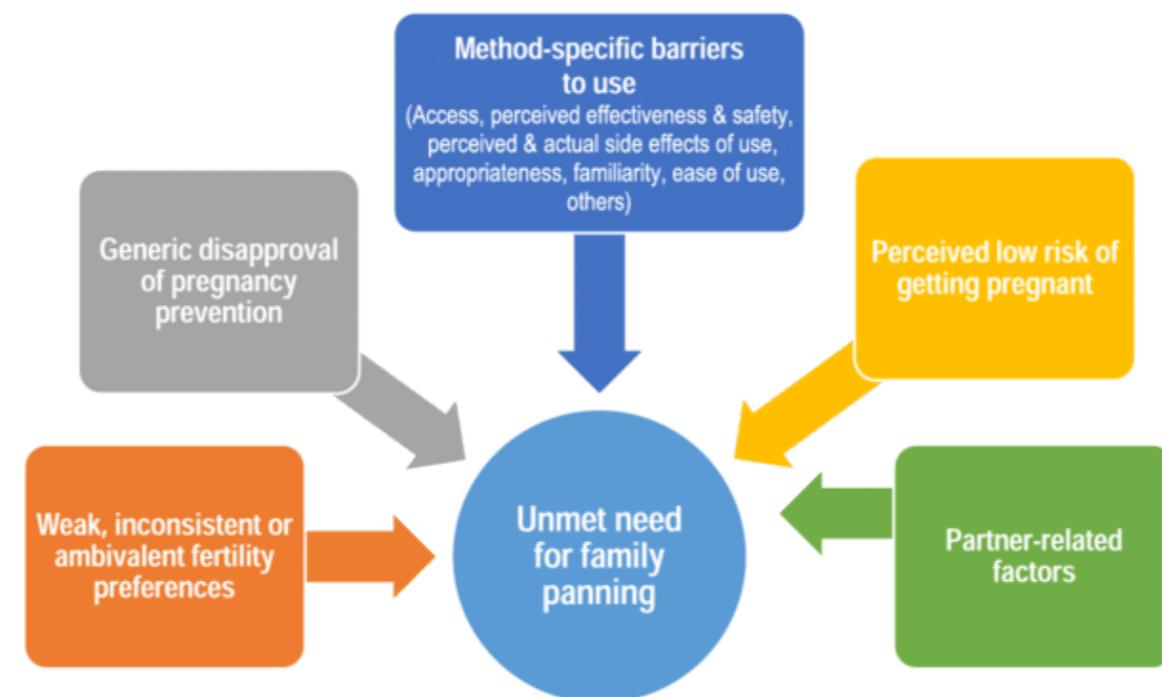
# WHY ARE REASONS IMPORTANT?

Alone, Unmet Need does not explain access or desire to use family planning.

Senderowicz and Maloney (2022) suggest dividing Unmet Need into **supply-** and **demand-driven** factors.

Demand-side unmet need represents women who are choosing not to use contraception, not because contraception is inaccessible, but because they do not see a need for it in their own lives.

Machiyama et al. (2017) propose a 5-part causal framework for unmet need.



# REASONS SURVEYED BY PMA

Can you tell me why you are not using  
a method to prevent pregnancy?

- [ ] Not married
- [ ] Infrequent sex / Not having sex
- [ ] Menopausal / Hysterectomy
- [ ] Subfecund / Infecund
- [ ] Not menstruated since last birth
- [ ] Breastfeeding
- [ ] Husband away for multiple days
- [ ] Up to God / fatalistic
- [ ] Respondent opposed
- [ ] Husband / partner opposed
- [ ] Others opposed
- [ ] Religious prohibition
- [ ] Knows no method
- [ ] Knows no source
- [ ] Fear of side effects
- [ ] Health concerns
- [ ] Lack of access / too far
- [ ] Costs too much
- [ ] Preferred method not available
- [ ] No method available
- [ ] Inconvenient to use
- [ ] Interferes with body's processes
- [ ] Other
- [ ] Do not know
- [ ] No response

## RECODING

# REASONS SURVEYED BY PMA

Can you tell me why you are not using  
a method to prevent pregnancy?

- Not married
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- Do not know
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## RECODING

Low risk of becoming pregnant

# REASONS SURVEYED BY PMA

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## RECODING

Low risk of becoming pregnant

Opposition or prohibition

# REASONS SURVEYED BY PMA

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a method to prevent pregnancy?

- [ ] Not married
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- [ ] Costs too much
- [ ] Preferred method not available
- [ ] No method available
- [ ] Inconvenient to use
- [ ] Interferes with body's processes
- [ ] Other
- [ ] Do not know
- [ ] No response

## RECODING

Low risk of becoming pregnant

Opposition or prohibition

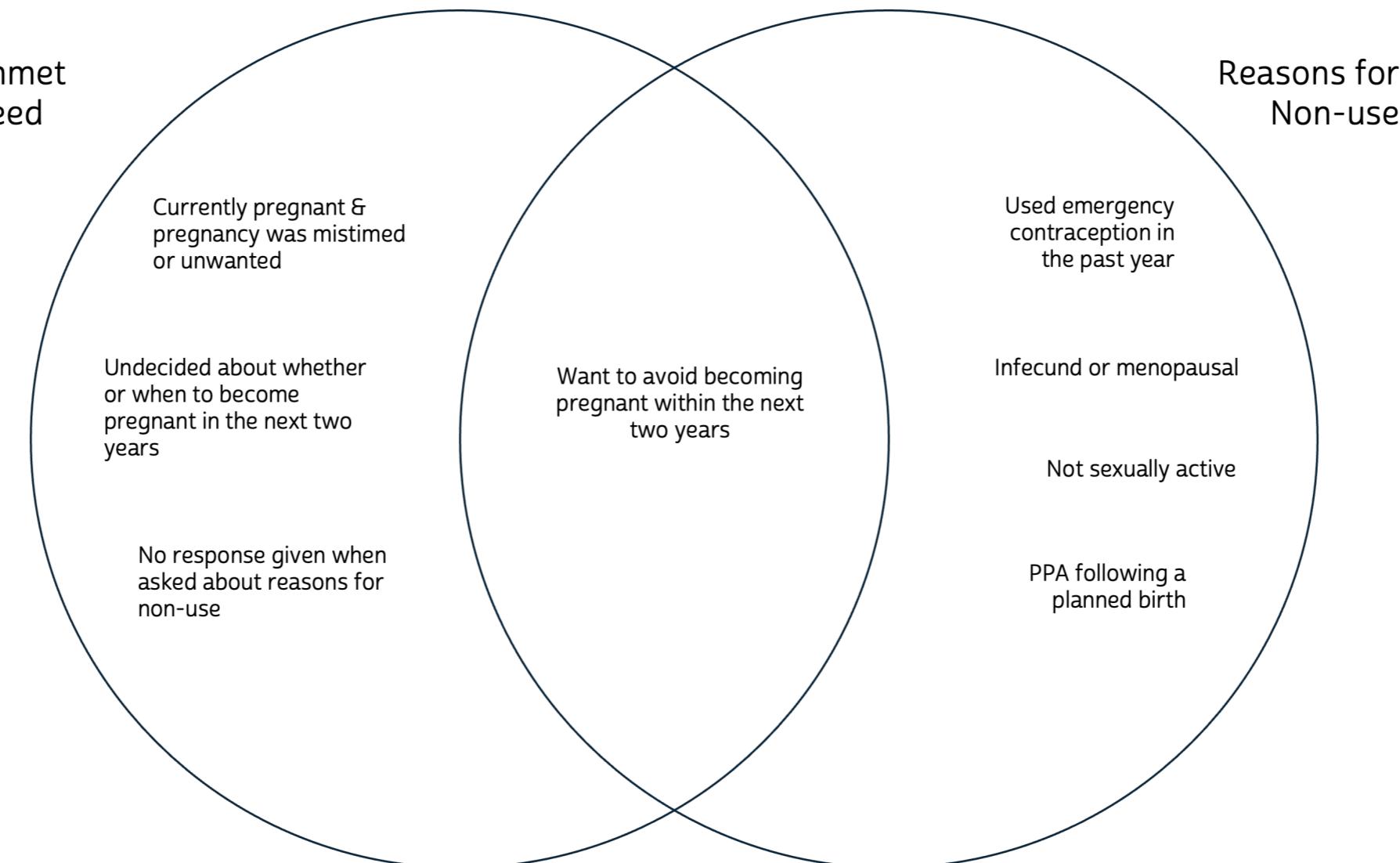
Method Access

Other / Unknown

# WHO GAVE REASONS?

Most - but *not all* - women with unmet need were asked to give reasons for non-use.

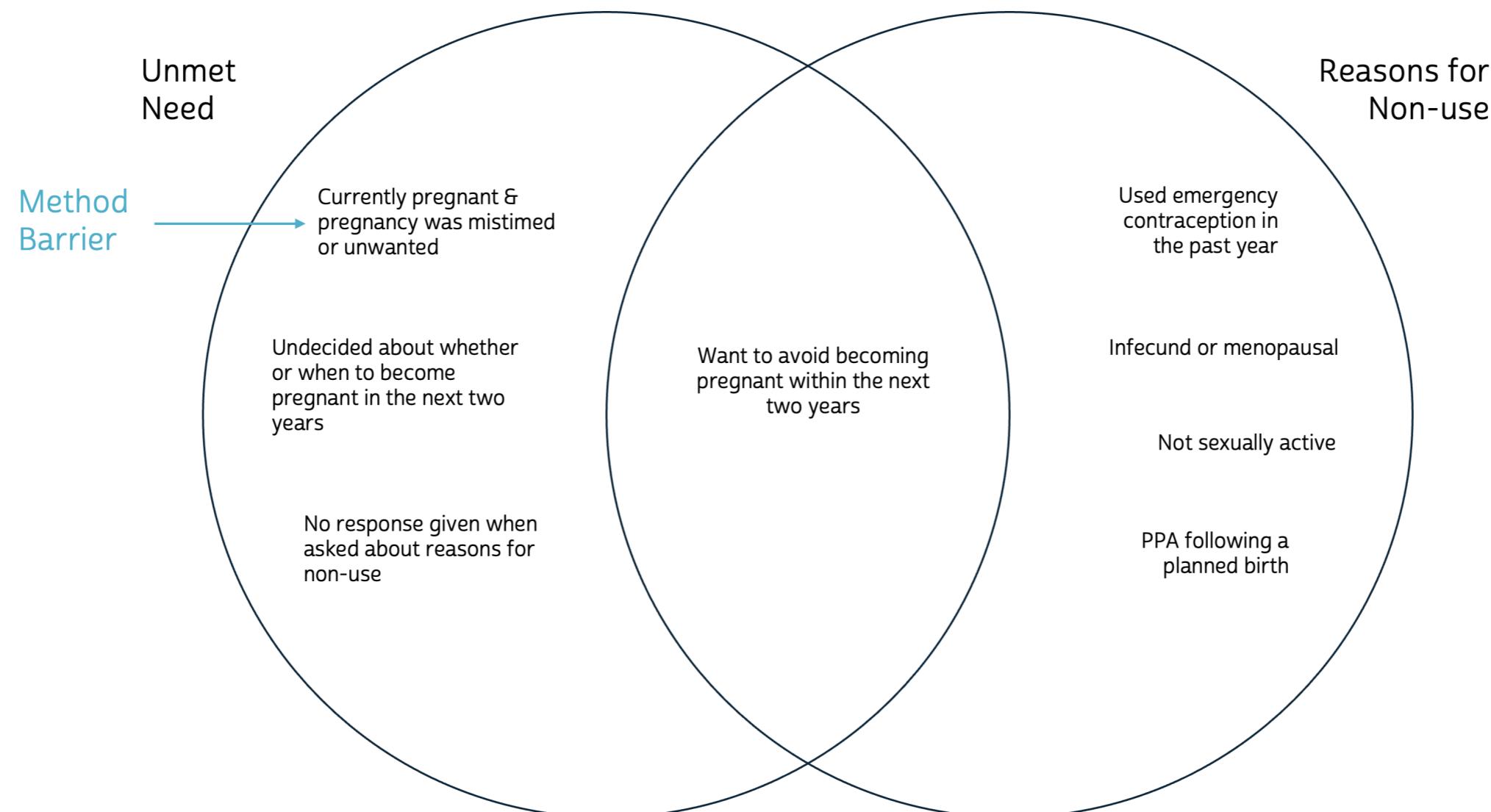
Most - but *not all* - women who gave reasons for non-use also have unmet need.



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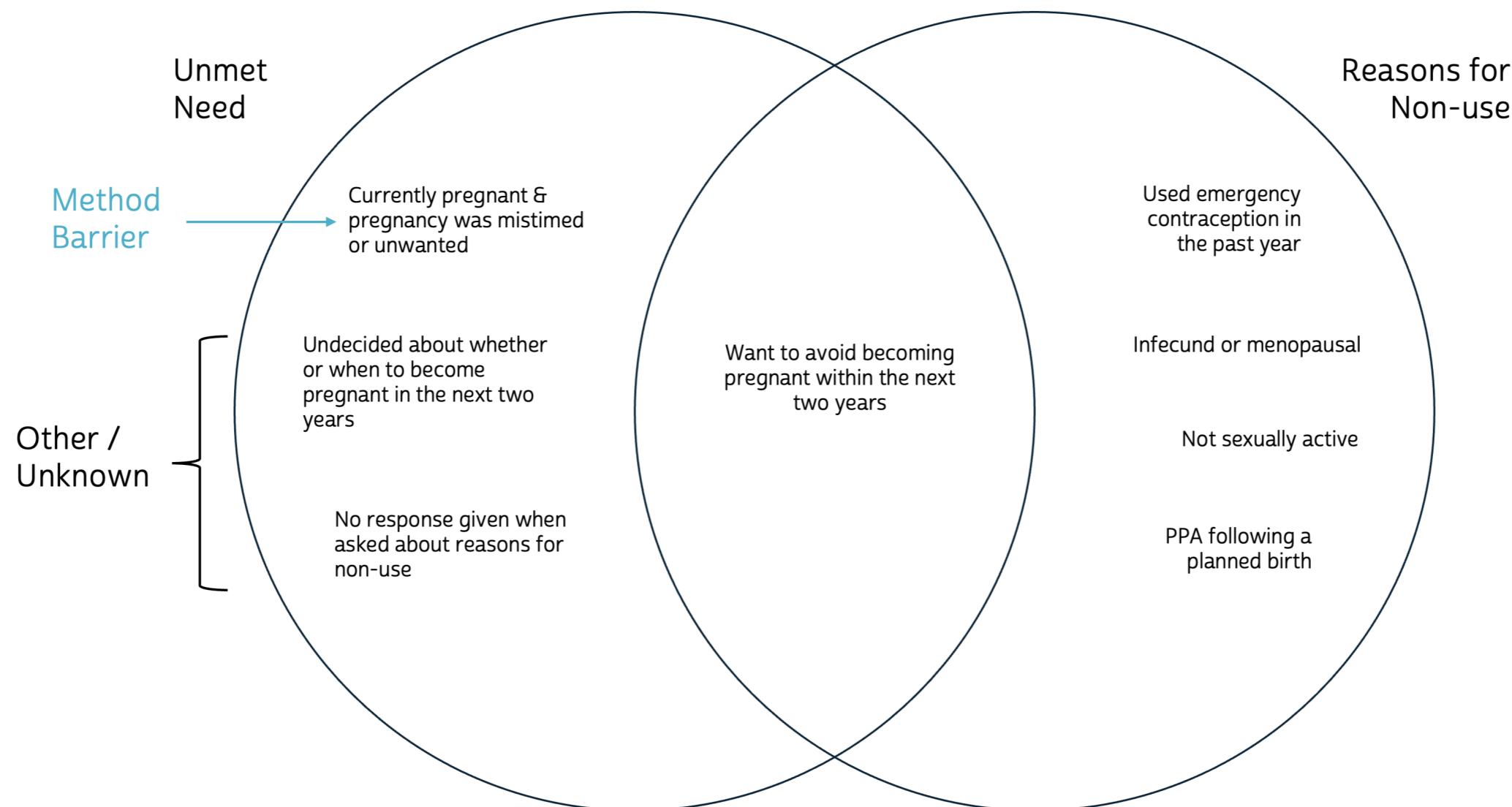
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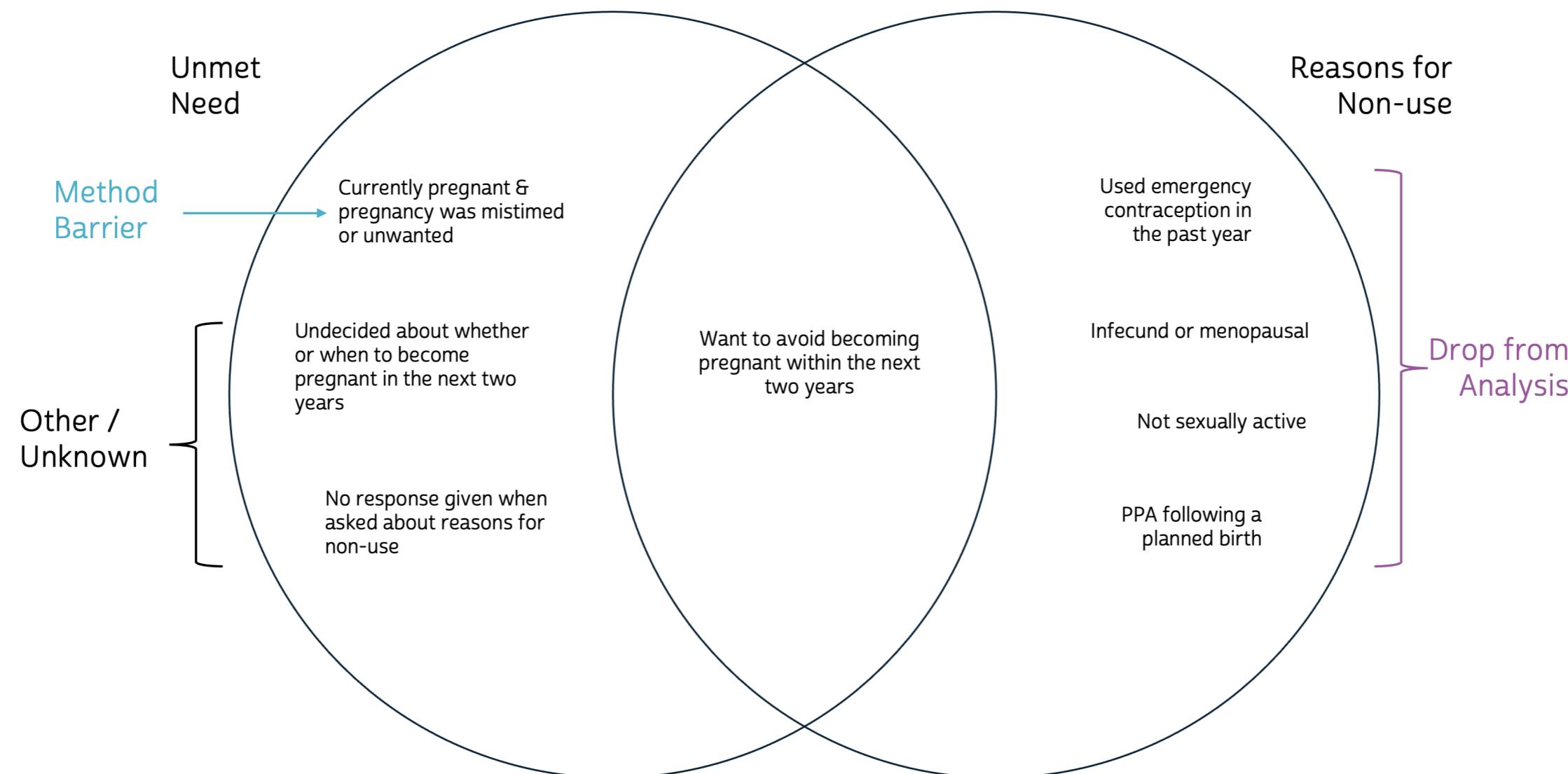
Most - but *not all* - women who gave reasons for non-use also have unmet need.



# WHO GAVE REASONS?

Most - but *not all* - women with unmet need were asked to give reasons for non-use.

Most - but *not all* - women who gave reasons for non-use also have unmet need.



# POPULARITY OF REASONS FOR PHASE 1 UNMET NEED

	Burkina Faso	Kenya
Fear Of Side Effects	15%	20%
Currently Pregnant	14%	18%
Not Having Sex	11%	21%
Health Concerns	8%	16%
Husband Away	10%	12%
Other	16%	4%
Not Married	3%	17%
Breastfeeding	5%	12%
Husband/Partner Opposed	10%	6%
No Menses Since Last Birth	6%	5%
Respondent Opposed	6%	4%
Interferes With Body	2%	6%
Up To God/Fatalistic	5%	3%
Religious Prohibition	3%	3%
Costs Too Much	4%	1%
Inconvenient To Use	1%	3%
Sub/Infecund	3%	0%
Knows No Method	2%	2%
Lack Of Access/Too Far	1%	2%
Others Opposed	1%	1%
Preferred Method Not Avail	1%	1%
No Method Available	0%	1%
Knows No Source	0%	1%
Don't Know	1%	0%
Menopausal/Hysterectomy	0%	0%

# RECODING

```
1 dat <- dat %>%
2   mutate(
3     across(
4       c(starts_with("UNMETYN"), starts_with("FPYNOT"), starts_with("PREGNANT")),
5       ~.x == 1
6     ),
7     FPYOPPOSED = if_any(c(FPYNOTRELIG_1, FPYNOTOPPF_1, FPYNOTFATE_1,
8                           FPYNOTOPPH_1, FPYNOTOPPO_1, FPYNOTSIDEF_1,
9                           FPYNOTSDHLTH_1, FPYNOTCONV_1, FPYNOTBODY_1)),
10    FPYMETHOD = if_any(c(FPYNOTFAR_1, FPYNOTCOST_1, FPYNOTKNO_1,
11                          FPYNOTSRC_1, FPYNOTAVAIL_1, FPYNOTAVAILP_1,
12                          PREGNANT_1)),
13    FPYLOWRISK = if_any(c(FPYNOTBSTFD_1, FPYNOTHSBAWAY_1, FPYNOTMENO_1,
14                          FPYNOTAMEN_1, FPYNOTNOSEX_1, FPYNOTMAR_1, FPYNOTINF_1
15                        )),
16    FPYOTHER = UNMETYN_1 & !FPYOPPOSED & !FPYMETHOD & !FPYLOWRISK,
17    across(
18      c(FPYOPPOSED, FPYMETHOD, FPYLOWRISK),
19      ~if_else(UNMETYN_1, .x, FALSE)
20    )
21  )
```

# RECODED REASONS BY COUNTRY

```
1 dat %>%
2   filter(UNMETYN_1) %>%
3   as_survey_design(
4     weight = PANELWEIGHT,
5     id = EAID_1,
6     strata = STRATA_1
7   ) %>%
8  tbl_svysummary(
9     by = COUNTRY,
10    include = c(
11      FPYOPPOSED,
12      FPYMETHOD,
13      FPYLOWRISK,
14      FPYOTHER
15    ),
16    label = list(
17      FPYOPPOSED ~ "Opposition or prohibition",
18      FPYMETHOD ~ "Method access",
19      FPYLOWRISK ~ "Low risk of becoming pregnant",
20      FPYOTHER ~ "Other / Unknown Reason"
21    ),
22    statistic = list(everything() ~ "{p}%" )
23  ) %>%
24  modify_header(update = list(
25    label ~ " ",
26    stat_1 ~ "Burkina Faso",
27    stat_2 ~ "Kenya"
```

	Burkina Faso <sup>1</sup>	Kenya <sup>1</sup>
Opposition or prohibition	38%	38%
Method access	20%	24%
Low risk of becoming pregnant	32%	46%
Other / Unknown Reason	19%	7.9%

<sup>1</sup>Weighted Percent

Reminder: women could give more than one reason!

# MODEL

```
1 models <- dat %>%
2   group_by(COUNTRY) %>%
3   summarise(
4     glm = cur_data() %>%
5       as_survey_design(weight = PANELWEIGHT, id = EAID_1, strata = STRATA_1) %>%
6       svyglm(
7         formula = UNMETYN_2 ~ FPYOPPOSED + FPYMETHOD + FPYLOWRISK + UNMETYN_1,
8         family = "quasibinomial",
9         design = .
10      ) %>%
11      list()
12    )
13
14 models

# A tibble: 2 × 2
  COUNTRY      glm
  <chr>        <list>
1 Burkina Faso <svyglm>
2 Kenya        <svyglm>
```

# RESULTS

```
1 models$glm %>%
2   map2(models$COUNTRY,
3   ~.x %>%
4    tbl_regression(
5       exp = TRUE, show_single_row = where(is.logical),
6       pvalue_fun = ~style_pvalue(.x, digits = 2),
7       label = list(
8         FPYOPPOSED ~ "Opposition or prohibition",
9         FPYMETHOD ~ "Method access",
10        FPYLOWRISK ~ "Low risk of becoming pregnant",
11        UNMETYN_1 ~ "Unmet Need"
12      )
13    ) %>%
14   add_significance_stars(hide_se = TRUE) %>%
15   modify_header(update = list(label ~ " ", estimate = .y)) %>%
16   modify_footnote(estimate ~ NA, abbreviation = TRUE)
17 ) %>%
18tbl_merge(tab_spanner = FALSE) %>%
19modify_caption("## Odds Ratios for Phase 2 Unmet Need")
```

Compared to women who gave no reason, women who were **opposed** to using family planning were *significantly* more likely to have Phase 2 unmet need.

Women with **method access** issues - less clear!

Women **not at risk** for becoming pregnant were:

- *not significantly* more likely to have Phase 2 unmet need in Burkina Faso
- significantly *less* likely to have Phase 2 unmet need in Kenya

## ODDS RATIOS FOR PHASE 2 UNMET NEED

	Burkina Faso <sup>1</sup>	Kenya <sup>1</sup>
Opposition or prohibition	1.55*	1.77*
Method access	1.88	0.84
Low risk of becoming pregnant	1.44	0.77
Unmet Need	2.78***	3.61***

<sup>1</sup>\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

# NEXT STEPS

What controls could we add to our model?

- AGE ↗ age
- MARSTAT ↗ marital status
- WEALTHQ ↗ household wealth (quartile or tertile)
- CHEB ↗ parity
- FPUSPLAN ↗ plans for future use of a method

Comparison with results from other IPUMS Global Health surveys

- IPUMS DHS: Why Not Use Family Planning ↗ variable group; UNMETNEED ↗, UNMETNEED2 ↗, and UNMETNEED3 ↗,
- IPUMS MICS: *coming soon!*

# NEW AT IPUMS

IPUMS



## IPUMS DISCOVERY

Search for variables across all IPUMS microdata collections

OPTIONS ▾ SEARCH

### FILTERS

#### IPUMS DATA COLLECTION

[\(Deselect all\)](#)

[Select collections \(11 of 11\) ▾](#)

#### GEOGRAPHY

ONLY SHOW U.S. RESULTS

[\(Deselect all\)](#)

[Select countries \(157 of 157\) ▾](#)

#### YEAR RANGE

SHOW PRE-1960 RESULTS

[1960 ▾](#) to [2022 ▾](#)

Showing 1 - 5 of 5 results

Variable Name	Variable Label	Collection	Country	Years data are available	2020	2010	2000	1990
<a href="#">UNMETNEED</a>	Unmet need for FP	DHS	▼ <i>Multiple (38)</i>					
<a href="#">UNMETNEED2</a>	Unmet need for FP (2nd def)	DHS	▼ <i>Multiple (38)</i>					

# REFERENCES

- Machiyama, Kazuyo, John B Casterline, Joyce N Mumah, Fauzia Akhter Huda, Francis Obare, George Odwe, Caroline W Kabiru, Sharifa Yeasmin, and John Cleland. 2017. “Reasons for Unmet Need for Family Planning, with Attention to the Measurement of Fertility Preferences: Protocol for a Multi-Site Cohort Study.” *Reproductive Health* 14 (1): 23. <http://dx.doi.org/10.1186/s12978-016-0268-z>.
- Senderowicz, Leigh, and Nicole Maloney. 2022. “Supply-Side Versus Demand-Side Unmet Need: Implications for Family Planning Programs.” *Population and Development Review* 48 (3): 689–722. <https://onlinelibrary.wiley.com/doi/10.1111/padr.12478>.