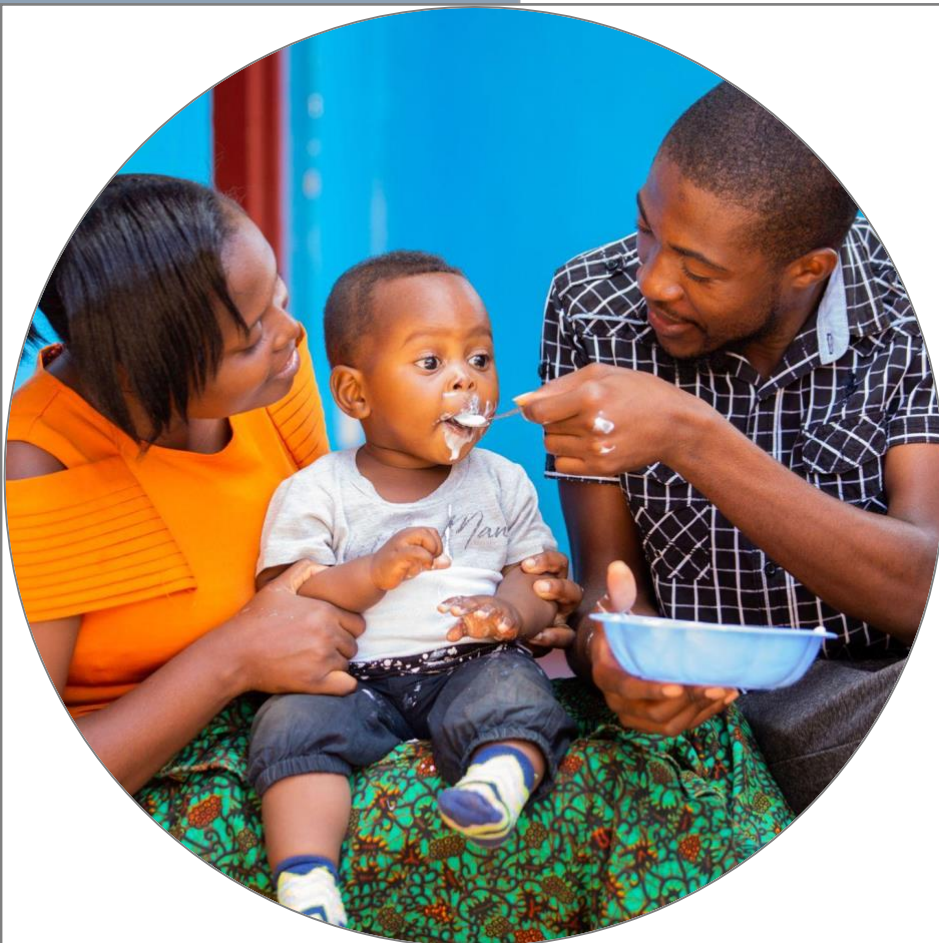


Using Routine Data in Combination with Population Surveys to Understand Patterns of Contraceptive Use

A Case Study of Malawi



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This publication was produced with the support of the United States Agency for International Development (USAID) under the terms of the Data for Impact (D4I) associate award 7200AA18LA00008, which is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with Palladium International, LLC; ICF Macro, Inc.; John Snow, Inc.; and Tulane University. The views expressed in this publication do not necessarily reflect the views of USAID or the United States government.

TR-22-472 D4I

February 2022



Acknowledgments

The authors would like to thank several people who have contributed to this exercise, including Wezi Munthali, Ramy Guirguis and Stephanie Davis at Office of Population and Reproductive Health at USAID/Washington as well as Dennis Chali, Veronica Chirwa, Reuben Ligowe, Chifundo Kuyli, Lumbani Makwakwa, Belay Mengistu, and Violet Orchardson at USAID/Malawi. We are tremendously grateful to Mbongeni Chizonda and Isaac Dambula at the Malawian Ministry of Health for allowing us access to the Health Management Information System, which was critical for this exercise. We also thank Andrew Inglis at Global Health Supply Chain/Procurement and Supply Management (GHSC/PSM) project, Dennis Chali, and Priya Emmart at Avenir Health for providing us with their insights to the analysis and the supply chains.

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Abbreviations

CHAI	Clinton Health Access Initiative
COVID-19	Coronavirus Disease 2019
FP	family planning
DHS	Demographic and Health Survey
DHIS2	District Health Information System 2
DMPA-IM	intramuscular depot medroxyprogesterone acetate
DMPA-SC	subcutaneous depot medroxyprogesterone acetate
HMIS	Health Management Information System
LMICs	low- and middle-income countries
mCPR	modern contraceptive prevalence rate
MOH	Ministry of Health
NSO	National Statistic Office
OpenLMIS	Logistics Management Information System
SDPs	service delivery points
SRHR	sexual and reproductive health and rights
USAID	United States Agency for International Development
UNFPA	United Nations Population Fund

Executive Summary

Routine data have often been underutilized in family planning (FP) program monitoring and evaluation and in decision making at local and national levels. This presents a critical need for a greater use of these data sources for health outcome monitoring and decision making. The overall goal of this exercise was to test the feasibility of using existing routine data in combination with non-routine data to monitor and explain contraceptive use behaviors among populations in need, while also assisting districts to better understand supply chain challenges and plan for commodity procurement. We aimed to achieve two specific objectives:

1. Assess patterns of modern contraceptive use and discontinuation for method related reasons among women of reproductive age
2. Compare modern contraceptive supply data among districts with different levels of contraceptive use and discontinuation for method related reasons to identify potential supply challenges and recommendations

Malawi was the focus country of this activity. Non-routine information on contraceptive behaviors among representative samples of women of reproductive age came from the last Malawi Demographic and Health Survey (DHS) in 2015–16 (National Statistical Office [NSO/Malawi] and ICF, 2017). Sources for routine data included District Health Information System 2 (DHIS2) and OpenLMIS, which have been integrated into the health management information system (HMIS) of the Ministry of Health (MOH). We focused on data related to the current use and discontinuation of injectables and implants (from the DHS), and their supply data from the HMIS. Supply data included indicators related to stockout, stock on hand, and quantities received and used.

<p>Key Findings</p> <ul style="list-style-type: none">• This exercise tests the possibility of a simple analysis where non-routine and routine data are used to monitor and explain FP behaviors in the population.• While the analytical approach is simple, our exercise shows challenges with the consistency and quality of both routine and non-routine data, particularly with OpenLMIS and DHIS2, even when these data have been integrated.• Two key recommendations to enhance the feasibility and usability of this exercise are: (1) there needs to be clear criteria on contraceptive commodity reporting (who, what, and how) that can distinguish between types of SDPs and distribution mechanisms, and (2) it is critical to have an established mechanism for district and central levels to review data reported, take actions to enhance data quality and incorporate them into decision making.
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The analysis was implemented in two phases. Phase I was the analysis contraceptive use and discontinuation among Malawian women using the DHS data. The intent of Phase II was to assess supply indicators for each of the eleven USAID priority districts. The key outcome of the exercise was to produce a simple analytical approach that could be replicable in other settings.

The exercise highlighted the critical need for data consistency and quality for this type of analysis to produce useful findings that could benefit decision making around commodity supplies. We propose certain recommendations to improve the usability of commodity supply data and enhance the feasibility and usefulness of this exercise. First, it is important to establish clear criteria with regard to what service delivery points (SDPs) and health facilities need to report on what indicators, and how. These criteria also need to clearly distinguish different community distribution mechanisms, i.e. facility-based versus community-based, depending on the specific method. Second, there needs to be an established feedback mechanism for the district and central levels to review and incorporate such data into commodity procurement and disbursement decision making. Such a feedback mechanism should allow sufficient time for the district and central levels to review data and take actions to enhance data quality.

Introduction

Background

Routine data have often been underutilized in family planning (FP) program monitoring and evaluation, and in decision making at both local and national levels, despite significant investments in improving the availability and quality of these data (Amadou et al., 2020; Braa et al., 2007). Data from HMIS and non-routine data from surveys and other research activities are used for a variety of monitoring and evaluation purposes but are rarely used in combination, although together they can provide extremely useful information for program decision making. A critical need exists to make better use of available data sources for health outcome monitoring and decision making. This activity provides a case study on the use of existing routine and non-routine data for timely and informed program decisions.

Objectives

The overall goal of this exercise was to test the feasibility of using existing routine data in combination with non-routine data to monitor and explain contraceptive use behaviors among populations in need, while also assisting districts to better understand supply chain challenges and plan for commodity procurement. We aimed to achieve two specific objectives:

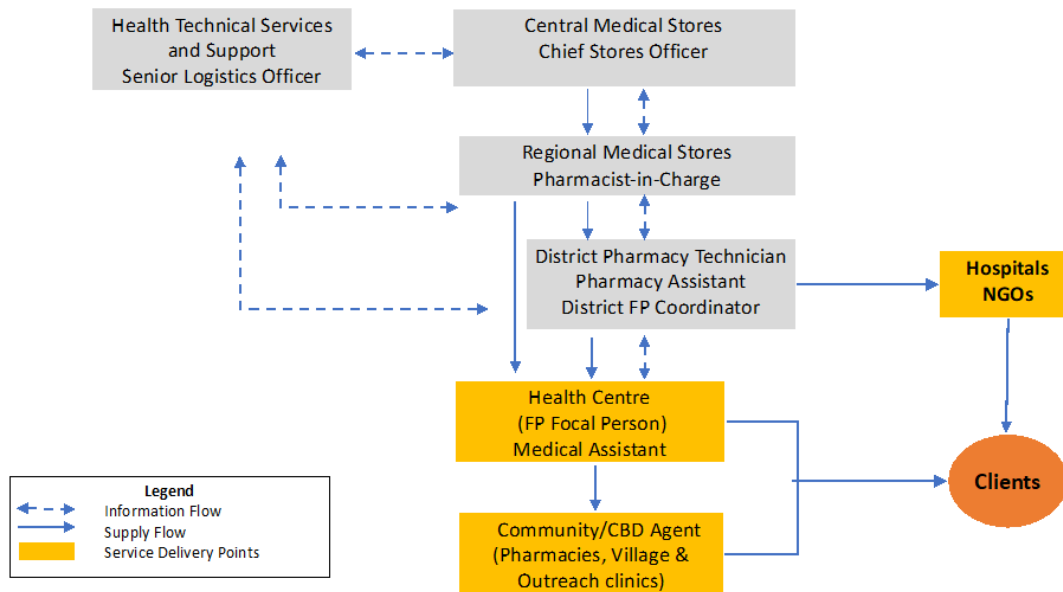
1. Assess patterns of modern contraceptive use and discontinuation for method related reasons among women of reproductive age
2. Compare modern contraceptive supply data between districts with different levels of contraceptive use and discontinuation for method related reasons to identify potential supply challenges and recommendations.

Country: Malawi

Malawi was the focus country of this activity primarily because of the Mission's interest in a better understanding of how the contraceptive commodities supply system has been able to meet demands for contraception in their priority districts. At the time of this activity, there were eleven districts supported by USAID: Balaka, Chitipa, Dowa, Karonga, Kasungu, Lilongwe, Machinga, Mulanje, Nkhitakota, Salima, and Zomba.

Non-routine information on contraceptive behaviors among representative samples of women of reproductive age came from the latest Malawi Demographic and Health Survey (DHS) in 2015–16 (National Statistical Office [NSO/Malawi] and ICF, 2017). Routine data on contraceptive services and supply came from DHIS2. DHIS2 has been used by the Malawian (MOH) since 2012 as the main data collection and aggregation tool and serves as the national repository for health data. Since 2018, this system has integrated with the electronic Logistics Management Information System (OpenLMIS), to collect and manage data on medical stocks down to the facility level (DHIS2.org website, nd). The integrated data are easily accessible from the HMIS dashboard of the MOH. Figure 1 shows the flow of commodities and information in Malawi HMIS, adapted from the DELIVER project (DELIVER, 2003).

Figure 1. Flow of health commodities and information in Malawi HMIS



According to stakeholders, contraceptive supply decision making in Malawi is informed via a “push-pull” mechanism, where service delivery points (SDPs) and higher-level facilities report on a monthly basis the number of contraceptive units used or disbursed. SDPs include community-based providers, pharmacies, and some hospitals, whereas higher-level facilities include district level health centers and major hospitals at the district or central level. This number is used to inform the planning of contraceptive distribution to the facilities in the next month and the plans for contraceptive procurement at the higher levels, including logistics support at the district and central levels. In theory, these data are used for commodity distribution decision making on a monthly basis, as suppliers at the district and central levels respond to the needs, or the “pull” for supplies from SDPs. In reality, it is also possible that the district and central levels can “push” extra stocks available on hand to SDPs, particularly if these commodities are close to expiration date. Another possible scenario is that the district and central levels can “push” alternate supplies, such as sending implants if injectable commodities are low.

Data from the 2015–16 DHS showed a 45.2% modern contraceptive prevalence among all women of reproductive age. Among those, injectables and implants were the most frequently used methods, at 22.5% and 9% prevalence, respectively. The vast majority of users received these two methods from public sector facilities, at a level much higher than that among users of other contraceptive methods (NSO/Malawi and ICF, 2017). This means that the country’s HMIS likely captures the supply environment of these two contraceptive methods. Consequently, it was decided that this exercise would focus on use patterns and supply chains of these two methods.

Indicators and Analytical Approach

Indicators from non-routine data

The most recent DHS in Malawi (2015–16) provided information on three indicators: (1) prevalence of modern contraceptives, (2) unmet need, and (3) percentage of demand satisfied for all contraception. The survey also provided data to assess patterns of use of the two most frequently used methods of contraception: implants and injectables, as well as the likelihood of discontinuing use within a year, among women of reproductive age. Method discontinuation was high: 37% of users stopped using within twelve months of adoption; this figure was 41% for injectables and 8% for implants (NSO/Malawi and ICF, 2017). Current contraceptive use and discontinuation due to method related reasons within the first twelve months of use were examined at the district level for the eleven priority districts. Method related reasons for discontinuation included: contraceptive failures, side effects or health concerns, lack of access/too far, desire for a more effective method, method(s) being inconvenient to use, and fatalism.

Indicators from routine data

We obtained data on several indicators on contraceptive commodities from the HMIS portal once permission was granted by the MOH. These indicators are summarized in Table 1. Data for all indicators were not consistently available for every method during 2019–2020.

Table 1. List of contraceptive commodity indicators and source of data

Indicator	Definition	Source of data
Percent of facilities reporting stockout in the last month	Percent of facilities having a stockout out of all facilities reporting in the last month. This indicator was calculated from the number of stockout days reported having any stockout days was considered “yes” for stockout, otherwise “no.”	OpenLMIS
Stock-on-hand	The number of injectable vials or implant units deemed usable recorded at the end of the month and deemed to be available on the day of reporting.	OpenLMIS
Quantity received	The number of injectable vials or implant units available on hand in the previous month.	OpenLMIS
Quantity used: Injectables	The number of injectable vials given during a month.	DHIS2
Quantity used: Implants	Number of implant units used or available for use within the last month, reported by pharmacies	OpenLMIS
Number of implant insertions	Number of implant units used within the last month, reported by health facilities	DHIS2

At the time of this exercise, two types of injectables were available in Malawi: (1) intramuscular depot-medroxyprogesterone acetate (DMPA-IM) injectables which came in two brands (Triclofem and Depo Provera), and (2) subcutaneous injectables (DMPA-SC). DMPA-IM injectables were only available at health facilities, including village or outreach clinics or higher-level facilities, while DMPA-SC injectables could be self-injected by clients or administered by a provider. Community-based distribution of DMPA-SC began in 2008, where the contraceptive is delivered in a prefilled, auto-disabled Uniject injection system (Burke et al., 2019). Studies have

shown that self-injection improved continuation rates compared to provider administered DMPA (Burke et al., 2018, 2019).

Four major brands of implants were available: Implanon, Jadelle, Levoplant, and Levonorgestrel (Norplants). Because these brands were provided interchangeably, we combined them into *all implants* for this report. Two indicators were available to measure implant usage. The first (quantity used) was reported by public sector pharmacies and reflected the number of units that were or could be used at pharmacies; therefore, it was considered a proxy for actual use. The second (number of implant insertions) was reported by health facilities and reflected the actual number of insertions at facilities. Both were included in this exercise.

We presented data on these indicators for the period August–November 2020. The most recent data available at the time this exercise began in January 2021, although we also examined the same data in 2019 to ensure that supply data were not affected due to the COVID-19 pandemic. Because the two periods presented similar patterns, we showed data from the recent period in this report.

Approach

The analysis was implemented in two phases. Phase I was the analysis of contraceptive use and discontinuation among Malawian women using the DHS data. We categorized districts by the level of contraceptive demand, using modern contraceptive use prevalence (mCPR), unmet need, and demand satisfied, resulting in “high” versus “low” demand districts. Districts with “high” demand are those with mCPR and demand satisfied higher than the national averages of 45.2% mCPR and 70.7% demand satisfied, and an unmet need level lower than the national average of 18.7%. Districts with “low” demand are those with mCPR and demand satisfied lower, and unmet need higher, than the national average statistics. This was done for all modern contraceptive use, resulting in two groups of districts: (1) High-demand districts (Chitipa, Dowa, Karonge, Kasungu, Lilongwe, Mulanje, and Zomba) and (2) Low-demand districts (Balaka, Machinga, Nkhonkhotakota, and Salima).

Next, within each group of districts, we assessed the level of twelve-month method discontinuation for the two methods of interest (injectables and implants), also using the DHS data with the most recent episode of method use. Within each group, districts were further categorized into “high” versus “low” discontinuation, depending on whether their method discontinuation rate was higher or lower than the national average. For implants, however, all priority districts had lower than the average discontinuation rate (5.9%). Consequently, districts were categorized using the cut-off of 3.6%—the median discontinuation rate of the 11 priority districts. Figures 2 and 3 present district categorizations for injectables and implants. All districts in the low demand group had lower than average injectable method discontinuation rates.

Figure 2. District categorization by level of contraceptive demand and injectable method discontinuation, Malawi, 2015–16

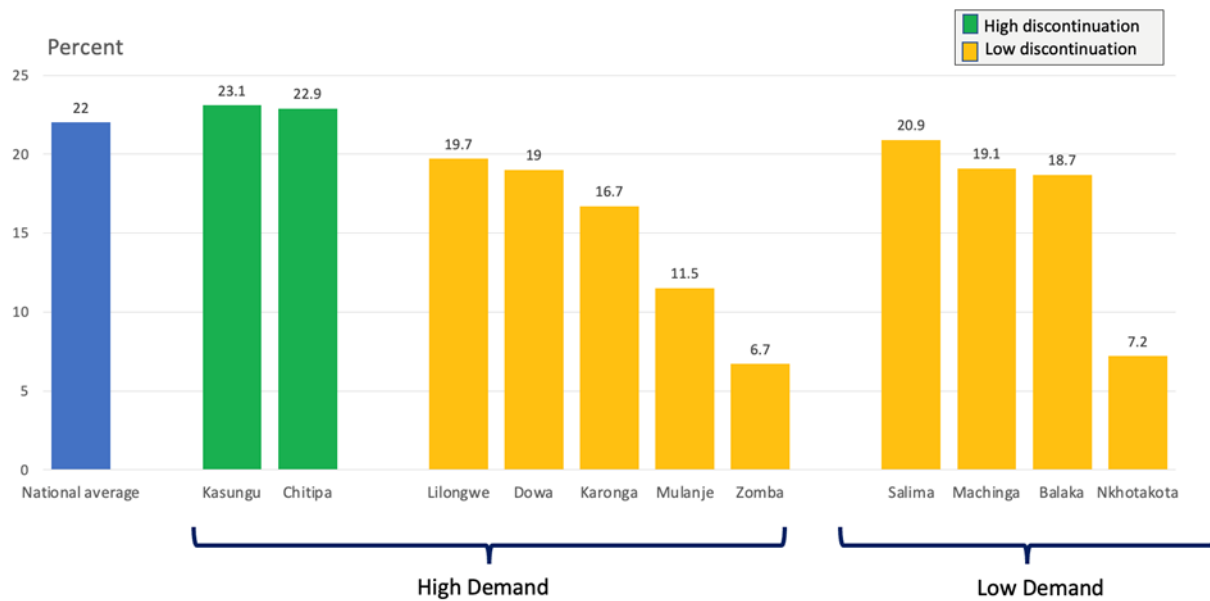
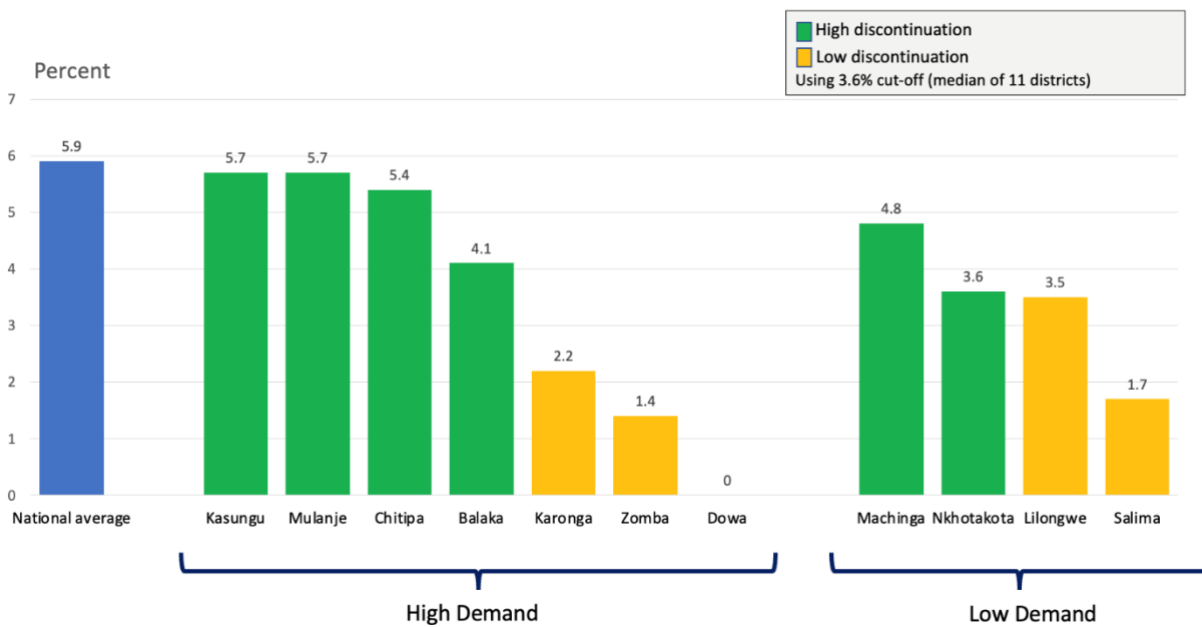


Figure 3. District categorization by level of contraceptive demand and implant method discontinuation, Malawi, 2015–16



Phase II included assessments of the supply indicators mentioned above for each district. Associations between these indicators and levels of demand and method discontinuation, as well as among these indicators, were to be examined. Data for this phase were aggregated from the

health facility level to the district level. As previously mentioned, data at the health facility level came from SDPs, which could include hospitals, health centers, village and outreach clinics, pharmacies, and community-based distributors. The HMIS dashboard did not have data at the SDP level. The purpose of phase II was to: (1) shed light on demand and discontinuation patterns observed with the population-based data, and (2) identify potential supply challenges to meeting contraceptive needs within each district.

While we conducted assessments for both DMPA-IM and DMPA-SC, and implants, in the following section, we focus our discussions of findings on DMPA-IM since many of the same observations were made across methods. Where applicable, we discussed findings specific to DMPA-SC and implants.

Findings

When interpreting patterns of contraceptive use, discontinuation, and supplies, or lack of associations between them, we discuss data challenges that were encountered and issues for consideration for future exercises of this type.

DMPA-IM

Figures 4a–c present graphs of the relationship between DMPA-IM supply data by level of demand for the eleven priority districts. Districts were shown on the x axis; the percentage of facilities reporting stockout (yellow line) is shown on the right vertical axis, whereas quantities received, used, and stock on hand are shown on the left vertical axis.

Figure 4a. DMPA-IM supply and use data for high-demand, high-discontinuation districts, Malawi

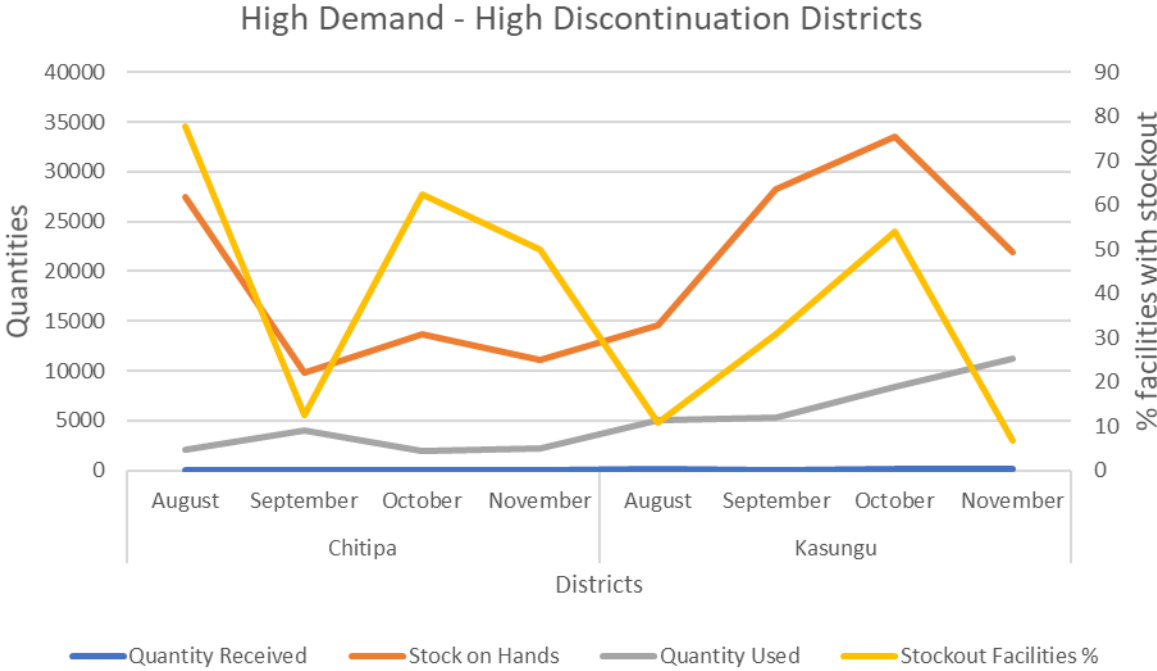


Figure 4b. DMPA-IM supply and use data for high-demand, low-discontinuation districts, Malawi

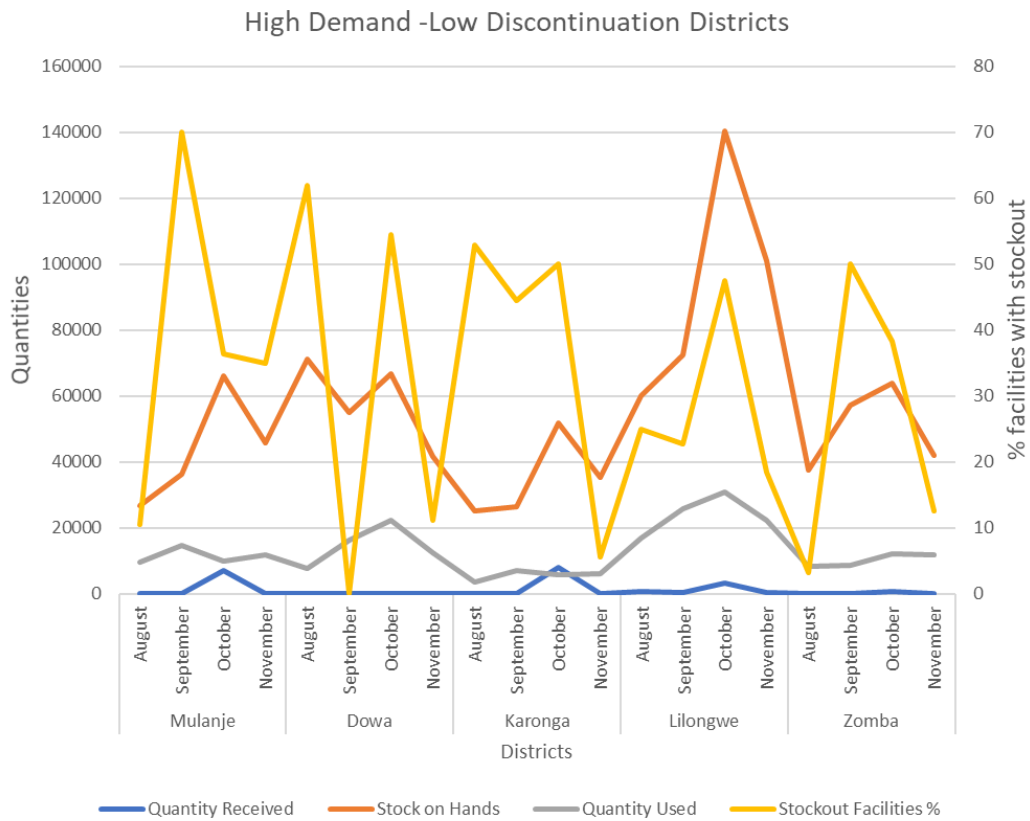
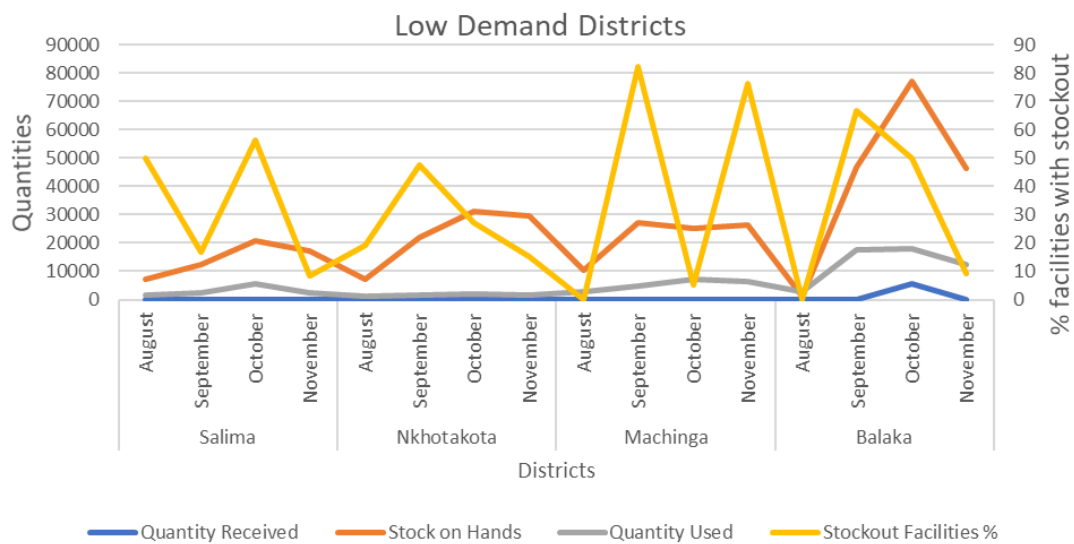


Figure 4c. DMPA-IM supply and use data for high-demand, low-discontinuation districts, Malawi



Comparisons within districts

Figures 4a–c show wide variations within districts in the percentage of facilities reporting stockout each month. In no particular month were facilities more vulnerable to having DMPA-IM stockout. Within each district, we did not observe correlations between stockouts, and the quantity of DMPA-IM used, which could suggest that contraceptive stockout was not driven by actual use recorded at the facility level. In addition, the quantity of DMPA-IM received was also not related to either stockout rates or the quantity used in the same month or the previous month. In fact, the quantity of DMPA-IM received was consistently low compared to the quantity used and stock on hands, which were the other two quantitative supply indicators. There were no variations within or between districts, with a few exceptions of increases in October compared to other months in several districts.

The final supply indicator, stock on hand, is theoretically driven by the quantities received and used within any particular month. We did not observe this relationship, nor did we observe any correlations between the number of contraceptive methods available on hand and the stockout rates.

Comparisons across districts

The lack of any patterns in contraceptive supply indicators, as well as the absence of empirical relationships between them in each district made it challenging to compare these data across districts. We could not detect significant differences between districts with high versus low demand of contraception, or between high versus low method discontinuation districts. However, we found that both the quantity used and stock on hand indicators were highest in high-demand, low-discontinuation districts, compared to the other districts. Based on this observation alone, one would assume that DMPA-IM supplies in the five districts (Mulanje, Dowa, Karonga, Lilongwe, and Zomba) are sufficient to meet the high demand and maintain a low discontinuation rate.

DMPA-SC

With DMPA-SC (self-injection), we were first struck by the 100% stockout rates reported at the district level, regardless of the time and type of districts. In addition to issues with data reporting that we discuss later, there were several reasons that could contribute to such a high stockout rate of DMPA-SC. First, DMPA-SC in general has a shorter shelf life, therefore, there might be a push for SDPs to use these methods first to avoid expiration. Second, it was possible that global constraints with supplies during the COVID-19 pandemic might have contributed to stockouts. The 100% stockout rates were, however, in contrast with positive quantities of stock on hand reported across time and districts, although both indicators came from OpenLMIS.

Figures 5a–c show DMPA-SC supply data by type of districts for the 11 priority districts.

Figure 5a. DMPA-SC supply and use data for high-demand, high-discontinuation districts, Malawi

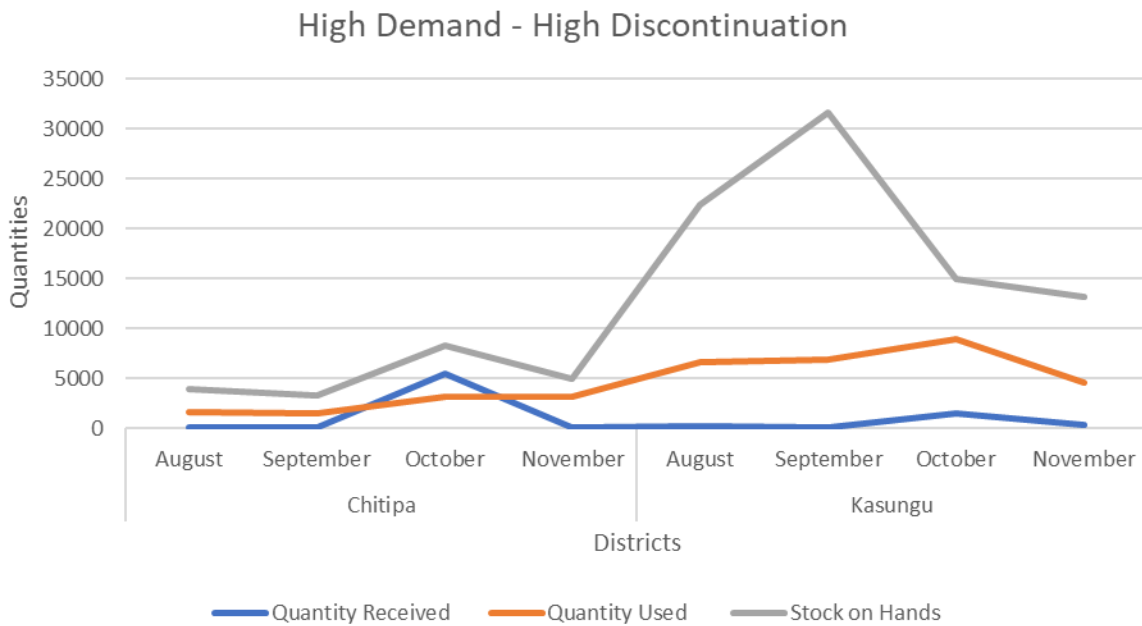


Figure 5b. DMPA-SC supply and use data for high-demand, low-discontinuation districts, Malawi

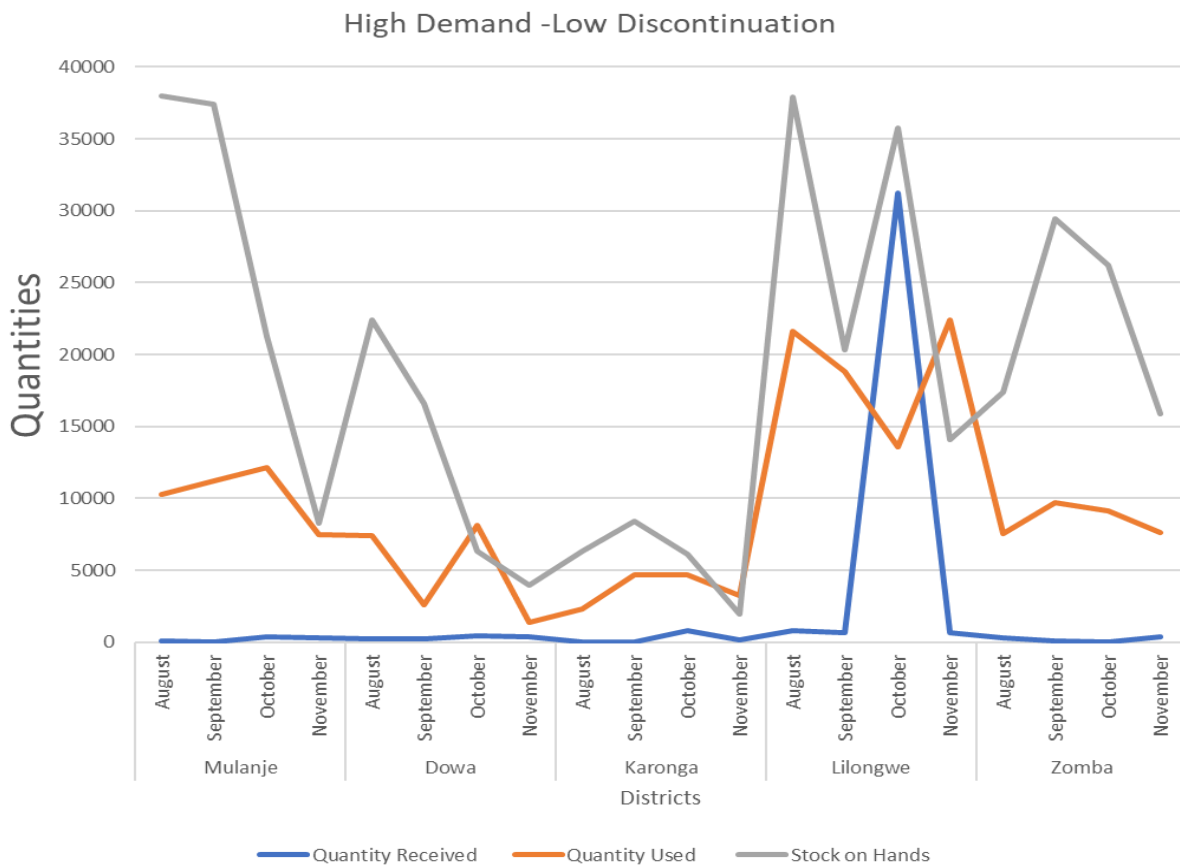
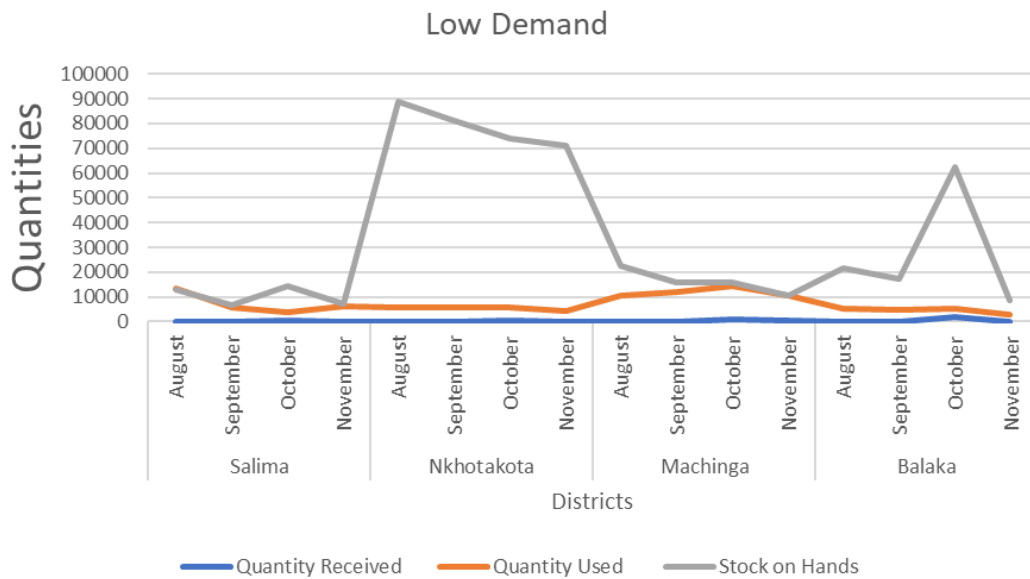


Figure 5c. DMPA-SC supply and use data for low-demand districts, Malawi



Figures 5a–c show little correlation between stock on hand and DMPA-SC quantities used and received. The quantity received was low overall, similar to DMPA-IM, although there were a few bumps in October.

Comparisons between the three groups of districts did not reveal any obvious patterns that could distinguish districts either. High-demand districts did not necessarily have more stock on hand than low demand districts. There was also no evidence to suggest that high discontinuation districts were different from low discontinuation districts in DMPA-SC supplies, suggesting that injectable method discontinuation rates were unlikely influenced by DMPA-SC supplies.

Implants

The opposite stockout situation was observed with implants in all districts: no districts at any time reported having a stockout of all implant methods, meaning at least one of the four implant brands was always available. Any implant stockout rates varied widely between districts and time, as shown in Figures 6a–b. Variations in the percentage of facilities with any implant stockout were not distinguishable between high versus low demand districts, or between high versus low discontinuation districts. In addition, this indicator did not seem to correlate with use, measured by quantity used and the number of insertions. As mentioned earlier, any method stockouts should not have an impact on implant use since all four brands seemed to be used interchangeably.

Figure 6a. Implant supply and use data from high-demand districts, Malawi

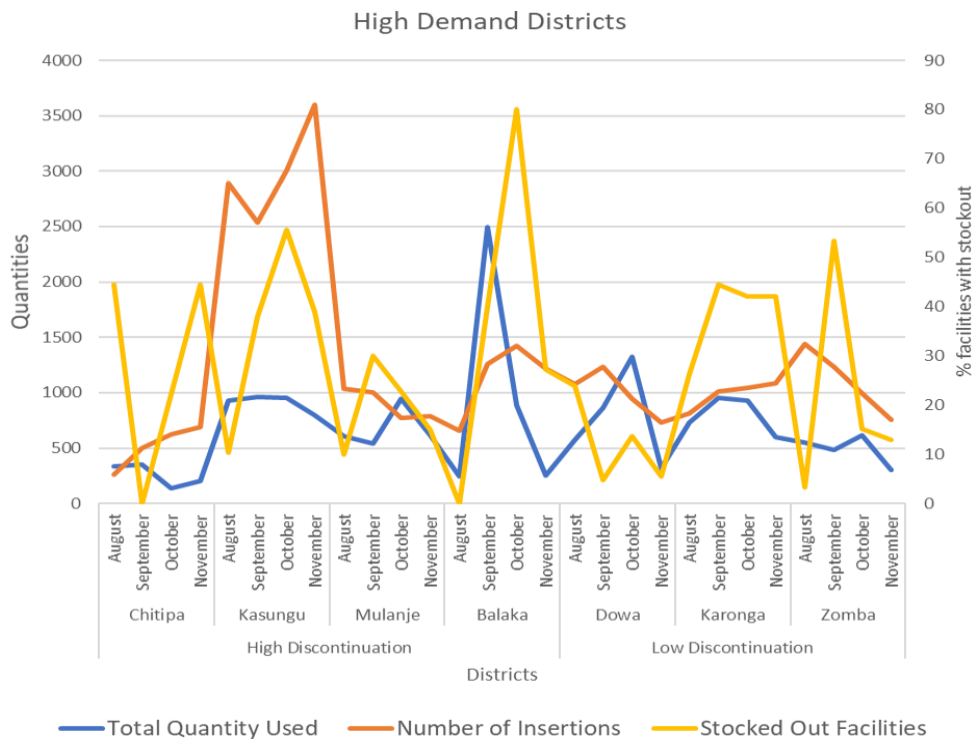
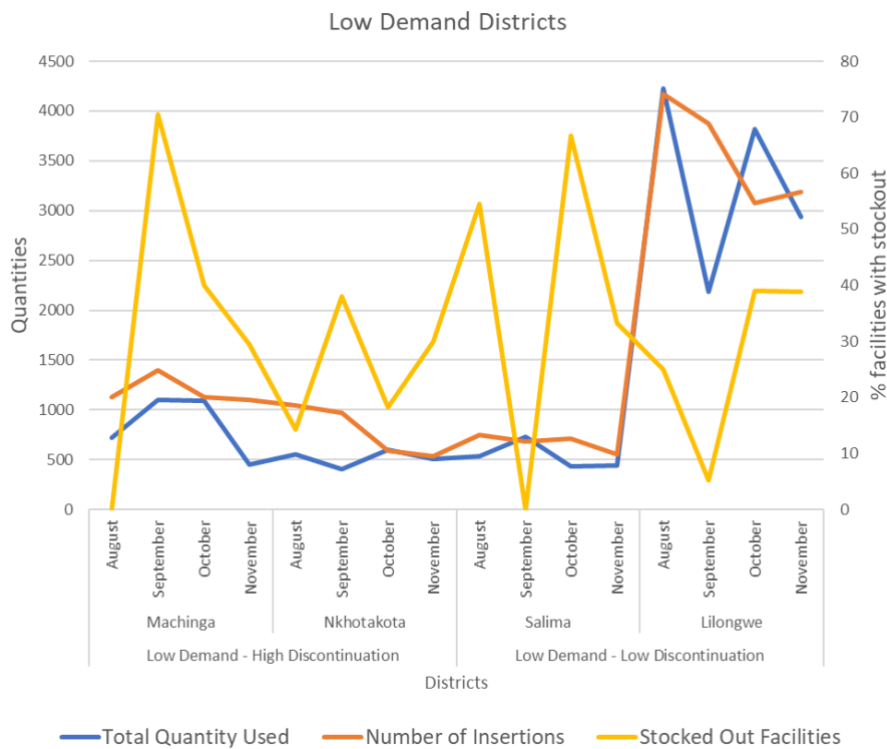


Figure 6b. Implant supply and use data from low-demand districts, Malawi



The two indicators for implant use should be interpreted separately; one (number of insertions) reflects actual use at clinics, while the other (quantity used) is a proxy. The number of insertions was generally low in low-demand districts, except Lilongwe and higher in high-demand districts. The number of insertions peaked and mirrored any implant method stockout rates in Balaka, a high-demand, high-discontinuation district. On the other hand, in Lilongwe, a low demand, low discontinuation district, this number also peaked but any implant method stockout rates were low. We also observed some correlations between these indicators in Balaka and Lilongwe.

In Balaka, there appeared to be some positive correlations between the total quantity used, the number of insertions, and the percent of facilities reporting any implant stockouts. This could suggest that any implant stockout might have been driven by implant use, and that the supply chain might not be able to meet demand in Balaka, which may be related to high method discontinuation rates. In Lilongwe, the opposite was observed: despite high measures of use in August and September, any implant stockout rates remained low in these months, suggesting that supplies might have been able to keep up with demand and keep discontinuation rates low.

Challenges With Data and Interpretation of Findings

Using routinely collected data alone or in combination with population-based survey data for monitoring of health behavior outcomes and interventions is desirable for many reasons. This case study demonstrates the feasibility of this type of exercise in a country like Malawi, where OpenLMIS and DHIS2 have been integrated into the same system for a few years, with data that can complement one another and population-based data. Our exercise suggests that while such data are available to make the analysis possible, meaningful, and useful interpretation of the results could be spurious due to issues related to data availability and quality. During this exercise, we encountered several issues that were critical to both the feasibility of the analysis and the accuracy of result interpretation, which are discussed below.

1. Stockout data

In this exercise, we observed a wide variation in stockout rates at the district level over time and across districts. We also observed 100% stockout rates for DMPA-SC but 0% stockout rates for implants. These patterns underline several issues that one must consider when conducting this type of analysis. First, the specific context needs to be considered. For example, in Malawi, DMPA-SC can be provided by community health workers or self-injected by clients at home; clients only need to go to clinics to obtain the method once every three months. Meanwhile, stockout data recorded in the HMIS system have already been aggregated from the SDP level to the facility level within each district. It was not possible in this case to distinguish community-based versus facility-based distribution and to further examine stockout variations across SDPs. In addition, in Malawi, there might be a priority for DMPA-SC to be used first, despite anecdotal evidence pointing to DMPA-IM preference in the population; therefore DMPA-SC may actually run out faster than DMPA-IM.

Second, the number of SDPs that reported on stockouts within each district varied widely from month to month for all methods. While the HMIS listed all potential SDPs under each facility and all facilities within a district, it was not possible to identify clinics and facilities that do and do not provide FP services or the contraceptive method of interest on a regular basis.

Key Points

- Stockout data were not uniformly reported across SDPs and times, largely due to the lack of a clear requirement regarding what SDPs needed to report such information.
- For methods like DMPA-SC that were distributed both at facilities and in the community, CHWs did not report to the facility level, further challenging the interpretation of stockout rates.
- For this indicator to be useful, it is important that: (1) there is a clear definition of what SDPs need to report on stockout, and (2) there is a mechanism for CHWs to report stockout of community-based distributed methods to the facility level.

For example, only SDPs with trained health care workers or CHWs would be eligible to disburse DMPA-SC, but this information was not recorded. CHWs do not report to the facility level, therefore it was hard to obtain accurate data from clinics, in contrast to DMPA-IM that is only available at health facilities.

Relatedly, it was not clear which facilities should report on contraceptive supplies. While facilities and SDPs that provide FP services on a regular basis need to report, this requirement leaves too much room for ambiguity. In addition to the availability of trained providers above, it was also impossible to define “a regular basis” and what SDPs meet this requirement from the HMIS dashboard, which lists all SDPs that report to health facilities. Our conversations with experts of the Malawian FP program revealed that if a SDP ran out of contraceptives the month before and did not get re-supplied, they might not report on the stockout indicator the next month, leaving this information missing in the dashboard, and consequently, was not counted in this indicator. Tables 2 and 3 present the number of SDPs reporting stockout data for two injectable methods in 2020. This number was more consistent across time for implants (see Table 4).

Table 2. SDPs reporting DMPA-IM stockout data by district, Malawi 2020

	District	Total Number of Facilities	August	September	October	November
High demand High discontinuation	Chitipa	12	9	8	8	8
	Kasungu	42	28	26	26	30
High demand Low discontinuation	Mulanje	26	19	20	22	20
	Dowa	25	21	21	22	18
	Karonga	21	17	18	18	18
	Lilongwe	126	60	57	59	54
	Zomba	48	31	32	34	32
Low demand	Salima	20	12	12	16	12
	Nkhotakota	23	21	21	22	20
	Machinga	24	17	17	19	17
	Balaka	19	8	9	12	11

Table 3. SDPs reporting DMPA-IM stockout data by district, Malawi 2020

	District	Total number of facilities	Data type	August	September	October	November
				Facilities reported	Facilities reported	Facilities reported	Facilities reported
High demand High discontinuation	Chitipa	12	Implanon	9	6	7	6
			Jadelle	9	9	9	9
			Levoplant	8	6	6	2
			Levonorgestrel	8	6	7	4
	Kasungu	42	Implanon	22	20	21	53
			Jadelle	28	29	26	54
			Levoplant	16	12	13	53
			Levonorgestrel	25	22	24	54
	Mulanje	26	Implanon	20	20	22	20
			Jadelle	19	20	21	19
			Levoplant	19	20	20	19
			Levonorgestrel	19	20	21	19
High demand Low discontinuation	Dowa	25	Implanon	21	21	22	18
			Jadelle	21	21	22	18
			Levoplant	21	21	21	18
			Levonorgestrel	21	21	22	18
	Karonga	21	Implanon	15	15	15	23
			Jadelle	17	18	19	26
			Levoplant	2	6	7	9
			Levonorgestrel	10	11	12	23
	Lilongwe	126	Implanon	60	58	59	53
			Jadelle	60	58	58	54
			Levoplant	60	57	54	53
			Levonorgestrel	60	58	59	54
	Zomba	48	Implanon	29	25	25	28
			Jadelle	26	26	26	27
			Levoplant	18	22	14	24
			Levonorgestrel	27	29	27	30
Low demand High discontinuation	Machinga	24	Implanon	17	16	20	17
			Jadelle	17	17	19	17

			Levoplant	15	15	17	17
			Levonorgestrel	17	16	19	17
Low demand Low discontinuation	Nkhotakota	23	Implanon	21	21	21	19
			Jadelle	21	21	22	20
			Levoplant	21	18	20	18
			Levonorgestrel	21	20	21	19
	Salima	20	Implanon	11	12	14	11
			Jadelle	11	12	15	12
			Levoplant	10	12	12	10
			Levonorgestrel	11	12	14	12
Low demand Average discontinuation	Balaka	19	Implanon	7	9	10	11
			Jadelle	7	9	10	11
			Levoplant	7	9	6	11
			Levonorgestrel	7	10	10	11

Table 4. SDPs reporting DMPS-SC stockout data by district, Malawi 2020

	District	Total number of facilities	August	September	October	November
High demand High discontinuation	Chitipa	12	3	1	6	1
	Kasungu	42	2	11	7	8
High demand Low discontinuation	Mulanje	26	0	8	9	1
	Dowa	25	2	2	12	2
	Karonga	21	5	8	6	1
	Lilongwe	126	8	7	20	24
	Zomba	48	0	17	1	0
Low demand	Salima	20	8	0	6	0
	Nkhotakota	23	2	1	4	1
	Machinga	24	0	11	6	1
	Balaka	19	1	0	1	1

2. Supply and use data

Seemingly, the stockout rates should highly correlate with stock on hand, however, this was not the case. A reason may be that these two indicators were reported differently; the former was based on whether a facility reported any days of stockout within the previous months, whereas the latter was based on stocks available on the day of reporting. Nevertheless, no evidence existed to correlate between stockout rates in a month and stock on hand in the next month.

This lack of correlation also raised a question of how likely facilities may run into a stockout situation given their level of demand, i.e. whether higher demand for commodities in the catchment area of a particular facility may drive a higher stockout rate. To answer this question, we examined demand and stockout data from facilities within Chitipa and Kasungu, two high-demand, high-discontinuation DMPA-IM districts. We used three proxies for contraceptive demand that were available in the HMIS:

Key Points

- There were no correlations between contraceptive demand and supply (or lack of it), which may be related to discontinuation.
- Decisions in contraceptive commodity distribution were not informed by the amount of commodities used, possibly for two reasons: (1) inconsistent reporting of commodities used from SDPs to the districts, and (2) commodity distribution decisions sometimes were based on commodities available at the central level.
- Recommendations: (1) establish clear definitions of who need to report and on what indicators to the district level, and (2) create a feedback mechanism for the district and central levels to review and use such data.

- 1) The number of village and outreach clinics managed by each facility, with an assumption that all village and outreach clinics provided FP services
- 2) The number of pregnancies expected in a year, calculated based on the population size and fertility rates, and recorded in DHIS2
- 3) The total number of modern contraceptive units used, with a caveat that many facilities did not report this number

Regardless of which proxy was used, data did not support the hypothesis that high demand or high volume might have driven stockout rates, at least for DMPA-IM. This observation needs to be interpreted with caution, however, due to issues related to the reporting and quality of stockout rates discussed above.

Similarly, the quantity of contraceptives received did not consistently reflect the quantity used or for implants, the number of insertions. The possibility of receiving a false. Negative finding arises due to the inconsistency and quality of reporting as mentioned above. On the other hand, a true negative finding, i.e., the lack of correlation patterns, suggests that the push-pull system may not always effectively inform FP commodity disbursement and procurement decision making at the central, district, and facility levels. In both scenarios, the findings suggest that FP commodity decision making is currently not well-grounded in demand and use. Within the push-pull system, SDPs were to report on commodities on the tenth day of each month. If this was not performed, SDPs might experience stockout in the following month. As previously mentioned, such reports were critical but we learned from the Mission that the provision of commodities from the central level also depended on what commodities, and in what quantity, were available at the central level during a particular month. Therefore, decisions for contraceptive commodity distribution (measured by quantity received) were not informed by the amount of commodities used. In the case of DMPA-SC, as there might be pushes for them to be used first, they may become unavailable more quickly when compared to DMPA-IM. Whether

such a “push” is effective or not depends on how receptive current and potential users are with DMPA-SC, the method that is being pushed out. Overall, the lack of correlations also suggests the need for an established feedback mechanism allowing district and central levels to review and incorporate supply data into commodity procurement and disbursement decision making. Additionally, making decisions each month may not allow enough time for the district and central levels to review and ensure data quality and consistency before any decisions are made.

3. Potential impacts of COVID-19 on contraceptive use and supply

To assess if COVID-19 affected results, we compared data from 2020 to those reported in the 12 months of 2019 before the pandemic began. Results did not change dramatically, i.e., we still observed an absence of consistent and significant correlation between stockout and supply indicators. However, supply chain issues due to the pandemic still may have had negative impacts on modern contraceptive procurement and shipping in Malawi.

In contrast to such concerns, little evidence exists of contraceptive supply disruptions caused by the pandemic. A December 2021 scan of the global FP market, conducted by the Clinton Health Access Initiative and the Reproductive Health Supplies Coalition, did not find evidence of significant or long-term disruptions. This market scan reported volumes of contraceptive commodities purchased by institutional buyers (e.g., USAID, United Nations Population Fund [UNFPA], and social marketing organizations), ministries of health, and government-affiliated procurers for 69 FP2020 focus countries. Instead, the scan found a growth in the public sector market between 2019 and 2020, much of it driven by increased procurement volumes for implants, injectables, and oral contraceptives (Clinton Health Access Initiative (CHAI) & Reproductive Health Supplies Coalition, 2021). The same trend was observed in Malawi during this period (Clinton Health Access Initiative (CHAI) & Reproductive Health Supplies Coalition, 2021). The report also highlighted discussions with global key stakeholders, which revealed that disruptions to supply chains caused by the pandemic were often resolved within “weeks, rather than months” (Clinton Health Access Initiative (CHAI) & Reproductive Health Supplies Coalition, 2021). UNFPA also reported that women in Malawi continued to have access to FP and reproductive health services and were able to plan for their families as they wished during the pandemic (UNFPA [Malawi], 2020).

Several studies reported other disruptions caused by the pandemic that could negatively affect contraceptive use in the population, including temporary closures of FP clinics and outreach services, de-prioritization of contraceptive counseling and administration, and overloaded health facilities (Aly et al., 2020; Mambo et al., 2020; Tolu et al., 2020). Disruptions of FP services can negatively affect implant users as the commodity expires and most require interaction with a service provider to procure (Dasgupta et al., 2020). Globally, it was estimated that the pandemic could produce a 10 percent decline in short- and long-acting reversible contraceptives in LMICs (Riley et al., 2020). There were concerns of an upsurge of unwanted pregnancies and unmet need for contraception, with women in LMICs bearing most of this burden (Kumar, 2020). However, these concerns did not last long. For example, a study in Burkina Faso and Kenya reported that most women at risk of unintended pregnancy did not

change their contraceptive use status during the pandemic (Karp et al., 2021). Among those who changed, it was likely because they adopted a method, or switched to a method as or more effective relative to pre-pandemic method(s) (Karp et al., 2021). Consequently, there were increases in contraceptive use among women in need in these two countries (Wood et al., 2021). The fairly constant contraceptive use patterns indicated adaptations of governments, ministries of health, and distribution systems to ensure continuity of services, including the classification of FP as essential services, and increases in the use of community health workers, as seen in several sub-Saharan African countries (Makumbi et al., 2021).

In Malawi, a survey conducted in March 2020 reported no change in the number of operational SDPs but there was a decrease in the outreach activity, scaling down activities which required crowd gathering. In response to these disruptions, the Government of Malawi's declaration of SRHR as essential health services facilitated community based SRHR services. In general, there were no reports of SRHR commodities shortage. The same longitudinal study reported rearranging service delivery, including door delivery, and reorganizing SDPs in November 2020 (Sødal, 2021).

A remaining question is how the pandemic might have affected reporting by staff at health facilities and SDPs of implants and injectables. Since FP services were not considered essential services earlier in the pandemic, coupled with facilities and health workers heavily burdened by COVID and other critical needs, reporting of FP commodities may be less prioritized. Training and quality assurance may also not follow a regular schedule or level of intensity.

4. Limitations of population-based data

Two key limitations arose with the DHS data used in this exercise. First, while it was the most recent Malawi DHS (2015–2016), the data were somewhat dated compared to routine data. In theory, patterns of contraceptive use and discontinuation may have changed in the past few years, although this would be unlikely due to the relatively stable nature of these indicators. How the pandemic might have changed contraceptive behaviors was discussed above. Second, while we limited discontinuation to that of method related reasons, many of the reasons are not directly related to supply, but more to counseling pre- and post-method acceptance. In this case, using discontinuation due to reasons related to method supply alone would result in a very small number of discontinuers, limiting the analysis. Method-related reasons, especially due to side effects and health concerns, were the most frequently cited reasons for discontinuation; if these challenges can be overcome, a significant proportion of contraceptive use may continue. On the other hand, contraceptive availability might have some effect on method counseling, particularly pre-acceptance—a relationship that should not be ignored.

Conclusion

This exercise tested the feasibility of using non-routine in combination with routine data to shed light on contraceptive behaviors among population in need at the district level in Malawi. We found that while such analyses are possible, the interpretation of the results, and consequently the exercise's feasibility and practicality, depends on the regularity, consistency, and quality of routine data. As a result, findings from the analysis have limited usefulness. We propose two recommendations to improve the usability of commodity supply data and enhance the feasibility and usefulness of this exercise. First, it is important to establish clear criteria regarding which SDPs and health facilities need to report on what indicators, and how reporting should occur. These criteria also need to clearly distinguish different community distribution mechanisms, i.e., facility-based versus community-based, depending on the specific method. Second, an established feedback mechanism should be developed for the district and central levels to review and incorporate such data into commodity procurement and disbursement decision making. Such a feedback mechanism would provide sufficient time for the district and central levels to review data and take actions to enhance data quality. Even in a context like Malawi where DHIS2 and OpenLMIS have been integrated, quality assurance must occur. This will ensure that different indicators collected through different reporting systems and within the same systems, indicators will correspond and align to one another. Until then, much of the monitoring of contraceptive behaviors will likely continue to rely on non-routine data, like population-based surveys.

References

- Aly J, Haeger KO, Christy AY, & Johnson AM. (2020). Contraception access during the COVID-19 pandemic. (Vol. 5, pp. 1–9): Springer.
- Adamou B, Barden-O’Fallon J, Williams K, Selim A. (2020). Routine family planning data in the low- and middle-income country context: A synthesis of findings from 17 small research grants. *Global Health: Science and Practice*. doi: 10.9745/GHSP-D-20-00122.
- Braa J, Hanseth O, Heywood A, Mohammed W, Shaw V. (2007). Developing health information systems in developing countries: the flexible standards strategy. *Manage Inf Syst Q*. 31(2):381–402.
- Burke HM, Chen M, Buluzi M, Fuchs R, Wevill S, Venkatasubramanian L, Dal Santo L, & Ngwira B (2018). Effect of self-administration versus provider-administered injection of subcutaneous depot medroxyprogesterone acetate on continuation rates in Malawi: A randomised controlled trial. *The Lancet Global Health*, 6(5), e568–e578.
[https://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X\(18\)30061-5.pdf](https://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(18)30061-5.pdf)
- Burke HM, Chen M, Buluzi M, Fuchs R, Wevill S, Venkatasubramanian L, Dal Santo L, & Ngwira B (2019). Factors affecting continued use of subcutaneous depot medroxyprogesterone acetate (DMPA-SC): A secondary analysis of a 1-year randomized trial in Malawi. *Global Health: Science and Practice*, 7(1), 54–65.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6538126/pdf/ghsp54.pdf>
- Clinton Health Access Initiative (CHAI), & Reproductive Health Supplies Coalition. (2021). *Family Planning Market Report December 2021*.
- Dasgupta A, Kantorová V, & Ueffing P (2020). The impact of the COVID-19 crisis on meeting needs for family planning: A global scenario by contraceptive methods used. *Gates Open Research*, 4.
- Karp C, Wood SN, Guiella G, Gichangi P, Bell SO, Anglewicz P, Larson E, Zimmerman L, & Moreau C. (2021). Contraceptive dynamics during COVID-19 in sub-Saharan Africa: Longitudinal evidence from Burkina Faso and Kenya. *BMJ Sexual & Reproductive Health*.
- Kumar, N. (2020). COVID 19 era: A beginning of upsurge in unwanted pregnancies, unmet need for contraception and other women related issues. *The European Journal of Contraception & Reproductive Health Care*, 25(4), 323–325.
- Makumbi F, Kibira SPS, Giibwa L, Polis C, Giorgio M, Segawa P, Namakula L, & Mimbela R. (2021). Access to Contraceptive Services Among Adolescents in Uganda During the COVID-19 Pandemic.
- Mambo SB, Sikakulya FK, Ssebuufu R, Mulumba Y, Wasswa H, Thompson K, Rusatira JC, Bhondoekhan F, Kamyuka LK, & Akib SO. (2020). Sexual and Reproductive Health and Rights Challenges among Ugandan Youth during COVID-19 Pandemic lockdown: An online Cross-Sectional Study.

Riley T, Sully E, Ahmed Z, & Biddlecom A. (2020). Estimates of the potential impact of the COVID-19 pandemic on sexual and reproductive health in low-and middle-income countries. *International perspectives on sexual and reproductive health*, 46, 73–76.

Sødal, A. (2021). Understanding the Impact of Covid-19 on SRH Services and SRHR: A Comparative Study of Malawi and Palestine [Masters Thesis, OsloMet-Storbyuniversitetet].

Tolu LB, Hurisa T, Abas F, Daba M, Abebe B, Nigatu B, & Prager S. (2020). Effect of Covid-19 pandemic on safe abortion and contraceptive services and mitigation measures: A case study from a tertiary facility in Ethiopia. *Ethiopian Journal of Reproductive Health*, 12(3), 6-6.

UNFPA [Malawi]. (2020). Annual Report 2020: Delivering during COVID-19.

Wood SN, Karp C, OlaOlorun F, Pierre AZ, Guiella G, Gichangi P, Zimmerman LA, Anglewicz P, Larson E, & Moreau C. (2021). Need for and use of contraception by women before and during COVID-19 in four sub-Saharan African geographies: Results from population-based national or regional cohort surveys. *The Lancet Global Health*, 9(6), e793–e801.

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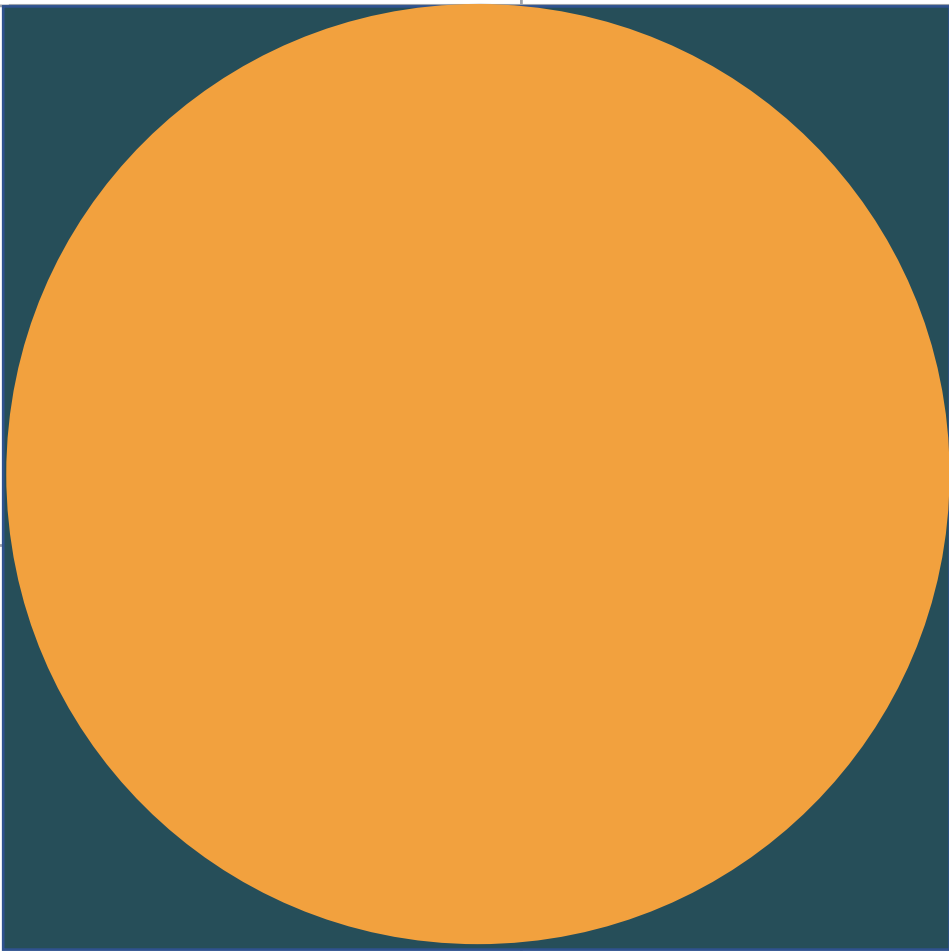
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This publication was produced with the support of the United States Agency for International Development (USAID) under the terms of the Data for Impact (D4I) associate award 7200AA18LA00008, which is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with Palladium International, LLC; ICF Macro, Inc.; John Snow, Inc.; and Tulane University. The views expressed in this publication do not necessarily reflect the views of USAID or the United States government.

TR-22-472 D4I

