

# **NANDI COUNTY REPRODUCTIVE HEALTH QUANTIFICATION DOCUMENTATION FOR 2017-2020**

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Technical Report  
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## ACRONYM LIST

AMC	Average Monthly Consumption
BMGF	Bill and Melinda Gates Foundation
CHMT	County Health Management Team
COCs	Combined Oral Contraceptives
CPR	contraceptive prevalence rate
CSTWGC	Commodity Security Technical Working Group
CYP	couple years of protection
DHIS 2	District Health Information System 2
DHS	Demographic Health Survey
DMPA	Depot Medroxyprogesterone Acetate
ECPs	Emergency Contraceptive Pills
EPI	Expanded Program of Immunization
FP	Family Planning
HMIS	Health Management Information System
HRIO	Health Records Information Officer
IUCD	Intrauterine Contraceptive Device
IAP	Implants Access Program
JSI	John Snow, Inc.
LMIS	Logistics Management Information Systems
LMU	logistics management unit
mCPR	Modern Contraceptive Prevalence Rate
MOH	Ministry of Health
MOS	Months of Stock
NGO	Non-Governmental Organization
POPs	Progesterone Only Pills
RH	Reproductive Health
SDP	Service Delivery Point
SCHMT	Sub-County Health Management Team
SoH	Stock on Hand
WRA	Women of Reproductive Age

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## EXECUTIVE SUMMARY

The Innovations for Public Health Supply Chain Project (inSupply) is a two-year project funded by Bill & Melinda Gates Foundation. The project aims at improving the performance and efficiency of family planning and vaccine supply chains by increasing data visualization and utilization and strengthening management practices to improve system outcomes. Strong supply chains are essential to ensure that an uninterrupted supply of products is available to support these programs in delivering comprehensive RH/FP services. Under the Implant Access Program (IAP), inSupply supports countries in strengthening their supply chains to deliver RH and FP products by providing technical assistance to forecast and produce supply plans.

Reproductive, maternal and newborn health is a key priority in Nandi county and has been prioritized by county ministry of health and development partners to date leading to the need for forecasting commodity needs, estimated costs, funding gaps, and strategic interventions to further improve family planning program in the county.

InSupply was invited to conduct a quantification workshop for the County Health Management Team (CHMT) and the Sub County Health Management Team (SCHMT) to build their capacity in contraceptive quantification including the steps in forecasting and supply planning, compilation and manipulation of data used in quantification, assumption building, and how quantification activities contribute to commodity security. A total of 25 participants participated in the workshop.

The inSupply facilitators with the participants undertook a quantification exercise to quantify family planning product needs in the Nandi County public sector for the years 2017 through 2020. The scope of the activity included eight products (combined oral pills (COCs), progesterone only pills (POPs), IUCD, injectables, 1 Rod, 2 Rod, emergency contraceptive pills (ECPs), male and female condoms). Data used for the quantification exercise included 2009 census, Kenya DHS 2014 and DHIS 2 logistics and service data.

Three quantification methods (consumption-based, demographic-based and services-based) were performed. The final reconciled forecast for each product was determined after consensus from the participants.

The supply plans generated (using the PipeLine tool) were developed using DHIS 2 and KEMSA inventory data for the period May 2017.

The team made a number of recommendations including: regular monitoring of supply plans; quarterly review by the CHMT of the forecast with current logistics data and supply plans; annual quantification exercise; mobilization of funding to meet the forecasted needs; adherence to the agreed timelines for committed procurements and regular updates from the procuring agencies to ensure uninterrupted supply.

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## BACKGROUND

The Innovations for Public Health Supply Chain Project (inSupply) is a two-year project funded by Bill & Melinda Gates Foundation. The project aims at improving the performance and efficiency of family planning and vaccine supply chains by increasing data visualization and utilization and strengthening management practices to improve system outcomes in East Africa. Its goal is to optimize the performance of these supply chains using data and management practices, to maximize resources available and improve efficiency. This requires quality, available, and timely data that can be rapidly transformed into usable information for operational and strategic decisions. inSupply is currently working in ten (10) counties, under the national leadership of the Division of Family Health at the Ministry of Health, and alongside County Health Management Teams (CHMT) in these counties.

One of the inSupply components, the Implants Access Program (IAP) involves improving upstream data visualization for contraceptives implant supply chains. Based on this mandate, and in response to a request from the Nandi county IMPACT team, inSupply supported the county in a 4-years contraceptive forecast and supply plan. The out-puts of this exercise will go a long way in providing both the county and sub-county health management teams with critical information that will allow them make informed decisions around sustained availability of contraceptives in their health facilities. This will address the Nandi county efforts of improving family planning services and hence reducing both maternal and neonatal/child mortality. This report outlines the various activities carried out to generate the contraceptives forecast and supply plan. The quantification workshop was conducted from 20<sup>th</sup> to 24<sup>th</sup> June 2017 in Golf Hotel, Kakamega County.

## OBJECTIVE

The objective of the quantification workshop was to calculate the FP commodity requirements and quantities to be procured for the years 2018 through 2020 for the public sector. Based on the generated requirements, current county stocks and planned/pending shipments from the county and development partners, a county supply plan would be prepared to guide procurement in the period under consideration. The supply plan would also be used for advocacy of resources to ensure commodity security.

### Commodities quantified

The main target was FP products for the public sector. A complete list of products considered for the forecast in this exercise are listed in Table 1.

**Table 1: Commodities considered during the quantification exercise**

Combined oral contraceptives (COCs)
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Progestin only pills (POPs)
Depo Provera (injectable)
Implanon (implant)
Jadelle (implant)
Copper T (IUCD)
Emergency contraceptive Pills (ECPs)
Male Condoms for FP only
Female Condoms for FP only

## Quantification workshop overview

The workshop took place in Golf Hotel, Kakamega County in June 20-24 2017. Participants from the CHMT and SCHMT in all the 6 Nandi sub-counties arrived in Kakamega on June 20, 2017 and departed June 24, 2017. A total of 25 participants participated in the workshop. The attendees included:

- a. County Pharmacist
- b. County Chief Nursing Officer
- c. County Reproductive Health Coordinator
- d. County Health Records Information Officer (HRIO)
- e. County EPI Logistician
- f. 6 Sub-county Pharmacists/Pharmaceutical technologists
- g. 6 Sub-county Health Records Information Officers
- h. 6 Sub-county Public Health Nurses (PHN)

During the May 2017 IMPACT Team meeting, the participants were taken through the steps of quantification and a session on how to collect, organize, analyze and adjust data necessary for contraceptives forecasting exercise. They were also introduced to the Pipeline Monitoring and Procurement Planning System (*PipeLine*).

Each sub-county team was then expected to analyze their 2015 and 2016 consumption and service data downloaded by inSupply staff from the District Health Information System-2 (DHIS2) and make the necessary adjustments in preparation for the planed quantification workshop. The sub-county data were then aggregated to come up with the county data. The county team collected data necessary for conducting a demographic data-based contraceptive forecast and for the supply planning. The *PipeLine* software was also uploaded into their laptops and they were expected to practice its use.

During the actual workshop, a 1½ hour session was held on the evening before the workshop to review the quantification preparations status. Key objectives for this session included:

1. Review of the adjusted sub-county consumption and service data
2. Aggregating the adjusted data to generate county profile
3. Discussing the teams' preparedness in the use of the *PipeLine* database and address any gaps
4. Uploading *PipeLine* and quantification exercises into the participants laptops

In the next 2½ days, participants were taken through a hands-on chronological account of the activities leading to the quantification exercise. Participants were introduced to the process of contraceptives forecasting and used data in Excel worksheets from a fictitious Anyland county to come up with a consumption and service data based forecast. Contraceptives for the Nandi county forecast and family planning program future plans and targets were agreed upon through a consensus process.

Participants were then split into two groups to develop consumption and service data-based forecast with a inSupply staff member serving as each group facilitator. The teams then presented their forecast output in plenary for discussion and adoption. This was followed by a demographic data-based forecast that was conducted with all participants. On the last day of the workshop after the forecast reconciliation, participants were taken through a session on supply planning using the *PipeLine* database.

## **Data Considered**

The following key data was collected for the quantification exercise:

- 2009 census
- Kenya DHS 2014 (past DHS for trends)
- KEMSA: Issues data (2016-2017), inventory (May 2017)
- DHIS 2 Dispensed to user Data: (2015-2016 by month)
- DHIS 2 Service Data: New Visits, revisits (2014-2015 by month)

## **FORECASTING METHODOLOGY**

Three forecasting methods were performed using: 1) Demographic data; 2) Services data and 3) Issues data.

The final reconciled forecast to inform procurement planning for each product was determined based on consensus from the workshop participants. Completeness and quality of data, and past trends informed the final forecast method agreed upon for each product.

### **Demographics Data**

Different algorithms were used during the workshop to assist in data collection, decision making and selection of assumptions for the demographic method. The following section outlines some of the data and decisions made in the demographics data forecast method.

Women of reproductive age (WRA) population of Nandi county for 2017-2020 was estimated by applying a 3.0% annual growth rate to the 2009 population census figures. The team agreed to

use the Contraceptives Prevalence Rate (CPR) for all WRA since survey data has shown that in the county, women who are not in union are using contraceptives. Review of CPR data between 1989 and 2014 showed an annual increase of 1.1%. The group thus assumed this annual CPR increase will apply between 2017 and 2020 resulting into 50.2%, 51.4%, 52.5% and 53.7% for 2017, 2018, 2019 and 2020 respectively.

Next, the participants reviewed several options for assuming the shifts in method mix into the future. We reviewed data from DHS and an option given by the technical advisors using trends. The method mix was assumed by the participants to be as follows:

- 60% for 1-Rod and 40% for 2-Rod Implants.
- 80% male condoms and 20% female condoms
- 90% combined oral contraceptives (COC) and 10% Progestin only Pill

The couple year protection used was as follows:

- IUCD (New Users) – 1.0
- Pills – 15
- Injectable (DMPA) – 4
- Implant 1-Rod – 2.5
- Implant 2-Rod – 5
- Male and female condom – 120

The team assumed that 70% of the contraceptives are accessed in the public sector.

The combined results of the demographic forecast are presented in Table 2.

**Table 2. Results of demographic forecast method**

Products	Unit	2017	2018	2019	2020
IUCD	pcs	2,112	2,171	2,236	2,303
COCs	cycles	224,704	231,445	238,389	245,540
POCs	cycles	24,967	25,716	26,488	27,282
Injectables	Vial	324,421	334,154	344,179	354,504
Implant - 1-Rod	set	32,684	33,665	34,675	35,715
Implant - 2-Rod	set	43,579	44,886	46,233	47,620
Male Condoms	pcs	552,001	568,561	585,617	603,186

## Consumption Data

Various methodologies were used to adjust the 2015 and 2016 consumption data for each contraceptive. The adjusted sub-county data was then aggregated to get that county data before applying both a natural growth trend (in Excel) and a 2% program growth for the forecast years.

Results are presented below in Table 3



**Table 3. Consumption Data-Based Contraceptives Forecast**

	2017	2018	2019	2020
<b>COC</b>	38,039	38,419	38,804	39,192
<b>POP</b>	6,331	5,546	4,859	4,257
<b>MALE CONDOMS</b>	810,438	696,796	599,088	515,082
<b>ECP</b>	4,987	5,419	5,889	6,399
<b>IUCD</b>	6,437	6,502	6,568	6,635
<b>1-ROD IMPLANT</b>	14,575	15,597	16,692	17,863
<b>2-ROD IMPLANT</b>	10,717	12,491	14,559	16,970
<b>INJECTABLE</b>	107,288	109,434	111,622	113,854
<b>FEMALE CONDOM</b>	6,866	4,264	2,648	1,644

## Service data

A review of the 2015 and 2016 family planning data showed major gaps for all the contraceptives except the injectable contraceptives therefore only injectables were considered using this methodology. Missing sub-county data for new clients and re-visits was adjusted for non-reporting. The adjusted data was then aggregated to get the county data for the 2 years. The 2016 data was found to be lower than 2015, a factor that was attributed to 2 months of industrial unrest. The necessary adjustment was made using the average monthly data for 2015. The growth trend application in Excel was used to estimate the 2017-2020 data. Commodity needs was determined using the established dispensing protocol. Program growth rate was assumed to be 2%. The resulting future needs was estimated as shown in Table 4.

**Table 4. Service based forecast for injectables**

Description	2017	2018	2019	2020
Injectables	106,698	108,572	110,479	112,420

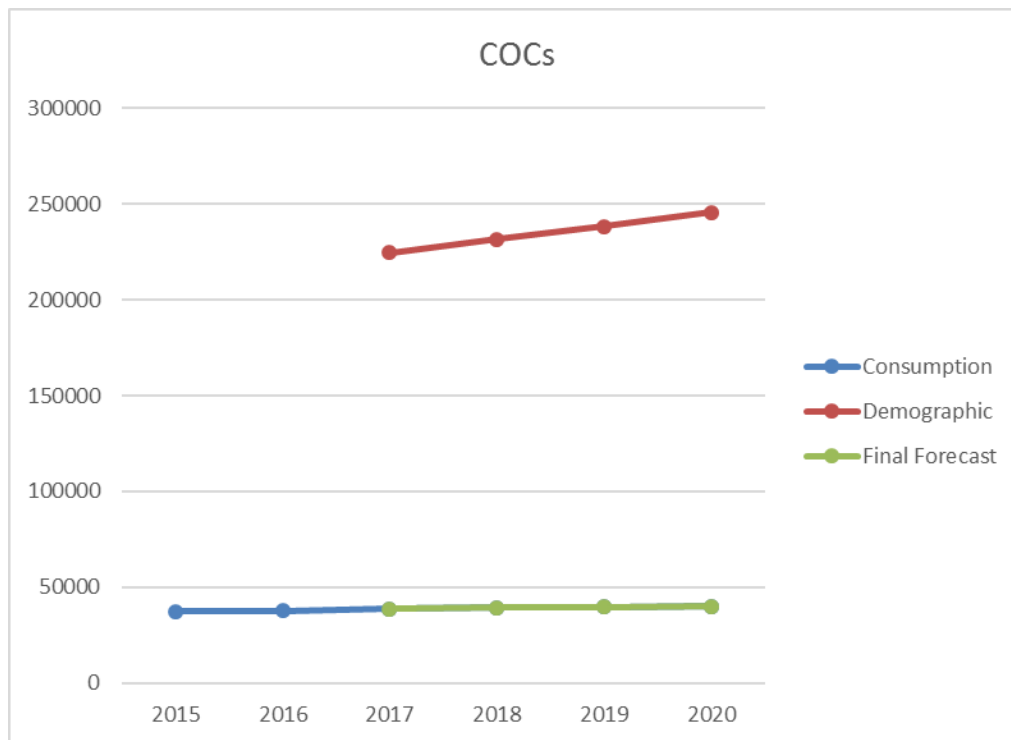
## QUANTIFICATION RESULTS AND SUPPLY PLAN

### Reconciled (Agreed Upon) Forecast for Each Method

After walking through the various forecasting methods, workshop participants broke out into groups to review the strengths and weaknesses of the data used for each forecasting method. This exercise was done to assist in determining which result to use for the final forecast figures. The group went through each product and discussed each of the forecast results. The agreed-upon forecast was determined per each product by various ways including averaging of various forecast methods, selection of a single forecast method, etc. based on the strength and

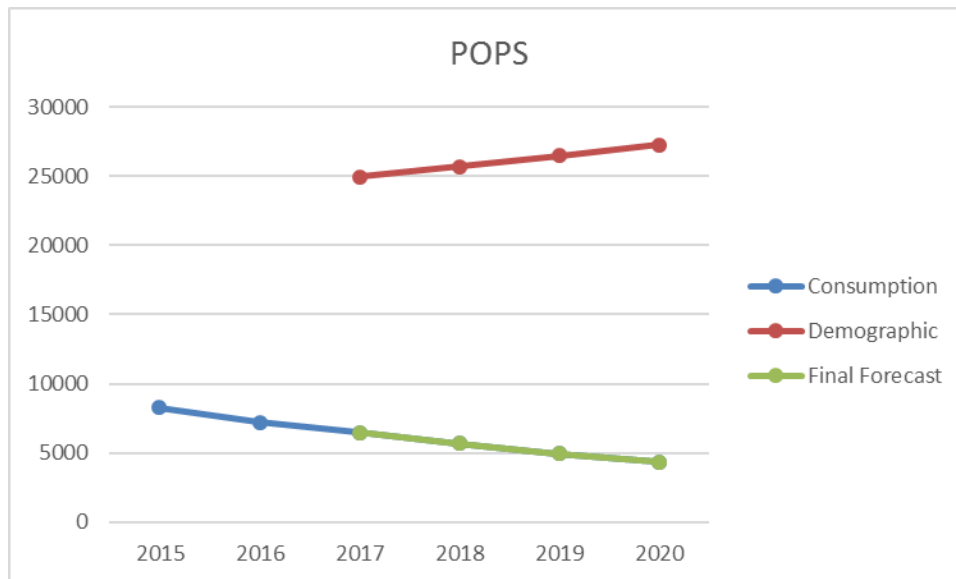
weakness of the data used and level of assumptions required during the calculating process. The result of the reconciled (selected) forecast is presented in the figures below.

**Figure 1. Forecast methods for COCs**



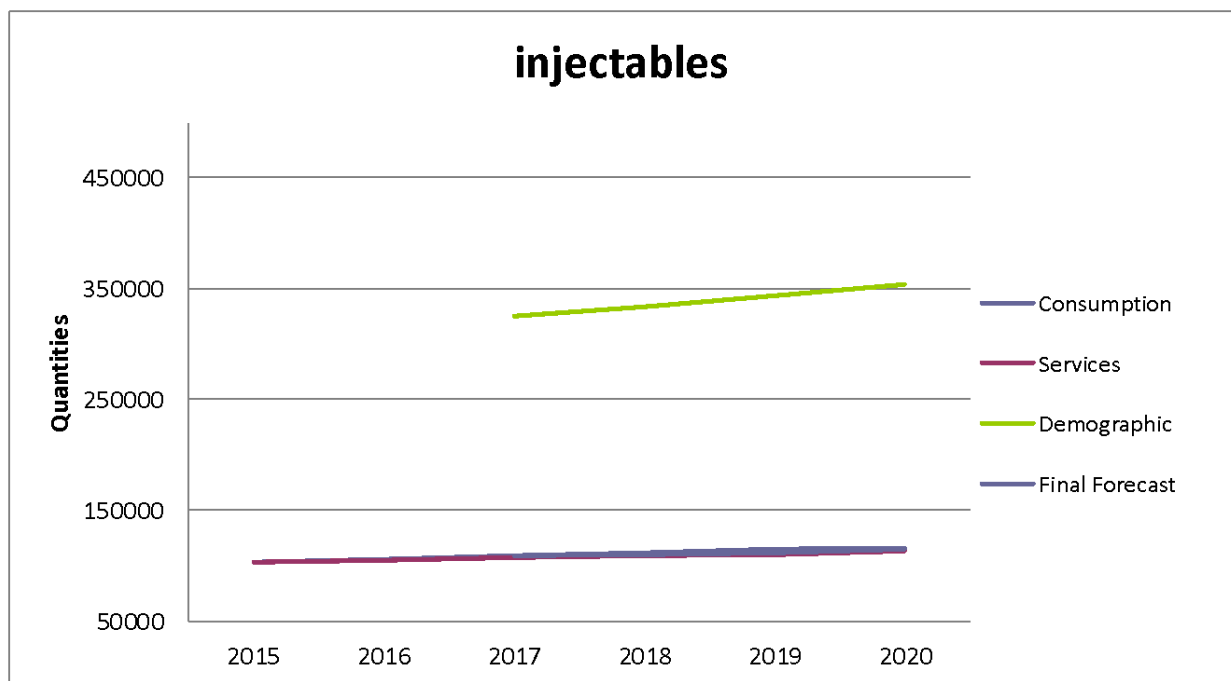
The reconciled method for COCs was consumption based method because the group felt the demographic method was too high

**Figure 2. Forecast methods for POPs**



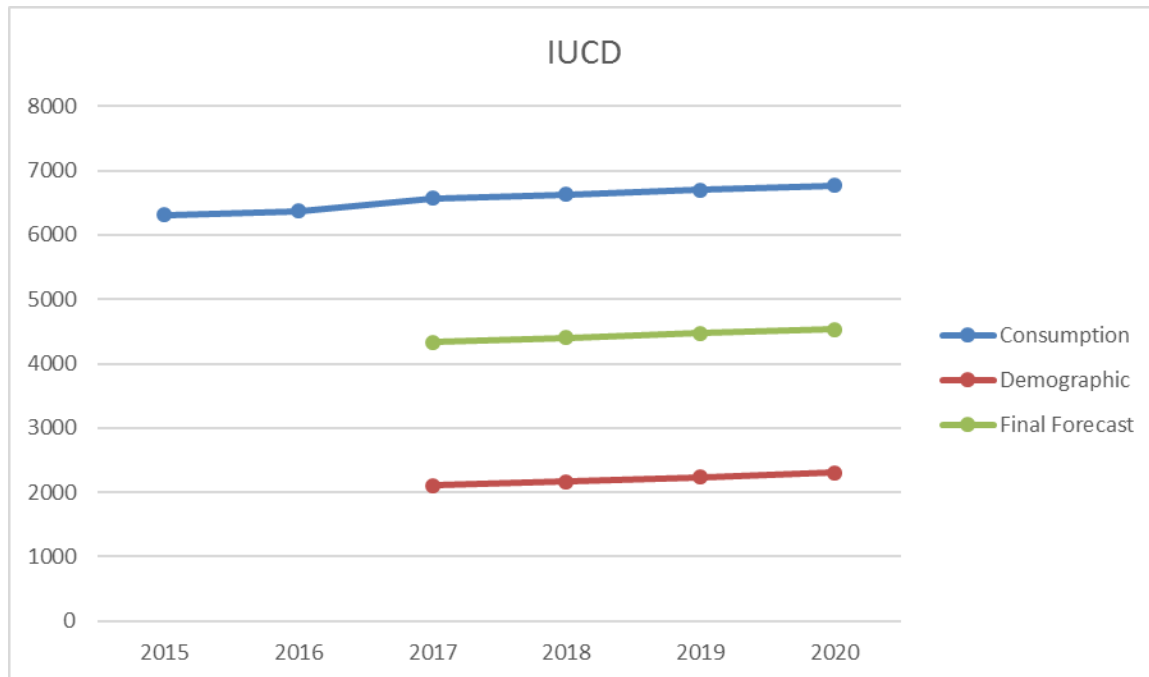
The selected forecast for POPs was the consumption based forecast because it reflected the current trend in the county that shows a decrease in POPs uptake.

**Figure 3. Forecast methods for Injectables**



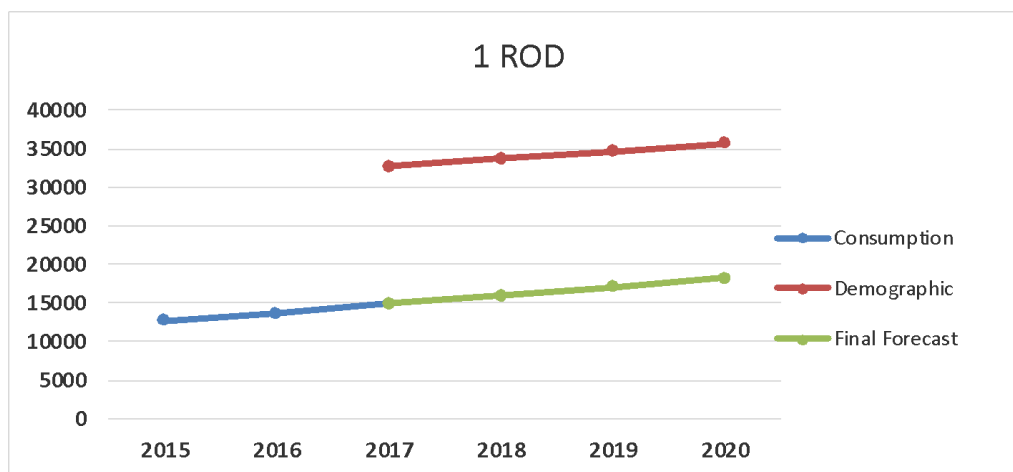
The reconciled method for injectables was an average of consumption and services based method because these two forecasts produced similar results the group was comfortable using the average.

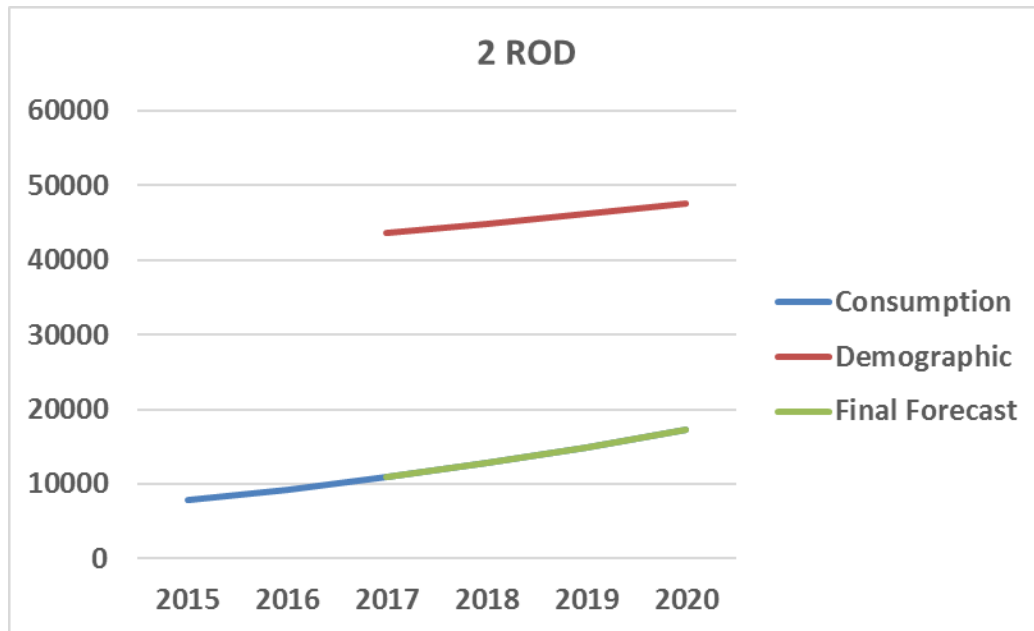
**Figure 4. Forecast methods for IUDs**



The reconciled method for IUCDs was an average of consumption and demographic methods as this produced a mid-point of the two which is neither too high or too low

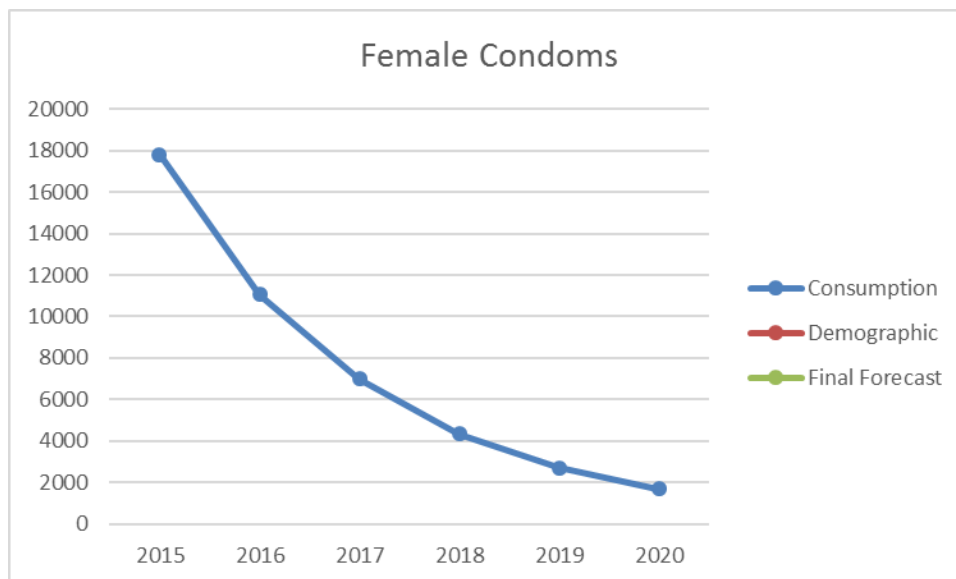
**Figure 5. Forecast methods for implants**





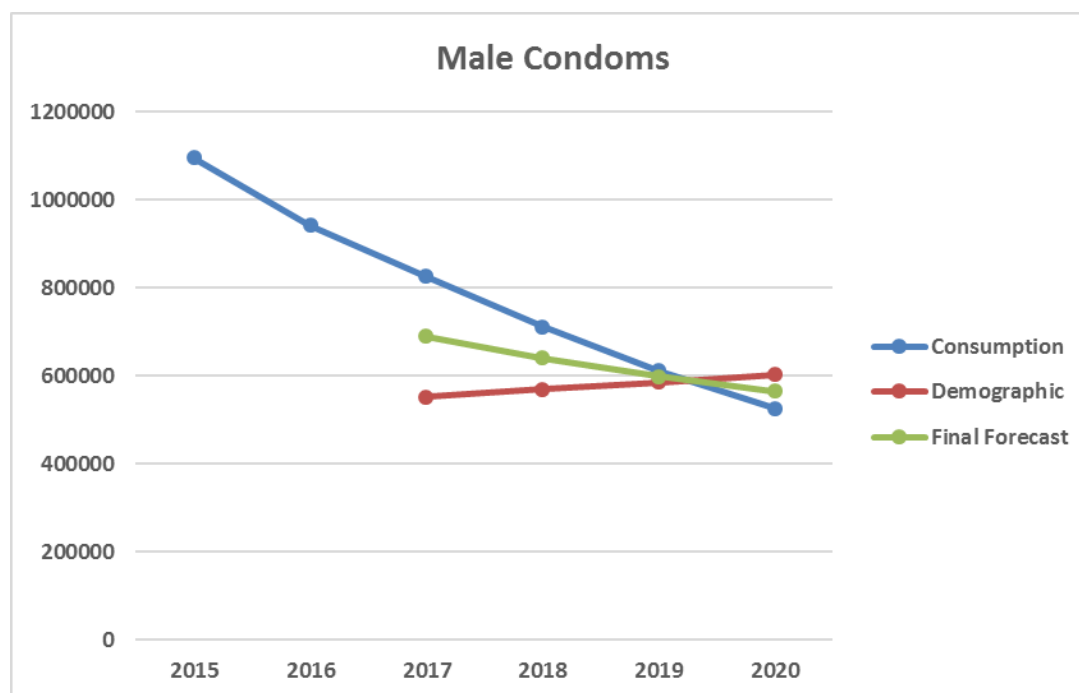
The reconciled method for implants was consumption based method. The consumption of Implants is expected to increase due to various activities in the county geared towards increasing uptake of long term methods.

**Figure 6. Forecast methods for female condoms for FP program**



The reconciled method for female condoms was the consumption method since it was the only method used

**Figure 6. Forecast methods for male condoms for FP programs**



The agreed upon method for male condoms for FP programs is an average of consumption and demographic based forecast as it produced a midpoint of the two methods.

## Quantification results

The result of the reconciled forecasts are presented in Table 5. Summary of final forecast quantities by product.

**Table 5. Summary of final forecast quantities by product**

Commodity Name	Unit Pack	2017	2018	2019	2020
Injectables		108,060	110,097	112,167	114,275
1-Rod Implant (Etonogestrel, 68 mg)	Set	14,866	15,909	17,026	18,220
2-Rod Implant (Levonorgestrel 75mg/rod)		10,932	12,741	14,851	17,309
IUCD		4,338	4,402	4,468	4,535
COC (Levonorgestrel/ Ethinylestradiol 150mg/30mg)	Cycle	38,800	39,188	39,580	39,976
POC (Levonorgestrel 0.03mg)	Cycle	6,457	5,657	5,956	4,342

Female Condoms	Piece	7,004	4,349	2,701	1,677
Male Condoms		689,324	639,646	598,344	564,285
ECP (Levonorgestrel 0.75mg/tablet)	Pack of 2 Tablets	5,086	5,527	6,006	6,527

## Supply Plan

A PipeLine database was set up and populated with current stock on hand, pending orders and shipments, forecasted requirements, order and shipment lead times, funding source, supplier, and product information. The tool assists with planning and tracking orders if it is kept current with actual consumption data. It can identify actions and issues to avoid stock outs and maintain desired stock levels to ensure adequate inventory throughout the supply chain. PipeLine can estimate costs by year, product, and funding source which provides information to advocate for future funding.

A quick assessment of contraceptive stocks in the health facilities and sub-county stores as of May 31<sup>st</sup> 2017 indicated that these commodities are available in relatively sufficient quantities based on the established inventory levels considering the challenges with distribution (Table 6). Health facilities and the sub-county stores are expected to receive contraceptives together with essential drugs from the central level once in a quarter. This means there is a delay in distributing contraceptives if the facilities have not ordered essential drugs. Participants indicated there were no pending orders that are yet to be delivered to the health facilities and sub-county stores.

**Table 6: Physical Inventory May 31, 2017**

	COC	POC	1-Rod Implant	2-Rod Implant	Injectable Contraceptives	ECP	Male Condom	IUCD	Female Condom
Unit of Count	Cycle	Cycle	Set	Set	Vial	Pack of 2	Piece	Set	Piece
Physical Inventory	4,107	19,352	12,888	6,172	72,035	715	142,675	2,101	8,503
Average Monthly Consumption	1,244		964	362	5,408	DHIS Down			
Months of Stock on Hand	3.3		13.4	17.0	13.3				

The physical inventory data and actual consumption for the months of January 2017 to May 2017 was entered in the *PipeLine* database. Pockets of COC stock outs were reported as a result of shortage at the central level. To achieve continuous availability of COC and other contraceptives, the quantities outlined in Table 7 below need to be ordered to maintain the desired levels in 2017. Based on the current needs estimate:

- No additional female condom receipt is required until October 2018.
- Orders of male condoms, IUCD, ECP and 2-Rod Implant needs to be placed urgently to arrive in the health facilities by August 31, 2017.
- The health facilities are highly overstock with POP.
- The program shall review the expiry status and implement mechanisms to allow re-distribution to other needy counties.

This supply plan should be reviewed and updates as more complete consumption data is available. The forecast shall be updated in a 3-month rolling cycle.

**Table 7. Nandi county supply plan**

Product Name	Unit	Receive Date	Quantity
1-Rod Implant	Set	Oct-17	741
1-Rod Implant	Set	Jan-18	4,325
<b>Sub-total</b>			<b>5,066</b>
2-Rod Implant	Set	Aug-17	2,027
2-Rod Implant	Set	Nov-17	3,033
<b>Sub-total</b>			<b>5,060</b>
Intrauterine Contraceptive Device	Set	Aug-17	1,157
Intrauterine Contraceptive Device	Set	Dec-17	1,448
<b>Sub-total</b>			<b>2,605</b>
Injectable Contraceptive	Vial	Sept-17	18,025
Injectable Contraceptive	Vial	Dec-17	27,683
<b>Sub-total</b>			<b>45,708</b>
Male Condoms	Piece	Aug-17	374,321
Male Condoms	Piece	Nov-17	164,046
<b>Sub-total</b>			<b>538,367</b>
ECP	Pack of 2 Tabs	Aug-17	3,101
Male Condoms	Pack of 2 Tabs	Nov-17	1344
<b>Sub-total</b>			<b>4,445</b>



## **RECOMMENDATIONS TO ENSURE COMMODITY SECURITY**

The team made a number of system related and quantification related recommendations to ensure a continuous supply of commodities and to avoid over or under stock of products, thereby improving commodity security:

### **Recommendations to improve supply chain capacity for future forecasting**

1. Consumption data is the best source of data for a more robust and accurate forecast. Extracting this information from the DHIS 2 will be critical for future quantifications. There is need to ensure that the data is complete and accurate
2. Focus on accessing regular accurate and complete downstream data from the service delivery points to help in county planning. Dispensed to user services data can be triangulated with services data to validate each data source.
3. Ensure dispensing protocols are being followed at service delivery points.
4. Update actual consumption (from DHIS 2) in Pipeline to routinely monitor stock status and update supply plans.
5. Share report outputs of pipeline with relevant organizations and individuals for more informed decision making.

### **Recommendations for CS TWG**

1. Quarterly monitoring of the supply plan should take place to ensure uninterrupted supply and to make adjustments to shipments as needed
2. Update the forecast annually based on consumption and services data if available from the DHIS 2, current market share and source mix and any current demographic data sources in order to conduct several forecasts for comparison and validation purposes.
3. Establish a core quantification team from the CS TWG to review forecasts and to carry out annual forecasts
4. Receive regular updates from the KEMSA and national FP program to ensure an uninterrupted supply of contraceptives.
5. Increase county government financing for future contraceptive procurement

## ANNEXES

### Annex A: Demographic method algorithms used in forecasts

#### Family Planning Contraceptives

Include  
consumables like  
gloves, syringe,  
water and lidocaine

