



Solving Human Resources for Health Efficiency Challenges by Using the HRH Optimization Tool for Family Planning (HOT4FP)

Introduction

Providing client-centered family planning (FP) services requires a strong, well-managed health workforce. To deliver effective healthcare—as well as to maintain essential FP services during public health emergencies—it is important for health facilities, national human resources for health (HRH) planners, and implementing partners to use HRH data to determine how to best configure their health workforce and services. With funding from USAID, the Human Resources for Health in 2030 program (HRH2030) team created the HRH optimization tool for family planning (HOT4FP)¹ to increase health workforce efficiencies by identifying and addressing HRH bottlenecks at frontline health facilities. HOT4FP supports comprehensive planning and management of a more adaptive and diverse health workforce for achieving FP2030 goals.

HOT4FP helps improve workforce efficiencies by:

- Identifying and correcting HRH imbalances within and across health facilities
- Promoting client-centered services through tasksharing and expanding service delivery beyond facility walls
- Strengthening community engagement and health systems support functions
- Budgeting to address workforce gaps
- Estimating FP coverage levels under current and potential FP service scenarios.

The results from HOT4FP benefit stakeholders at all levels in the health sector. For example: The tool helps national and regional HRH planners and managers budget for addressing HRH shortages, revise guidelines for community-based service delivery, budget realistically for systems support such as supervision, and adjust job descriptions to allow for greater task-sharing. HOT4FP results support district health management teams in identifying gaps and balancing their health workforce geographically, strengthening task-sharing and community-based service delivery and community engagement, and budget for additional staff in decentralized settings. At the health facility level, HOT4FP shows clinic managers whether their healthcare workers (HCW) are sufficient and have the right skills set for coping with the client volume, how their coverage for critical FP services compares to national benchmarks, and the HRH requirements and costs for scaling up and differentiating service delivery. A facility can be a health post, health center, district hospital, or private clinic.

The application of HOT4FP is led by local teams involving key stakeholders at service provider and administrative levels. It is an iterative process that fosters learning by providing new insights into a country's health workforce, its efficiency challenges, and solutions. The tool was tested in Mali's Dioila district November 2020. Data collection was conducted entirely by a local team of HRH experts and healthcare providers in Mali. Its data are used to illustrate the HRH efficiency cases in this document. These cases and solutions are for learning purposes only and are not meant to reflect actual health systems performance or be applicable in Mali.

This paper presents how the HOT4FP tool can help decision makers to address common HCW changes to achieve efficiencies in family planning. This document addresses the following HRH efficiency scenarios:

- 1. Identifying HRH inefficiencies across all health facilities
- 2. Improving HRH efficiency through task-sharing
- 3. Improving HRH efficiency by differentiating service delivery

¹ University Research Co. (URC), an HRH2030 partner, led the development of HOT4FP (as well as HOT4PHC and HOT4ART). All tools are available at: https://hrh2030program.org/resources/

Each HRH scenario is described in detailed below using data from Mali, which are adapted to illustrate the impact of HRH optimization on the staff situation in a health facility and the health district. Using HOT4FP, each scenario except the first can be applied to a single health facility or to aggregate data from multiple facilities. The latter is done throughout this document.

For specific steps and directions on how to interact with the tool there are guides available from the HRH2030 website.²

FP Service and HRH Data from Diolla District

Dioila district is located east of the capital Bamako in the Koulikoro region and can be reached in two and a half hours by car. The district population is about 339,000 spread out across 179 villages. There are 23 community health centers and one larger reference health center; all except one community health center are included in the field test. These 23 community and reference health centers provide an annual volume of almost 48,000 FP-related contacts spread over 17 clinical FP activities covering all modern contraceptive methods. Health centers deliver 77 percent of clinical services; the remaining 23 percent are delivered in catchment area communities. In addition, HCWs carry out some community engagement, supervision, and FP commodity supply activities; professional HCW and community-based workers receive five days of training annually.

All these clinical, community, and support activities are included in estimating staff requirements. The terms 'activities' and 'tasks' are used interchangeably. Services are provided by a total of 160 health professionals and

FIGURE I. HEALTH WORKERS BY CADRE

Health Warkforce in Dialla District	FTE
	Available
Medical Doctor	7.0
Medical Specialist	2.0
Physician Assistant	7.0
Midwife	15.9
Professional Nurse	10.1
Auxiliary Nurse Midwife	11.0
Nursing Aide	17.1
Pharmacists /Ph. Assistant	3.0
CHW	51.0
Community Midwife	35.0
Medical Assistant	1.0
Total	160.1

² User guides and other materials for the HOT4FP Tool may be found at https://hrh2030program.org/hot4fp-optimizing-hrh-fp/ community health workers (CHW). All personnel data are presented as full-time equivalents (FTE). See Figure 1 for a breakdown by cadre. HOT4FP was completed separately for each of the 23 health facilities. All their service and HRH data were then imported and aggregated in a master HOT4FP.

FIGURE 2. TOOL TABS FOR VIEWING/EDITING DATA (COLORS MATCH THE TOOL TABS)

- I. Client Volume
- 3. Service Providers
- 4. a&b Task Assignment (TA-Facility & TA-Community)
- 5. Community & Support
- DASHBOARD (comparison of HRH scenarios)

The aggregate data can be viewed and changed on the tool tabs listed in red in Figure 2.

I. Identifying HRH Inefficiencies Across All Health Facilities

Case goal: Identify provider imbalances and assess how efficiently HCWs deliver FP services

After importing the facility-specific data from all 23 health centers into a master HOT4FP, the first step is to identify the health facilities that have staff shortages or excesses and for which HCW cadres. Figure 3 shows which tool tabs will be used in this HRH efficiency scenario. Figure 4, copied from the **FTE Summary** tab, lists in pairs of columns how many FTEs are available for each type of HCW and what the excess or shortage is in all 23 health centers. A simple average can be found on the last row.

FIGURE 3. TOOL TABS USED IN THIS HRH EFFICIENCY CASE

FTE Summary		
FTE Chart		
FP Effort		
Community+		

FIGURE 4. SUMMARY OF FTES AVAILABLE AND EXCESS/ SHORTAGE BY CADRE FOR REGIONS AND DISTRICTS; BASED ON CURRENT CLIENT-LOAD (THE BOTTOM TABLE IS THE CONTINUATION OF THE TABLE ABOVE)

															Auxiliary		
					Medical		Medical		Physician					Auxiliary			
			Total	Medical	Doctor	Medical	Specialist	Physician			Midwife	Professional		Nurse			Nursing Aide
Region / District / Name of			current FP	Doctor	Excess/	Specialist	Excess/	Assistant	Excess/	Midwife	Excess/	Nurse		Midwife		Nursing Aide	
Health Facility: 🚽	Communities	Population	visits	Available	Shortage	Available	Shortage	Available	Shortage	Available	Shortage	Available	Shortage	Available	Shortage	Available	Shortage
🗏 Koulikoro	179	338,677	47,660		(3.4)		(0 7)		(3.9)	16	(7.6)	10	1.6	11	(11.9)	17	(3 3)
🖃 Dioila Cercle	179	338,677	47,660	7	(3.4)	2	(0,7)	7	(3.9)	16	(7.6)	10	1.6	11	(11.9)	17	(3.3)
BAMANTOU	1	3,223	155		0.0	-	0.0	-	0.0		0.0	1	0.1	1	0.5	1	(0.0)
Banco	14	29,023	2,093	1	(0 <mark>.</mark> 7)	-	0.0	-	0.0	1	(0 4)	-	0.0	-	0.0	1	(0 1)
Baou Foulala	6	9,759	572	-	0.0	-	0.0	-	0.0	-	0.0	1	(0 0)	-	0.0	1	(0.5)
Bole	3	6,325	358	-	0.0	-	0.0	-	0.0	1	0.3	1	0.1	-	0.0	-	0.0
Degnekoro	9	15,660	1,779	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	(0 1)
Diogo	4	7,757	511	-	0.0	-	0.0	-	0.0	-	0.0	1	0.2	-	0.0	1	(0 1)
Dioila Central	22	43,861	3,214	1	(0,3)	-	0.0	-	0.0	1	(0.1)	2	1.1	1	(0,9)	-	0.0
Dioila			988	-	0.0	2	(0,7)	-	0.0	4	2.9	-	0.0	3	1.9	-	0.0
Falakono	1	8,573	412	-	0.0	-	0.0	1	(0,4)	1	(0.2)	-	0.0	-	0.0	1	(0.5)
Fissaba	9	14,651	888	-	0.0	-	0.0	1	(0,2)	-	0.0	-	0.0	1	0.4	1	0.2
Kle	3	7,907	736	-	0.0	-	0.0	-	0.0	-	0.0	1	0.2	-	0.0	1	(02)
Kola	2	5,360	698		0.0	-	0.0	-	0.0	1	0.5	1	0.4	-	0.0	1	(0.0)
Maban	4	13,194	698	-	0.0	-	0.0	1	(<mark>0</mark> ,9)	-	0.0	-	0.0	-	0.0	-	0.0
Massigui	21	39,369	3,522	1	(0,3)	-	0.0	1	(1,1)	1	(1.3)	-	0.0	1	(1.6)	-	0.0
N'Gara	3	17,157	14,357	-	0.0	-	0.0	1	(0,7)	1	(7.7)	1	(0,5)	1	(11.5)	-	0.0
N'Tobougou	8	12,242	3,962	1	(1.4)	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	(0,7)
Niantjila	13	22,051	1,942	1	(0.9)	-	0.0	-	0.0	1	(1,4)	-	0.0	1	(1,5)	2	(08)
Sanankoro	5	5,716	224	-	0.0	-	0.0	-	0.0	1	0.5	1	0.0	-	0.0	1	(0 1)
Senou	33	32,875	1,255	1	(0,1)	-	0.0	1	(0 <mark>.</mark> 5)	1	0.0	-	0.0	-	0.0	2	(0 1)
Seribila	7	9,586	856	1	0.2	-	0.0	-	0.0	1	0.1	-	0.0	-	0.0	2	(0 1)
Тодо	2	6,228	370	-	0.0	-	0.0	1	0.0	-	0.0	-	0.0	1	0.6	-	0.0
Toukoro	4	8,168	307	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	0.3	-	0.0
Wacoro	5	19,992	7,763	-	0.0	-	0.0	-	0.0	1	(0 <mark>.</mark> 8)	-	0.0	-	0.0	-	0.0
Grand Total	179	338,677	47,660	7	(3.4)	2	(0.7)	7	(3.9)	16	(7.6)	10	1.6	11	(11.9)	17	(3.3)

Design / District / Norma of	F	Pharmacist /	Pharmacist / Ph.Assistant			Community	Community Midwife	Medical	Medical Assistant		Total FTEs	Lower Bound Total FTEs	Upper Bound Total FTEs
Region / District / Name of	1	Ph.Assistant	Excess/	CHW	CHW Excess/	Midwife	Excess/	Assistant	Excess/	Iotal FIEs	Excess/	Excess/	Excess/
Health Facility:	÷17	Available	Snortage	Available	Shortage	Available	Snortage	Available	Snortage	Available	Shortage	Shortage	Shortage
Koulikoro		3	1.8	51	17.0	34	0.8	1	0.1	160	(9.3)	(39.1)	10.0
Dioila Cercle		3	1.8	51	17.0	34	0.8	1	0.1	160	<mark>(9</mark> 3)	(39.1)	10.0
BAMANTOU		-	0.0	-	0.0	1	(0.2)	-	0.0	4	0.3	0.2	0.3
Banco		-	0.0	6	1.4	2	(0 <mark>,</mark> 2)	-	0.0	11	0.1	(14)	1.0
Baou Foulala		-	0.0	3	0.9	1	0.2	-	0.0	6	0.5	(0.1)	0.9
Bole		-	0.0	-	0.0	1	0.0	-	0.0	3	0.4	0.1	0.6
Degnekoro		-	0.0	6	1.2	1	0.2	-	0.0	8	1.3	0.4	1.8
Diogo		-	0.0	2	1.5	2	1.7	-	0.0	6	3.2	3.0	3.4
Dioila Central		-	0.0	11	7.3	4	(0,7)	-	0.0	20	6.4	4.0	8.0
Dioila		-	0.0	-	0.0	3	0.5	-	0.0	12	4.6	3.5	5.3
Falakono		1	0.6	4	(11)	-	0.0	-	0.0	8	(17)	(24)	(12)
Fissaba		-	0.0	-	0.0	1	0.0	-	0.0	4	0.4	(0.0)	0.7
Kle		-	0.0	1	(0.1)	2	1.3	-	0.0	5	1.2	e.o	1.4
Kola		-	0.0	-	0.0	1	0.2	-	0.0	4	1.1	0.9	1.4
Maban		1	0.6	4	(12)	1	0.4	-	0.0	7	(12)	(19)	(0 7)
Massigui			0.0	-	0.0	3	(0.0)	-	0.0	7	(43)	(67)	(16)
N'Gara		-	0.0	-	0.0	-	0.0	-	0.0	4	(20.4)	(29.9)	(15.5)
N'Tobougou		-	0.0	6	3.4	2	(<mark>0</mark> .4)	-	0.0	10	0.8	(23)	1.7
Niantjila		-	0.0	-	0.0	2	(2.4)	-	0.0	7	(6.9)	(93)	(4 9)
Sanankoro		1	0.7	-	0.0	-	0.0	-	0.0	4	1.1	1.0	1.3
Senou		-	0.0	-	0.0	1	0.1	-	0.0	6	(0 6)	(15)	(0 1)
Seribila		-	0.0	6	2.6	2	0.8	-	0.0	12	3.5	2.9	3.9
Togo		-	0.0	2	1.2	2	0.4	-	0.0	6	2.3	2.1	2.4
Toukoro		-	0.0	-	0.0	1	(0.8)	-	0.0	2	(0 5)	(0 9)	(0 2)
Wacoro		-	0.0	-	0.0	1	(0.2)	1	0.1	4	(0,9)	(17)	0.2
Grand Total		3	1.8	51	17.0	34	0.8	1	0.1	160	(9,3)	(39.1)	10.0

Overall, it appears that too little time is allocated to HCW for FP services in Dioila district, because 6 out of 11 cadres show an FTE shortage, which is highest for midwives and auxiliary nurse midwives, with 8 and 12 respectively. FTE excesses and shortages are calculated based on the following data built into HOT4FP, all customizable: (1) current client volume and current levels of community engagement and systems support activities (tabs 1 and 5); (2) initial task-assignments to each HCW cadre (tabs 4.a and

b); and (3) client contact times provided by HCWs in Mali (tab **D**, **Task Times**, preconfigured). FTE excesses or shortages should be as close to zero as possible for a well-balanced health workforce.

When summarizing FTEs across all cadres, the last four columns in the bottom part of Figure 4, N'Gara Health Center shows the largest FTE shortage, with 20 HCW, because of a very high client volume and too little time allocated for FP. Overall, 169 FTEs in total would be needed in Dioila district to deliver the current volume of services, which indicates that more staff time needs to be allocated to FP. The last two columns show how much the FTE excess or shortage estimates vary, because the time of contact between client and provider varies with each client visit and for each activity.

However, this average shortage underestimates the true need for such senior midwives and mid-level nurse midwives, because 10 health centers do not have any advanced degree midwife and six do not have any midwife as highlighted in red. This means that there are approximately 10 health centers in Dioila district that need an additional senior midwife, not just eight as suggested by the simple average. The presumption is that all health centers should have enough senior midwives to ensure quality reproductive health services. Therefore, to assess the overall HRH situation, it is important to examine the entire table and not only the bottom-line total. The **FTE Chart** tab shows the average (Figure 5), minimum and maximum FTE requirements and excesses or shortages in graphic form by cadre and for all cadres combined.

FIGURE 5. CHART SHOWING STAFF SHORTAGES OR EXCESSES FOR ALL CADRES COMBINED



Although health centers in Dioila district seem to have allocated too little time to FP for coping with the current client volume, there are a few cadres which seem to be underutilized as indicated by an excess in FTEs. CHWs have the most time available to take on additional FP tasks with 17 FTEs. Professional nurses show a slight excess of two. Pharmacist or their assistants have not been assigned any clinical FP tasks in this case.

The **FP Effort** tab in Figure 6 (on next page) shows coverage levels for key services. Columns 2 and 3 show basic demographic data followed by estimates of unmet need and current FP method users based on client visits and DHS 2018 data. FP visits are broken out by selected contraceptive methods. The third column before the last column shows the average time per day that one service provider spends on FP followed by the FTE shortage for reference. The last column estimates the mCPR for each center. Blue columns (hidden in Figure 6) do the calculations for the potential client load scenario.

FIGURE 6. WOMEN USING MODERN CONTRACEPTIVE METHODS AND DISTRIBUTION OF CLINIC VISITS

				18/ieb										A		
			Women of	women with	modern methods		% of visits for	% of visits for	% of visits for			% of visits for		Avg. # or nours		
Region / District / Name of Health			reproductive	under current	under current	Total current	Oral	IM Methods	SC Methods	% of visits for	% of visits for	FP	% of visits for	day on FP	Total FTFs	mCPR at current
Facility:	Communities	Population	age	client load ≡	client load	FP visits	Methods §	ş		Implants §	IUDs §	counseling §	FP IEC §	services	Excess/ Shortage	client load ‡
■ Koulikoro	179	338,677	176,687	79,296	17,477	47,660	21.2%	10.1%		31.9%	1.2%	6.7%	15.4%	0.6	(93)	20.3%
🖃 Dioila Cercle	179	338,677	176,687	79,296	17,477	47,660	21.2%	10.1%		31.9%	1.2%	6.7%	15.4%	0.6	(93)	20.3%
BAMANTOU	1	3,223	806	509	6	155	12.9%	2.6%			-		84.5%	0.3	0.3	0.7%
Banco	14	29,023	7,256	2,735	979	2,093	17.0%	15.6%		43.5%	1.0%	8.0%		0.5	0.1	13.5%
Baou Foulala	6	9,759	2,440	1,323	127	572	20.6%	17.3%		14.3%	0.4%	20.5%	-	0.4	0.5	5.2%
Bole	3	6,325	1,581	799	112	358	8.1%	20.7%		27.6%	-	21.5%		0.5	0.4	7.1%
Degnekoro	9	15,660	3,915	1,654	439	1,779	6.0%	11.2%		22.9%	0.5%	15.5%	20.4%	0.5	1.3	11.2%
Diogo	4	7,757	1,939	821	217	511	21.9%	11.3%		39.2%	-	24.3%	3.3%	1.5	3.2	11.2%
Dioila Central	22	43,861	10,965	3,290	1,900	3,214	14.4%	13.1%		52.9%	7.2%	6.0%	2.6%	0.6	6.4	17.3%
Dioila			92,018	58,889	306	988	13.2%	17.8%		12.2%	10.8%	-	3.0%	0.7	4.6	0.0%
Falakono	1	8,573	2,143	970	208	412	4.1%	17.0%		51.9%	-	10.7%		0.3	(1 7)	9.7%
Fissaba	9	14,651	3,663	1,899	235	888	48.9%	16.3%		10.8%	0.9%	6.9%		0.7	0.4	6.4%
Kle	3	7,907	1,977	1,038	120	736		6.7%		16.6%	0.3%	11.4%	62.2%	0.6	1.2	6.1%
Kola	2	5,360	1,340	468	199	698	41.1%	8.3%		18.6%	-		32.0%	0.6	1.1	14.9%
Maban	4	13,194	3,299	1,419	357	698	24.4%	20.8%	-	45.8%	-	-	-	0.4	(12)	10.8%
Massigui	21	39,369	9,842	4,224	1,070	3,522	42.9%	11.1%		19.4%	0.1%	8.4%	8.5%	0.5	(4 3)	10.9%
N'Gara	3	17,157	4,289	-10,215	6,494	14,357	9.2%	7.8%		46.4%	0.8%	1.8%	21.1%	0.9	(20.4)	151.4%
N'Tobougou	8	12,242	3,061	161	909	3,962	22.4%	9.8%		17.1%	-	1.3%	26.8%	0.6	0.8	29.7%
Niantjila	13	22,051	5,513	2,720	423	1,942	16.7%	9.5%		17.0%	0.5%	20.1%	22.8%	0.2	(6 9)	7.7%
Sanankoro	5	5,716	1,429	773	76	224	12.5%	21.0%		29.3%	-	14.3%	-	0.5	1.1	5.3%
Senou	33	32,875	8,219	4,581	367	1,255	4.9%	14.1%		27.9%	0.3%	43.1%	3.7%	0.4	(06)	4.5%
Seribila	7	9,586	2,397	585	483	856	18.6%	16.7%		53.6%	1.1%	0.4%	-	0.5	3.5	20.1%
Togo	2	6,228	1,557	859	74	370	7.0%	5.9%		19.3%	-	18.1%	49.4%	0.6	2.3	4.8%
Toukoro	4	8,168	2,042	1,233	44	307	-	14.0%		12.4%	-	-	-	0.4	(0 5)	2.1%
Wacoro	5	19,992	4,998	-1,438	2,335	7,763	45.4%	6.4%	-	18.8%	0.9%	5.5%	12.6%	2.3	(0 9)	46.7%
Grand Total	179	338,677	176,687	79,296	17,477	47,660	21.2%	10.1%		31.9%	1.2%	6.7%	15.4%	0.6	(9,3)	20.3%

Two health centers seem to have data issues, because their unmet need numbers are negative. This would need further investigation with facility staff and the district health teams, but possible reasons are very high client volumes compared to the health center's population size, possibly serving many clients from other areas. This is supported by an impossibly high mCPR. Client volume data also should be validated, because the health center cannot allocate sufficient staff to serve this many FP clients, hence the large gap of 20 HCWs. Wacoro Health Center seems to present similar issues, though not as extreme. During HOT4FP implementation this would require several communications with the health centers and the district team to clarify these issues. For all other health centers, the results seem reasonable, but they also reveal substantial differences in FP outcome such as very low mCPR of less than 5%, little time spent on FP —20 minutes per day per provider, and greatly varying provision of contraceptive methods, FP counseling, and IEC.

The **Community+** tab in Figure 7 shows that in this case, service providers spend about half of their allocated time on clinical FP services; of the remaining allocated time, over one third is mostly for continuing education (five days per year per provider). Little time is spent on community engagement or supervision, only 5% each. Such a skewed picture arises when too little time is allocated to service provision and when the daily client volume is low.

FIGURE 7. SUMMARY OF COMMUNITY ENGAGEMENT, SUPERVISION, TRAINING, AND DRUG SUPPLY BY REGIONS AND DISTRICTS, FILTER BY FACILITY-TYPE AND

ORGANIZATION; CURRENT & POTENTIAL EFFORT

ALL AVERAGE PERCENTAGES ARE WEIGHTED BY CATCHMENT AREA POPULATION SIZE

			% of provider time spent on Clinical	% of provider time spent on Community & Support	% of provider time spent on Community	▶ % of Home Visits	% of provider time spent on	► % of CHW Supervision	▶ % of Health Center Supervision	% of provider time spent in	% of provider time spent on Drug	Community- based workers available (all	Community- based workers excess/	Total FTEs Excess/
Region / District / Name of Health Facility: 🚽	Communities	Population	tasks	tasks	Engagement	realized	Supervision	visits realized	visits realized	Training	Supply	cadres)	shortage	Shortage
E Koulikoro	179	338,677	50.4%	49.6%	5.4%	48.4%	5.1%	83.3%	100.0%	37.1%	2.0%	85.3	17.9	(93)
Dioila Cercle	179	338,677	50.4%	49.6%	5.4%	48.4%	5.1%	83.3%	100.0%	37.1%	2.0%	85.3	3 17.9	<mark>(9</mark> .3)
BAMANTOU	1	3,223	4.7%	95.3%	10.7%	28.5%	8.5%	83.3%	100.0%	65.8%	10.3%	1.0	0 (0,2)	0.3
Banco	14	29,023	46.1%	53.9%	8.3%	44.3%	8.5%	83.3%	100.0%	33.6%	3.4%	8.0	0 1.2	0.1
Baou Foulala	6	9,759	28.7%	71.3%	9.2%	56.7%	4.5%	83.3%	100.0%	52.4%	5.2%	4.0	0 1.0	0.5
Bole	3	6,325	27.9%	72.1%	10.0%	43.9%	7.3%	83.3%	100.0%	47.9%	6.8%	1.0	0.0	0.4
Degnekoro	9	15,660	46.8%	53.2%	6.0%	52.3%	3.0%	83.3%	100.0%	41.1%	3.1%	7.0) 1.4	1.3
Diogo	4	7,757	30.1%	69.9%	10.3%	47.4%	4.3%	83.3%	100.0%	50.3%	5.0%	4.0) 3.1	3.2
Dioila Central	22	43,861	49.6%	50.4%	3.4%	46.4%	3.1%	83.3%	100.0%	42.9%	1.1%	15.0	0 6.6	6.4
Dioila			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0	0.5	4.6
Falakono	1	8,573	21.3%	78.7%	7.0%	10.8%	4.1%	83.3%	100.0%	62.8%	4.8%	4.0) (11)	(1.7)
Fissaba	9	14,651	57.2%	42.8%	6.2%	56.7%	3.9%	83.3%	100.0%	31.8%	1.0%	1.0	0.0	0.4
Kle	3	7,907	20.5%	79.5%	14.9%	34.9%	5.4%	83.3%	100.0%	53.1%	6.2%	3.0) 1.2	1.2
Kola	2	5,360	43.0%	57.0%	7.0%	34.3%	5.4%	83.3%	100.0%	43.3%	1.4%	1.0	0.2	1.1
Maban	4	13,194	36.6%	63.4%	8.6%	28.1%	3.4%	83.3%	100.0%	48.2%	3.2%	5.0) (0 <mark>.</mark> 8)	(12)
Massigui	21	39,369	72.7%	27.3%	2.2%	49.2%	2.1%	83.3%	100.0%	23.0%	0.0%	3.0	0 (0,0)	(4,3)
N'Gara	3	17,157	96.3%	3.7%	0.0%	16.2%	0.1%	83.3%	100.0%	3.6%	0.0%	0.0) +	(20.4)
N'Tobougou	8	12,242	57.7%	42.3%	4.2%	60.0%	4.8%	83.3%	100.0%	31.3%	2.0%	8.0	2.9	0.8
Niantjila	13	22,051	52.6%	47.4%	3.4%	54.4%	7.7%	83.3%	100.0%	35.5%	0.7%	2.0) (24)	(6.9)
Sanankoro	5	5,716	21.9%	78.1%	11.2%	78.5%	1.5%	83.3%	100.0%	63.1%	2.3%	0.0) +	1.1
Senou	33	32,875	39.5%	60.5%	6.6%	90.7%	10.7%	83.3%	100.0%	42.2%	1.0%	1.0	0.1	(0 6)
Seribila	7	9,586	28.5%	71.5%	7.9%	65.8%	6.5%	83.3%	100.0%	54.3%	2.8%	8.0	3.4	3.5
Тодо	2	6,228	11.5%	88.5%	12.5%	29.6%	14.2%	83.3%	100.0%	55.9%	6.0%	4.0) 1.7	2.3
Toukoro	4	8,168	38.1%	61.9%	0.0%	44.8%	12.5%	83.3%	100.0%	49.5%	0.0%	1.0) (0 <mark>8</mark>)	(0 5)
Wacoro	5	19,992	88.6%	11.4%	1.1%	23.2%	0.9%	83.3%	100.0%	9.4%	0.0%	1.3	3 (0,2)	(0,9)
Grand Total	179	338,677	50.4%	49.6%	5.4%	48.4%	5.1%	83.3%	100.0%	37.1%	2.0%	85.3	17.9	(9.3)

Interpreting the evidence and next steps

While the lack of skilled midwives in 10 of the 23 health centers in Dioila districts is concerning, facilities seem to have sufficient staff to cope with the current FP client volume. Given the low volume in several facilities, staff should be able to see considerably more FP clients. The HRH situation in the district can be optimized by using HOT4FP in an iterative process requiring data validation and possibly adjustments to some of the data incorporated in the tool prior to roll out. Here are some of the next steps:

- Validate client volume and population data. The Mali team pulled data form the District Health Information System (DHIS2). In the two instances where a high client volume led to implausible results, these data should be verified with health facility and district staff. Any changes to the numbers should then be made in the HOT4FP files of these health centers before reimporting the data into the HOT4FP master.
- Validate service provider data. Besides ensuring an accurate head count of staff actually providing services excluding any staff permanently absent, it is important to correctly estimate the time different cadres have for service provision. In the case of Dioila, these times may have been underestimated for several cadres. The assumption that unpaid CHWs and other lay worker are available 40 hours a week may also need to be revisited.
- Assess how efficiently HCWs are employed to deliver essential FP services compared to national benchmarks such as the DHS and standards and for achieving FP goals.
- **Explore how increased task-sharing** can alleviate staff shortages in the next efficiency case. To illustrate the impact of task-sharing on HRH shortages, the assumption is that the observed FTE shortages are real.
- **Explore how service diversification** can alleviate staff shortages by expanding community-based service delivery in the third efficiency case.

If staff shortages persist despite increasing time allocations for FP, task-sharing, and service diversification, use FTE results (FTE Summary tab) and cost estimates (tab 7, Costs) provided by HOT4FP to advocate for the hiring (in a decentralized setting) or allocation (in a centralized setting) of additional HCWs.

2. Improving HRH Efficiency through Task-Sharing

Case goal: Increase task-sharing to address an HCW shortage and increase service utilization

Optimizing the health workforce through task-sharing is a four-step process when starting with data that are aggregated across multiple health facilities.³

- i. Use aggregated data to identify HCW cadres for tasksharing opportunities
- ii. Identify health centers with these cadres where task-sharing can be applied
- iii. Use the individual HOT4FP files for these health centers to implement task-sharing
- iv. Reimport all individual HOT4FP files to reaggregate data across all health centers

FIGURE 8. TOOL TABS USED IN THIS HRH EFFICIENCY CASE

DASHBOARD (comparison of HRH scenarios) 4.a TA-Facility FTE Summary / FTE Chart 2. FP Delivery 6. Task-sharing Start

When working with aggregated data from multiple health facilities, summary data for client volume, HCW numbers and task assignments are copied into the tool. This allows district health management teams to explore the HRH impact of task-sharing and service diversification on all health centers in the districts on the **DASHBOARD** tab. The data from individual health centers can only be viewed on the **FTE Summary and FTE Chart** and the other purple tabs but not changed in the district-level, master HOT4FP. Changes to client volume, staffing, and task assignments for individual health centers can only be made in their respective HOT4FP files, which then need to be reimported into a master HOT4FP. Note that the district-level summary results from the bottom line of the FTE Summary are close to the results on the DASHBOARD, but they are not the same. This happens because the tool assumes on the **DASHBOARD** that all health centers have an equal number of clients, the same number of HCWs, and identical task assignments when using summary data from multiple health facilities, which is not the case in reality. The bottom-line grand totals on the **FTE Summary** tab reflect the fact that each health facility is configured differently. Hence the differences between the numbers.

³ When working with facility-level data, only steps three and four are needed.

On the **DASHBOARD**, the user selects two scenarios that compare FTE results throughout HOT4FP. The two scenarios are a combination of service modalities and task-sharing options applied to either the current client volume or a potentially different volume. On most tabs current volume has green headers and potential volume has blue headers. The following user-scenarios I and 2 should be selected.

Clinical & Community/Support Activities: Current client load and initial task assignment - Baseline Scenario 1

Clinical & Community/Support Activities: Current client load - Task-sharing Scenario 2 (no modality change)

Figure 9, at right, shows the FTE results for the current client volume. As noted under the first HRH efficiency case, there is a gap of senior midwives and auxiliary nurse midwives in the district, but it is small for the aggregate data. The gap for physicians is much higher because they are only present in a few health centers. The chart also shows that community nurses and CHWs have additional time available and might be able to take on an additional client volume. Column AE on tab 4.a, TA-Facility identifies which clinical tasks take up most of providers' time; these task should be the priority for task-sharing as long as all cadres concerned are qualified to conduct these tasks as shown by the cell shading in a darker shaded light green (task is recommended), light green (with supervision only), or gray (task is not recommended) as designated on tab E, Task Sharing Guidelines.⁴ Implant insertions and prescribing oral contraceptives are the most time-consuming tasks and can be shared between all medical professionals including community midwives.

Instead of changing task assignments on tab **4.a TA-Facility**, these changes will be made in a second task-sharing scenario on tab **6, Task Sharing**. This allows the comparison of FTE results

FIGURE 9. FTE SUMMARY BY CADRE FOR DIOILA DISTRICT AT CURRENT PATIENT VOLUME (BASELINE)



before additional task-sharing (the baseline) and after more task-sharing (task-sharing scenario 2). The second task-sharing scenario will be applied to the current client volume, from tab **2, FP Delivery** (ensure that the service modality scenario 2 is displayed). Figure 10 shows the FTE impact of reducing the percent of the implant insertions handled by physicians and midwives (shaded



FIGURE I. TASK-SHARING CHANGES AND FTE IMPACT

⁴ Green tabs starting with a letter are hidden and should only be changed by the team assigned to configure HOT4PHC, because these changes should apply to all health centers and not to individual facilities only. A new HOT4PHC file will be created for each health center that incorporates configuration changes and data already entered by the end-user.

yellow), which reduced the gap from 10 to nine and three to zero respectively. Community midwives take on the additional volume of implant insertions by increasing their share from 29% to 51%, which reduces their FTE excess from six to four.

The FTE impact can also be seen on the **DASHBOARD** by selecting the following as the user scenario 2 and examining the second, blue chart shown in Figure 11.

Clinical & Community/Support Activities: Current client load - Task-sharing Scenario 2 (no modality change)

While working with aggregate district data shows the potential for task-sharing to reduce staffing gaps, the actual task-sharing must be performed in HOT4FPs of individual health facilities. The **FTE Summary** tab helps select the health centers that have the staff necessary for task-sharing. Six health centers – Banco, Dioila Central, Massigui, Niantjila, Senou, and Seribila – have physicians, midwives, and community midwives meeting these criteria. After making the individual changes, the updated HOT4FP files replace the older version in the folder from which all completed tools are imported into a master HOT4FP.

In addition to calculating FTE requirements, HOT4FP also estimates the costs for closing staffing gaps and implementing out-of-facility services as well as for community engagement and systems support activities. Salary, per diem, and transport costs are country-specific and customized on tab **G**, **Cost Data**. The actual costs for closing staffing gaps and incidental cost for travel and overnight stays are shown on tab **7**, **Costs**. This costing tab requires very little user input but for a few budget numbers. Section I of this tab shows funds needed for required FTEs under the current and potential client volume based on the 2 scenarios selected by the user on the **DASHBOARD**.

Existing vs. Required Staff (FTE) 7.0 15.9 10.1 11.0 17.1 3.0 51.0 35.0 7.0 2.0 1.0 100% 0.2 0.1 18.2 80% 1.9 60% 7.0 16.4 33.5 1.8 0.9 13.7 22.4 40% 13.5 15.9 32 8 20% 1.1 0% -20% -40% And the March March March thankold Physiolart Wedcal Specialist Comming Marine Metical Asistant Physician Asistant Professional Nurse Medical Doctor FTE available FTE required Excess Shortage

FIGURE 2. FTE SUMMARY BY CADRE FOR DIOILA DISTRICT AT CURRENT PATIENT VOLUME AND TASK-SHARING SCENARIO 2

It is unlikely that local or central government can fill all staffing gaps, which amounts to almost \$300,000, in the short run. A more realistic scenario is presented in sections 3 and 4 of tab **7**, **Costs**. The user enters funding available by source in Figure 12 and determines which cadres should be priority hires and how many. HOT4FP then show the user in section 4 how many additional staff can be hired within the existing budget envelop. This is not only calculated for salaries but also for per diem and transportation costs, which are shown in detail in section 2. In this example, the budget envelop for salaries is \$500,000. As shown in Figure 13, this would cover the existing staff and allow Dioila district to hire I medical doctor, 2 midwives, and 6 auxiliary nurse midwives. Where to allocate the staff would be determined based on the tab **FTE Summary**. In this example, per diem and travel costs face a major deficit. If no additional funds can be mobilized, community-based service delivery, community engagement, and systems support activities such as supervision will be negatively affected. Training will usually not suffer, because it is often donor-funded.

	Fund	s Required (US\$)		Funding S	ource	Funding Deficit/ Surplus (US\$)					
	FTE available	Scen. 1	Scen. 2	Government	Donors	NGOs	TOTAL	FTE available	Scen. 1	Scen. 2		
Salaries, Stipends and Other Types of Financial Support	\$448,212	\$775,344	\$719,389	\$500,000			\$500,000	\$51,788	(\$275,344)	(\$219,389)		
Per Diem	\$16,455	\$16,455	\$20,082	\$5,000	\$5,000		\$10,000	(\$6,455)	(\$6,455)	(\$10,082)		
Travel Costs/Allowances	\$11,807	\$11,807	\$15,732	\$2,000	\$5,000		\$7,000	(\$4,807)	(\$4,807)	(\$8,732)		
Equipment and suppies	\$30,000	\$30,000	\$30,000		\$30,000		\$30,000	\$0	\$0	\$0		
TOTAL	\$476,474	\$803,606	\$755,202	\$507,000	\$40,000	-	\$547,000	\$70,526	(\$256,606)	(\$208,202)		

FIGURE 12. BUDGET ENVELOP AND DEFICIT OR SURPLUS

FIGURE 3. USE OF AVAILABLE BUDGET FOR SALARIES TO COVER ADDITIONAL HIRES

	No. of Staff Hired	Salary per Staff	Total Cost	Salary Cost Funding Deficit/ Surplus before and after additional hires
Salary Cost Funding De	ficit/ Surplus before add	itional hires		\$51,788
Medical Doctor	1	\$28,093	\$28,093	\$23,695
Midwife	2	\$4,743	\$9,487	\$14,208
Auxiliary Nurse Midwife	6	\$2,339	\$14,036	\$172

3. Improving HRH Efficiency by Differentiating Delivery Service

Case goal: Offer more community-based services to address HCW gaps & increase service utilization

Instead of or in addition to task-sharing, service diversification (the way or modalities through which FP services are delivered) is another effective approach to optimizing the health workforce. HOT4FP includes four FP service delivery modalities: facility-based, community-based, mobile outreach, and collaboration with the private sector. The last two are hidden by the user on the **Start** tab because data are not reported separately for community-based and mobile outreach services in Mali, both types of service delivery are included in the tool under community-based services because they make up the largest proportion according to the Ministry of Health. Data were not available from private clinics in the districts. Service

FIGURE 4. TOOL TABS USED IN THIS HRH EFFICIENCY CASE

2. FP Delivery
FTE Summary / FTE Chart
6. Task-sharing
Start
DASHBOARD (comparison of HRH scenarios)

diversification is a four-step process when starting with data that are aggregated across multiple health facilities.⁵

- i. Use aggregated data to identify FP tasks (activities) for service diversification
- ii. Identify health centers with community-based providers to differentiate services
- iii. Use the individual HOT4FP files for these health centers to implement service diversification
- iv. Reimport all individual HOT4FP files to reaggregate data across all HC

The baseline scenario is the same as for the task-sharing scenario presented in section 2. To illustrate the HRH impact of FP service delivery diversification, the third modality mix scenario with a client volume identical to the baseline will be used. This allows for the comparison of HCW requirements and excess or gaps between the:

- Baseline (current client volume scenario I and initial task assignment scenario I)
- Task-sharing (current client volume scenario I and task sharing scenario 2)
- FP delivery diversification (modality mix scenario 2 and task sharing scenario 3)

To compare the baseline scenarios I with scenarios 3 the user selects the following on the **DASHBOARD** tab:

Clinical & Community/Support Activities: Current client load and initial task assignment - Baseline Scenario 1

Clinical & Community/Support Activities: Potential client load - Modality Mix 2 & Task-sharing Scenario 3

Figure 15, copied from tab **2**, **FP Delivery**, shows that currently 36% of all implants are provided in communities. Assuming that CHWs delivering community-based services are qualified – with additional training, supervision, and adjustments to job descriptions – to also cover implant insertions, the percent allocation between facility-based and community-based services is changed to 44% for facilities and 56% for communities under Modalities #2. Starting with tasks that take up most of HCWs' time per column AB have the greatest impact on staffing needs.

⁵ When working with facility-level data, only steps three and four are needed.

FIGURE 5. SERVICE DIFFERENTIATION UNDER FP SERVICE MODALITIES #2

Please select an option for "Potential Client Lo	oad"	Potential Increase in Number of FP Clients*						REFER	ENCE V	ALUES		20.6% mCPR at current clie			client	
Potential client load option not selected	0	Percent of postpart insertion (to simula	tum women v ite, check be	vith IUD low)	25.0%	▲ ▼	Total no	o. of pos	tpartum	women (DHIS2)	0	20.1%		mCPR at load	potentia	l client
1. Current client load + population & modern contraceptive prevalence growth	0	Years to project	potential cl	ient load	1	▲ ▼		Un	met nee	d (DHS)	25.7%	18.4%		National r	nCPR (la	ast DHS)
2. Benchmark Client Load based on DHS data applied to catchment pop.	0	Projected Annua	I Populatio	n Growth	3.0%	_		Modality mix description and user-defined values								
3. DHS Benchmark + population and modern contraceptive prevalence growth	0	Projected annual increase in s modern	Slow	(0.5%	-						Potential	l Modali	tv Mix #2		
4. DHS Benchmark + Unmet Need	\circ	contraceptive	Accelerate	ed 🤇	2.0%									,		
5. User-Defined Potential Client Load (enter or edit below)	۲	prevalence (select one option)	User-Define	d 🤇) 1.0%	▲ ▼ 5		Sho	ort Name:		СНМ	/s trained	d in imp	lant inser	ion	
Copy values from selected option 1-4 to 5, user-defined	d potential client	Estimate current L	ARC remova	numbers						Implant i	insertion ta	ikes up m	ost of hea	alth workers	s' time. C	HWs
load for manual editing		Simulate 25% post	partum IUD in	sertion				Des	scription:	seem un	derutilized	and can,	with app	ropriate tra	ning and	
		Option selected:								supervis of clients	ion insert i s who seled	mplants. A	Assuming thod.	that CHW	s can sei	rve 20%
	Current Client	5. User-Defined Potential Client	Actu	al Modalii	ty Mix ba Wor	ased on C kload	urrent Clii	nical	0 - 41: -14	Potent	ial Modalit Client L	ty Mix #2: 5. User-Defined Potential Load (enter or edit below)				A - 41-14-1
FP Activities	Load	Load (enter or	% Alloc	ation by N	lodality	Client	No. by Mo	dality	as % of	% Allo	cation by I	Modality	Client	No. by Mo	odality	as % of
		edit below)	Health Center	Community Level	Mobile Outreach	Health Center	Community Level	Mobile Outreach	total time for all providers	Health Center	Community Level	Mobile Outreach	Health Center	Community Level	Mobile Outreach	total time for all providers
Clinical Tasks									-	20	2					
Combined oral contraceptives (COC)	2,244	2,244	54%	46%		1,201	1,043		4%	54%	46%		1,201	1,043		4%
Progestin-only oral contraceptives (POP)	7,844	7,844	72%	28%		5,676	2,168		13%	72%	28%		5,676	2,168		12%
Condoms, male	4,282	4,282	78%	22%		3,348	934		1%	78%	22%		3,348	934		1%
Condoms, female	135	135	99%	1%		133	2		0%	99%	1%		133	2		0%
Injectable contraceptives (IM)	4,834	4,834	66%	34%		3,172	1,662		8%	66%	34%		3,184	1,650		7%
Fertility Awareness Methods	2	2	100%	0%		2	0		0%	100%	0%		2	0		0%
LAM	1,938	1,938	79%	21%		1,533	405		2%	79%	21%		1,533	405		2%
Implant Insertion	13,221	13,221	64%	36%		8,456	4,765		22%	44%	56%		5,817	7,404		22%
Implant Removal	1,983	1,983	100%	0%		1,983	0		4%	100%	0%		1,983	0		4%
IUD Insertion	483	483	93%	7%		448	35		1%	93%	7%		448	35		1%
IUD Removal	104	104	93%	7%		97	7		0%	95%	5%		98	5		0%
Tubal Ligation	42	42	100%	0%		42	0		0%	100%	0%		42	0		0%
Other FP-related Tasks																
Counseling (New Clients)	3,204	3,204	100%	0%		3,204	0		1%	100%	0%		3,204	0		1%
FP IEC	7,344	7,344	100%	0%		7,344	0		1%	100%	0%		7,344	0		1%
TOTAL	47,660	47,660				36,639	11,021		57%				34,014	13,646		54%

Next, for implant insertions where a client volume of about 2,600 was shifted from facility-based to community-based service delivery, these tasks need to be assigned from community midwives to CHWs under scenario 3 on tab **6**, **Task-sharing**, as shown in Figure 16. CHWs are assigned 23% and community midwives 60%. This results in FTEs requirements remaining the same for community midwives, but the FTE excess for CHWs decreases from 18 to 11. The changes in the utilization of these cadres are displayed as FTE excess or shortage comparison between the two scenarios in the top rows of Figure 16.

Community Level Show color code for Task-sharing	Current Client	Potential Client Load Modality Mix	Activity as % of total time for all		СНЖ		Comm	nunity M	lidwife	Activity as % of total time	
		#1	S	Baseline		Scen 3	Baseline		Scen 3	providers	
FTE Excess/ Shortage -	Current	Client Load			18 <mark>.2</mark>			5. <mark>9</mark>			
Clinical Tasks	Potential (Client Load	58%		11 <mark>.1</mark>			5.9		58%	
Implant Insertion	4,765	7,404	24%	-	-	23%	83%	83%	60%	24%	



Figure 17 from the **DASHBOARD** shows other effects of service diversification on the health workforce. Because there are fewer implants being inserted in the facility, the gap of physicians, midwives, professional nurses, and auxiliary nurse midwives is slightly reduced. However, it would not be unreasonable to expect overall service utilization to increase including facility-based services when community-based services are increased. Instead of keeping client volume the same for all scenarios, an increase could have been applied by the user.

While working with aggregate district data shows the potential for FP service diversification to reduce staffing gaps and increase service utilization, the actual shift between service modalities must be performed in HOT4FPs of individual health facilities. The **FTE Summary** tab helps select the health centers that have the staff necessary for diversification. Only 10 of the 23 health centers in Dioila district have CHWs and community midwives, without whom health centers cannot effectively deliver community-based services. After making the individual changes, the updated HOT4FP files replace the older version in the target folder from which all completed tools are imported into a master HOT4FP.

FIGURE 6. FTE SUMMARY BY CADRE FOR DIOLLA DISTRICT, TASK-SHARING SCENARIO 3



While the HRH efficiency cases of task-sharing and service diversification were presented separately to demonstrate the effect on staffing for each change, in practice they may be combined. The combined HRH impact can be explored in Figure 18 using HOT4FP by making all changes in service modalities scenario #2 on tab 2, FP Delivery and task-sharing scenario 2 on tab 6, Task-sharing. These changes can be applied to an increased client volume on tab 2, FP Delivery. At minimum, the volume should be adjusted to account for annual population and mCPR growth by checking the second radio button from the top, because usually service data are from a previous year or older. An annual increase of mCPR can be specified by the user in the blue table to the right of the radio buttons and added to population growth. The sixth button lets the user change the volume for each activity individually. The FTE results of these simultaneous changes, which add another 6,500 visits annually, are shown in Figure 18. The additional visits require slightly more FTEs for physicians, midwives, professional nurses, auxiliary nurse midwives, and nursing aids. The increased client volume results in a 2% mCPR increase from 20.6% to 22.6% in the district

FP SERVICE DIVERSIFICATION IN SCENARIO 2 Existing vs. Required Staff (FTE) 7.0 2.0 7.0 15.9 10.1 17.1 3.0 51.0 35.0 1.0 100% 0.1 0.1 17.2 0.1 17.2 0.1

FIGURE 18. FTE RESULTS BY COMBINING TASK-SHARING AND



HOT4FP versions for these HRH efficiency cases can be found at:

https://hrh2030program.org/resources/. These tools present additional analyses beyond what is described in this document.

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HRH2030 strives to build the accessible, available, acceptable, and high-quality health workforce needed to improve health outcomes.



MRH2030Program

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251 18 Street S, Arlington, VA 22202 | Phone: (202) 955-3300 | Fax: (202) 955-3400 | Email: info@HRH2030Program.org