

Examining caesarean delivery rate variation at Ugandan hospitals using Robson’s classification system

CRADLING STUDY UGANDA

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Background and Objectives

Few studies in sub-Saharan Africa (SSA) have compared caesarean delivery (CD) rates across multiple health facilities. We sought to compare CD rates across referral-level private and public hospitals in Uganda, classify births using the Robson Ten-Group Classification system (TGCS) (Figure 1) to identify groups contributing most to overall CD rates and examine variation in CD rates within the TGCS and examine variation in CD rates within the TGCS.



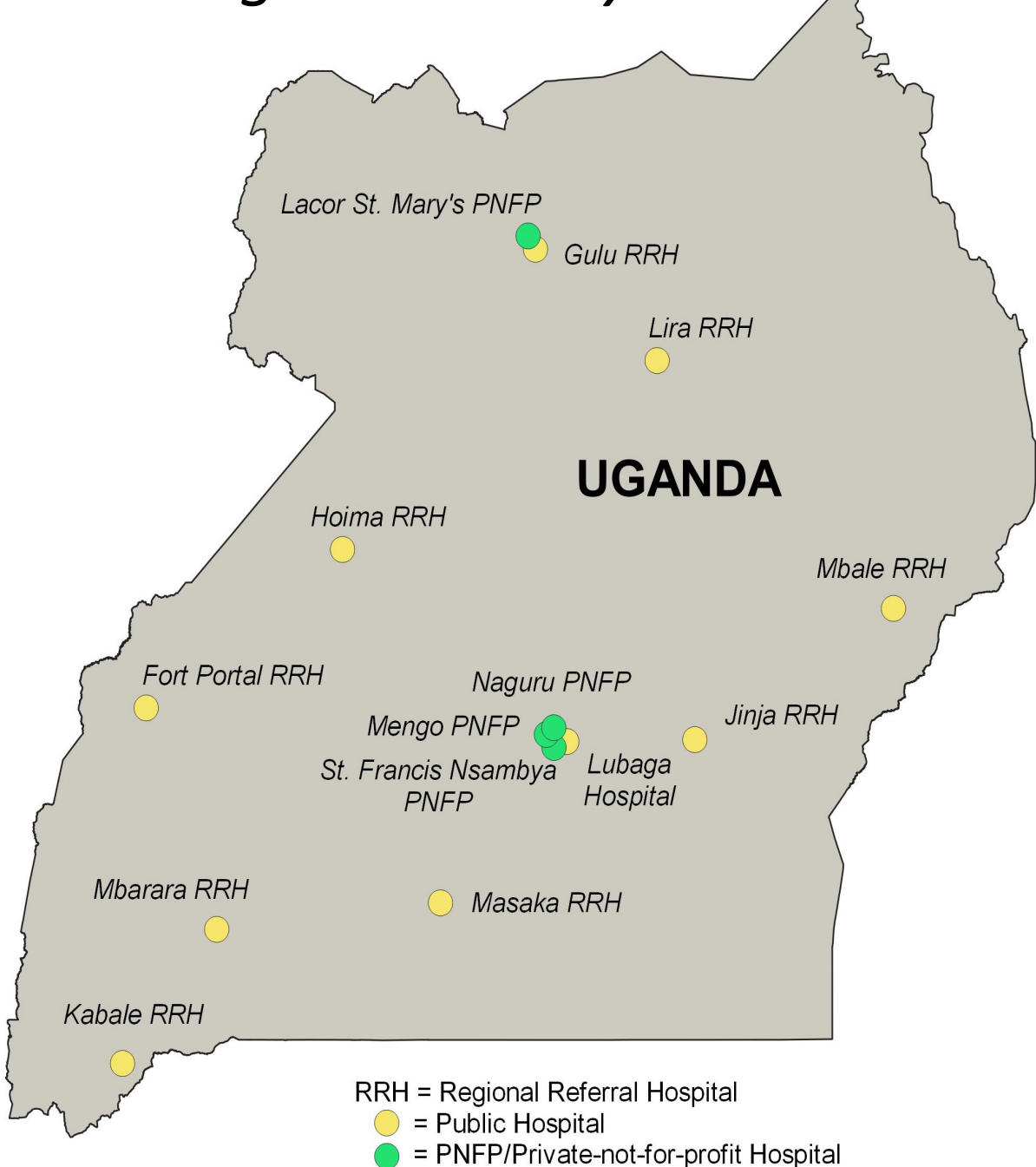
Figure 1: Ten Group Classification System

Methods

We reviewed a random sample of all births occurring at 10 regional referral hospitals (RRHs) and 4 large private non-for-profit hospitals (PNFPs) across Uganda during May 2021. (Figure 1; labelled A-L in results)

Data extraction included parity, gestational age, prior CD, fetal presentation, number of gestations and labor status at the time of delivery. Our main outcome measures included overall CD rate, size of TGCS obstetric groups, CD rate within groups. We used the chi-squared test to assess if a) overall CD rates varied across hospitals and b) rates varied across hospitals within the TGCS groups contributing most to CD rates.

Figure 2: Study Sites



Results

Data was extracted on 3,868 births. The overall CD rate was 38% and varied significantly across facilities ranging from 19% to 60% (p<0.001) (Figure 3).

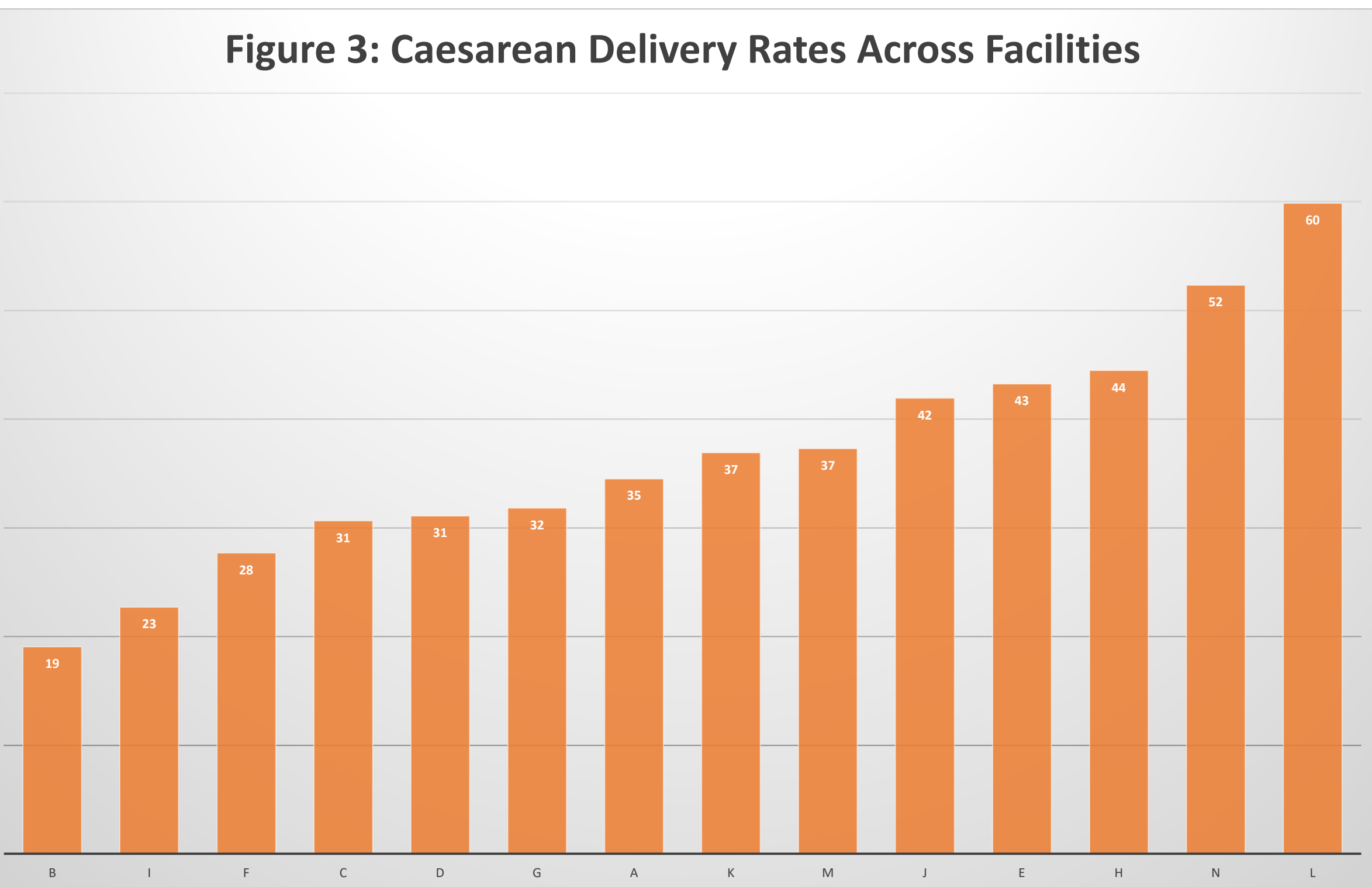


Figure 3: Caesarean Delivery Rates Across Facilities

The largest obstetric groups were Groups 1, 3 and 5 accounting for 24%, 39% and 9%, respectively of the cohort. CD rates were 32%, 22% and 85%, in groups 1, 3 and 5 respectively. Groups 1, 3 and 5 accounted for 66% of all CDs (Table 1 and Figure 4)

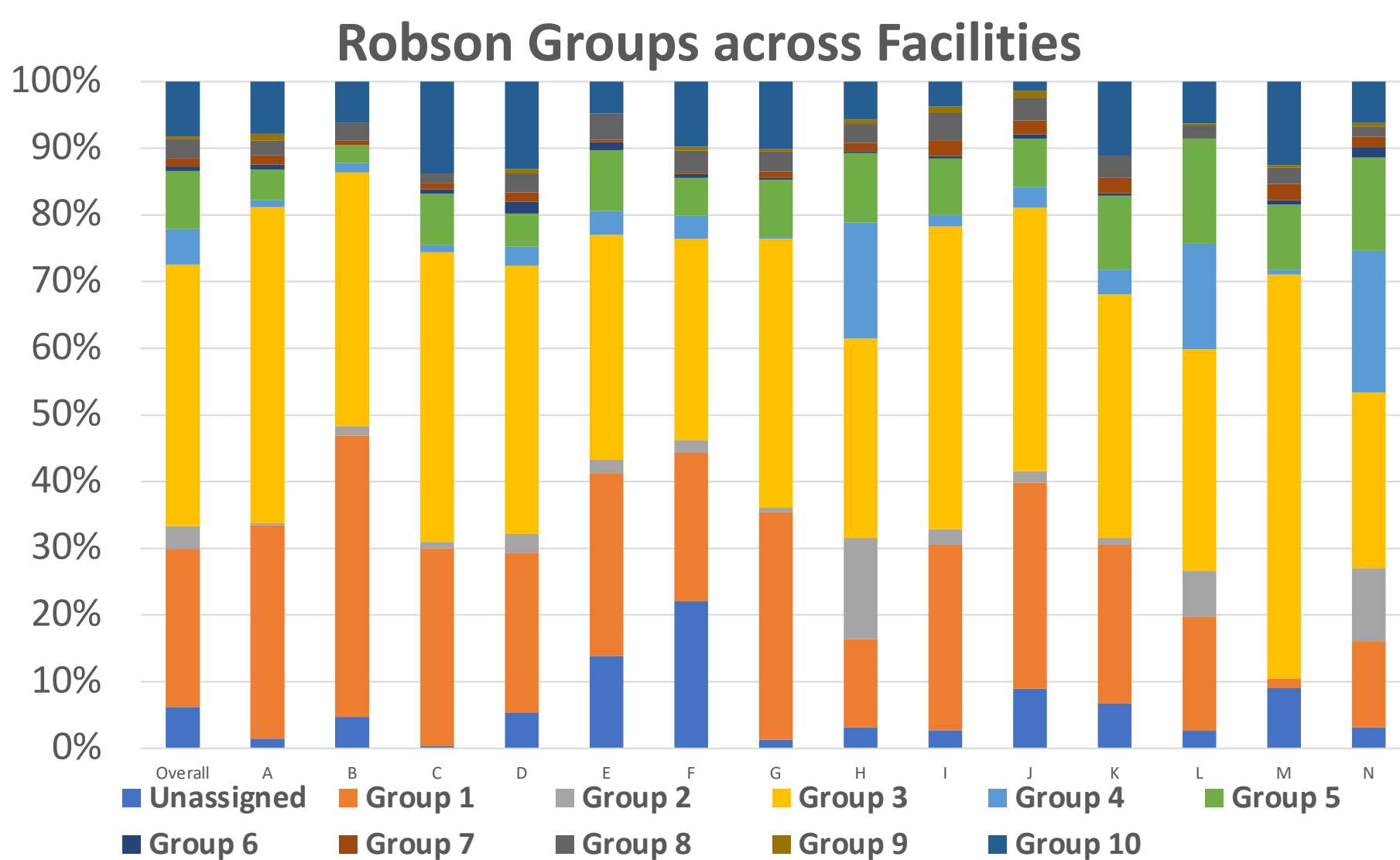


Figure 4: Proportion of women in each Robson groups across facilities

Table 1	Group 1	Group 3	Group 5
Robson group size	24%	39%	8.7%
CD % within Robson group	32%	22%	85%
Contribution of Robson group to overall CD rate	21%	24%	20%

CD rates within the TGCS varied significantly across facilities in all groups, ranging from 0-52%, in group 1(p<0.01), 11%-36% in group 3 (p<0.01) and and 57-100% in group 5 (p=0.03). (Figure 5)

	Robson 1	Robson 3	Robson 5
Median CD rate	30.80%	22.40%	84.70%
A	3.6	7.7	-0.1
B	-9.8	-11.7	-9.7
C	4.4	-6.1	-6.4
D	-2.9	-4.9	-27.6
E	8.3	4.7	-6.4
F	-1.2	-2.6	4.2
G	-4.8	-0.4	-3.9
H	4.9	-10.8	3.2
I	-14.9	-10.5	-8.7
J	18.1	5.4	1.0
K	-6.9	0.5	0.1
L	23.0	12.3	11.1
M	-30.8	5.8	1.0
N	1.2	3.1	11.6

Figure 5: Deviation from median delivery rate within Robson Groups 1, 3 and 5. Red indicates higher caesarean rates and green lower caesarean rates

Conclusions

Our findings highlight variable use of CD across facilities of comparable levels in Uganda, particularly among low-risk women (groups 1 and 3).

Consistent with other studies on the TGCS, groups 1 and 5 are prominent contributors to overall CD rates. However, CD rates and the contribution to CD from group 3 are higher in this cohort compared to prior reports from sub-Saharan Africa.

Further research is needed to determine drivers of variation in CD use across facilities in sub-Saharan Africa , especially among low-risk women.