

Article title: Pathways to Universal Health Coverage: A Qualitative Comparative Analysis of Effective Development Cooperation Principles in Fragile and Conflict-Affected States

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Supplementary file 2. Supplementary Analysis

This analysis was done using under-five mortality rate relative change (U5MRC) 2016-2022, which was calculated based on the formula below:

$$U5MRC = \frac{U5MR_{2016} - U5MR_{2022}}{U5MR_{2016}} * 100$$

Table S2.1: Complete data set (uncalibrated)

Country	align	Partners coordinate	National coordination	budget	national M&E	joint TA	U5MRC
1. Afghanistan	3	3	3	2	3	2	17.81
2. Burundi	4	4	3	4	3	3	21.09
3. Chad	4	3	2	3	4	4	17.68
4. Comoros	5	4	4	4	3	3	18.44
5. DRC	5	5	4	5	4	3	18.18
6. Eritrea	5	5	5	5	5	3	18.49
7. Ethiopia	4	4	5	4	5	4	22.87
8. Haiti	3	2	2	2	2	2	16.67
9. Mali	4	4	5	4	5	5	16.25
10. Mozambique	4	3	3	3	2	3	16.62
11. Niger	4	4	4	4	3	4	6.53
12. Nigeria	4	4	4	4	4	4	13.90
13. Somalia	3	2	1	2	2	2	17.43
14. South Sudan	3	3	4	4	4	2	0.00
15. Syrian Arab Republic	4	4	3	3	4	4	38.33
16. Yemen	3	3	1	2	1	4	13.78
17. Zimbabwe	4	4	3	3	3	5	17.04

For the U5MRC threshold we calculated the mean (found to be 17.12), which we used then as the cut-off point.

Table S2.2: Necessity and Sufficiency Analysis

Necessity Analysis – positive outcome

```
QCAfit(data.cr[,2:7], data.cr$U5MRC.cr, necessity = TRUE, neg.out = FALSE)
```

##	Cons.Nec	Cov.Nec	RoN*
## Align.cr	0.333	1.000	1.000
## partners coordinate.cr	0.222	1.000	1.000
## budget.cr	0.222	1.000	1.000
## national M&E.cr	0.222	0.667	0.933
## joint TA.cr	0.222	1.000	1.000
## national coordination.cr	0.222	0.667	0.933
## ~Align.cr	0.667	0.429	0.273
## ~partners coordinate.cr	0.778	0.467	0.200
## ~budget.cr	0.778	0.467	0.200
## ~national M&E.cr	0.778	0.500	0.300
## ~joint TA.cr	0.778	0.467	0.200
## ~nationalcoordination.cr	0.778	0.500	0.300

Comment:

No necessary condition

*RoN: Relevance of Necessity (measure of necessity trivialness if <.5)

Necessity Analysis – Negative outcome

```
QCAfit(data.cr[,2:7], data.cr$U5MRC.cr, necessity = TRUE, neg.out = TRUE)
```

##	Cons.Nec	Cov.Nec	RoN
## Align.cr	0.000	0.000	0.824
## partners coordinate.cr	0.000	0.000	0.882
## budget.cr	0.000	0.000	0.882
## national M&E.cr	0.125	0.333	0.875
## joint TA.cr	0.000	0.000	0.882
## national coordination.cr	0.125	0.333	0.875
## ~Align.cr	1.000	0.571	0.333
## ~partners coordinate.cr	1.000	0.533	0.222
## ~budget.cr	1.000	0.533	0.222
## ~national M&E.cr	0.875	0.500	0.300
## ~joint TA.cr	1.000	0.533	0.222
## ~national coordination.cr	0.875	0.500	0.300

Comment:

The negatives for Align, partners coordinate, budget and Joint TA are **NECESSARY** conditions to not achieve a good change in U5R when all conditions are set at 5 (strongly agree) within this dataset. This covers 53-57% of the cases that didn't achieve change.

Sufficiency Analysis – positive outcome

```
QCAfit(data.cr[,2:7], data.cr$U5MRC.cr, necessity = FALSE, neg.out = FALSE)
```

##	Cons.Suf	Cov.Suf	PRI**
## Align.cr	1.000	0.333	1.000
## partners coordinate.cr	1.000	0.222	1.000
## budget.cr	1.000	0.222	1.000
## national M&E.cr	0.667	0.222	0.667
## joint TA.cr	1.000	0.222	1.000
## national coordination.cr	0.667	0.222	0.667
## ~Align.cr	0.429	0.667	0.429
## ~partners coordinate.cr	0.467	0.778	0.467
## ~budget.cr	0.467	0.778	0.467
## ~national M&E.cr	0.500	0.778	0.500
## ~joint TA.cr	0.467	0.778	0.467
## ~national coordination.cr	0.500	0.778	0.500

Comment:

Align, partners coordinate, budget and Joint Technical Assistance are sufficient to achieve good U5MR change or at least can be part of an expression that is sufficient. 22-33% of the change can be explained by these conditions within the successful cases.

**PRI: Proportional Reduction in inconsistency (condition with PRI<.5 are not sufficient even if consistency threshold is met).

Sufficiency Analysis – Negative outcome

```
QCAfit(data.cr[,2:7], data.cr$U5MRC.cr, necessity = FALSE, neg.out = TRUE)
```

##	Cons.Suf	Cov.Suf	PRI
## Align.cr	0.000	0.000	0.000
## partners coordinate.cr	0.000	0.000	0.000
## budget.cr	0.000	0.000	0.000
## national M&E.cr	0.333	0.125	0.333
## joint TA.cr	0.000	0.000	0.000
## national coordination.cr	0.333	0.125	0.333
## ~Align.cr	0.571	1.000	0.571
## ~partners coordinate.cr	0.533	1.000	0.533
## ~budget.cr	0.533	1.000	0.533
## ~national M&E.cr	0.500	0.875	0.500
## ~joint TA.cr	0.533	1.000	0.533
## ~national coordination.cr	0.500	0.875	0.500

Comment:

No sufficient condition

Table S2.3: Truth table

```
TT <- truthTable(data.cr, outcome = U5MRC.cr, conditions = c("Align.cr", "partners coordinate.cr", "budget.cr", "national M&E.cr", "joint TA.cr", "national coordination.cr"),
  show.cases = TRUE, sort.by = "incl, n")
TT
## OUT: output value
## n: number of cases in configuration
## incl: sufficiency inclusion score
## PRI: proportional reduction in inconsistency
##
## Align.cr partners coordinate.cr budget.cr nationalM&E.cr joint TA.cr
## 3 0 0 0 0 1
## 8 0 0 0 1 1
## 33 1 0 0 0 0
## 57 1 1 1 0 0
## 62 1 1 1 1 0
## 1 0 0 0 0 0
## 6 0 0 0 1 0
## national coordination.cr OUT n incl PRI cases
## 3 0 1 1 1.000 1.000 5
## 8 1 1 1 1.000 1.000 15
## 33 0 1 1 1.000 1.000 6
## 57 0 1 1 1.000 1.000 13
## 62 1 1 1 1.000 1.000 4
## 1 0 0 11 0.364 0.364 1,2,3,7,8,9,10,11,14,16,17
## 6 1 0 1 0.000 0.000 12
```

Table S2.4: Parsimonious Solution

```
sol.pars <- minimize(TT, include = "?", details = TRUE, use.tilde = TRUE)
sol.pars
##
## M1: Align.cr + joint TA.cr -> U5MRC.cr
##
## inclS PRI covS covU cases
## -----
## 1 Align.cr 1.000 1.000 0.333 0.333 Comoros, DRC, Eritrea
## 2 joint TA.cr 1.000 1.000 0.222 0.222 Mali, Zimbabwe
## -----
## M1 1.000 1.000 0.556
```

Comment:

The coverage measures for sufficiency and final model pathway towards U5MR relative change were slightly higher than those for the UHC outcome, yet both remain to have moderate coverage. The separately low coverage of each of the sufficient conditions increases to their coverage sum in the model, indicating that there are no cross-over areas between them (evident in truth tables).