

Assessing Inequalities in Reproductive, Maternal, New-born and Child Health Coverage Indicators in Ghana - Analysis of Nationwide Complex Surveys, 2003-2018

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BACKGROUND:

- ◆ Significant investments have been made towards improving reproductive, maternal, new-born and child health interventions worldwide over the since the year 2000. [1-3]
- ◆ Ghana is one of the countries where such efforts and investments have been made with health care expenditure per capita increasing from 17 USD in 2000 to 75 USD in 2019 [4]
- ◆ These together with others are some of the aggressive efforts made by the country to provide accessible quality health care for all persons irrespective of their socio-demographic and socio-economic background
- ◆ A lot on studies has assess factors associated with specific RMNCHN in Ghana [5,6]
- ◆ However, very few studies assess the RMNCHN indicators trend with composite coverage index (CCI),

OBJECTIVE: Assess the overall coverage of RMNCH indicators using the composite coverage index (CCI) and investigate the trend of the CCI over the period 2003 to 2018 using six nationwide surveys, 3 each from the Demographic Health Survey (DHS) and the Multiple Indicator Cluster Survey (MICS).

METHODS:

- ◇ Data source: 6 Cross-sectional surveys, 3 from DHS & 3 from MICS
- ◇ CCI computed from 8 RMNCH indicators (including Family planning (FP), 4+ ANC attendance (ANC4), skill birth attendants (SBA), BCG, Penta-3 and MR vaccinations, care seeking for diarrhea (ORS) and pneumonia (CPNM))
- ◇ Subgroup of inequality assessment included, 10 regions, rural/urban residency, 5 household wealth quintiles, 4 age groups, & 3 levels of education
- ◇ Inequality assessment- $CCI = \frac{1}{4} \left(FP + \frac{SBA + ANC4}{2} + \frac{BCG + 2 * (Penta3) + MR1}{4} + \frac{ORS + CPNM}{2} \right)$ ty included simple difference (SD), simple ratio (SR), mean absolute difference from the mean (MADM) and the weighted mean absolute difference from the mean (wMADM)

RESULTS:

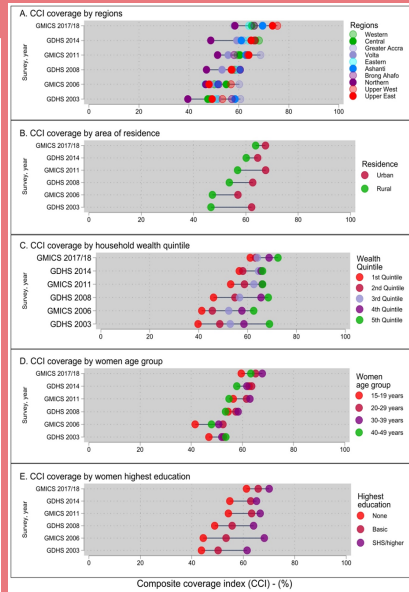
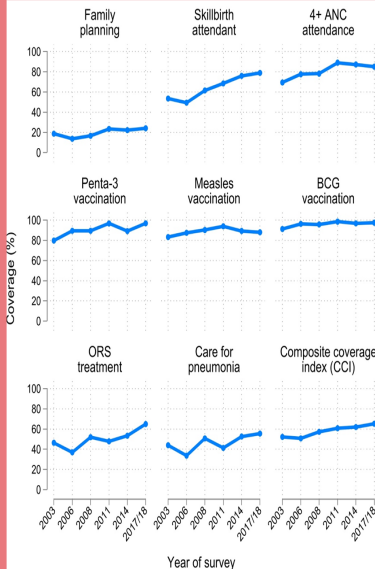


Figure 1: Trend of the coverages of RMNCH coverage indicators in Ghana

Figure 2: Equity plots of the composite coverage index of RMNCH indicators by region, residence, wealth quintile, age and highest education.

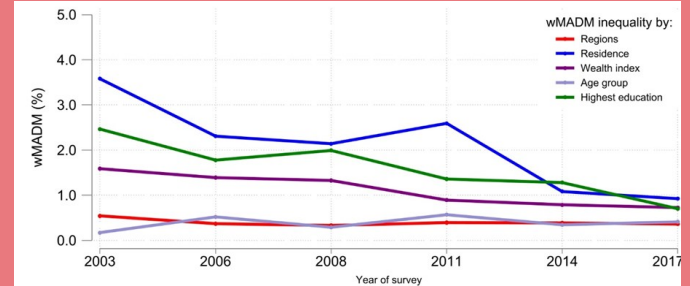


Figure 3: Trend of the wMADM inequality in CCI from 2003 to 2018

Table 1: Trend of Inequalities in composite coverage index across key subgroups in Ghana

Survey year	weighted mean absolute deviate from the mean (wMADM)											
	CCI (SE)	Est.	% Red.	Residence	Est.	% Red.	Wealth index	Est.	% Red.	Highest education	Est.	% Red.
2003	52.3 (1.39)	0.54	ref.	3.58	ref.	1.59	ref.	0.17	ref.	2.46	ref.	
2006	51.6 (1.28)	0.37	31.5	2.31	35.5	1.39	12.6	0.52	-205.9	1.78	27.6	
2008	57.1 (1.05)	0.33	38.9	2.14	40.2	1.33	16.4	0.29	-70.6	1.99	19.1	
2011	60.8 (0.95)	0.39	27.8	2.59	27.7	0.89	44.0	0.57	-235.3	1.36	44.7	
2014	62.1 (0.88)	0.39	27.8	1.09	69.6	0.79	50.3	0.35	-105.9	1.28	48.0	
2017/18	65.8 (0.89)	0.36	33.3	0.93	74.0	0.73	54.1	0.41	-141.2	0.70	71.5	

CCI: Composite coverage index. Est. Inequality estimate. % Red: Percentage reduction in inequality estimate in current relative to in inequality estimate in 2003

KEY FINDINGS:

- ◆ There was an overall increasing trend in CCI from 52.3% in 2003 to 65.8% in 2018.
- ◆ The wMADM inequality decreased from 2003 to 2018 by:
 - ⇒74.0% from 3.58% to 0.93% across of area of residence,
 - ⇒33.3% from 0.54% to 0.36% across of region
 - ⇒54.1% from 1.59% to 0.73% across household wealth index
 - ⇒71.5% from 2.46% to 0.70% across highest education of women.
- ◆ The inequalities across age groups remain low and consistent over the years.
- ◆ Similar findings were observed for the SD, SR and MADM inequality measures.

CONCLUSION:

CCI of RMNCH indicators in Ghana is increasing over the years accompanied by reduction in Inequalities. Ghana has over the period, developed several strategies for the various components of RMNCAHN which are being implemented. Hence, the country has improved significantly the performance of many of the RMNCAHN indicators, but the values are still high. This study reiterates the need for Strategic Plan that aimed at ensuring increased and equitable access to high quality RMNCAHN services for all by 2030.

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Mapping the levels of inequalities in vaccination coverage within regions in Ghana: Routine health facility data analysis from 2017 to 2021

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BACKGROUND:

- Childhood immunization is a key intervention to promote the health, well-being, and survival of children
- For over two centuries, vaccines have safely reduced the scourge of diseases like polio, measles, and smallpox, helping children grow up healthy and happy^[1]
- Vaccinations is a major strategy help attain the Sustainable Development Goal 3, which aims to ensure healthy lives and promote well-being for all
- Despite significant success in many aspects of immunization programs, geographic inequalities in childhood immunization remain a challenge^[2,3].
- Especially those who live in inner cities and dense parts of urban areas and some in hard-to-reach areas
- There is the need to measuring and map the inequalities in vaccination coverages across districts within each of the 16 regions in Ghana from 2017 to 2021.

OBJECTIVE: Assess and map the inequalities in vaccination coverages across districts within each of the 16 regions in Ghana from 2017 to 2021 using routine health facility data from the district health information management system 2 (dhis2) called "DHIMS"

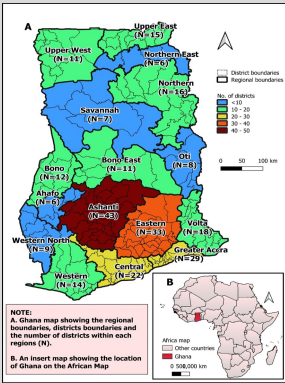


Figure 1: Map of Ghana showing the region and number of districts per region.

METHODS:

- Analysis of routine health data from the district health information system using annual district level data from January 2017 to December 2021.
- Focused on the coverages of 4 vaccines namely, BCG, Penta-1, Penta-3 and measles-rubella-1 among infants.
- Yearly coverage per vaccine was estimated as the number of vaccination expressed as the percentage of 2021 population and housing census based projected children under-1 years within the district for each year.
- Estimated coverage beyond 120% was capped at 120% to provided a more reasonable inequality estimates.
- Inequalities across district within each of the new 16 regions of Ghana was estimated using the simple difference (SD), simple ratio (SR) and the median absolute deviate from the median (MADM) approach.

RESULTS:

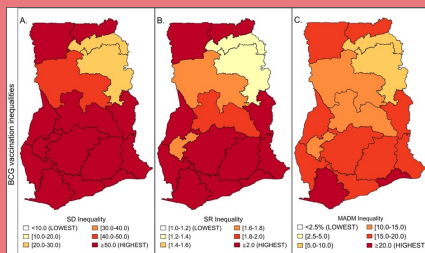


Figure 2: Level of inequalities in BCG vaccination coverage by regions during the period 2017-2021 in Ghana

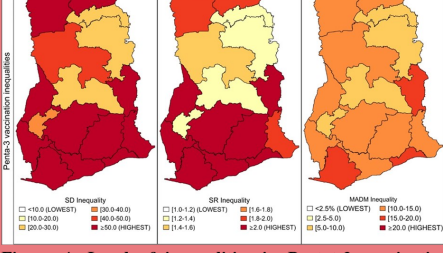


Figure 4: Level of inequalities in Pentat-3 vaccination coverage by regions during the period 2017-2021 in Ghana

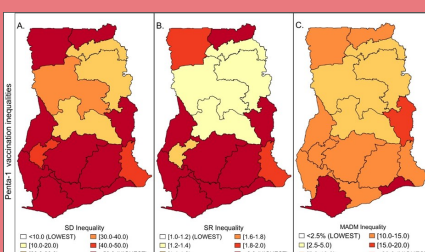


Figure 3: Level of inequalities in Pentat-1 vaccination coverage by regions during the period 2017-2021 in Ghana

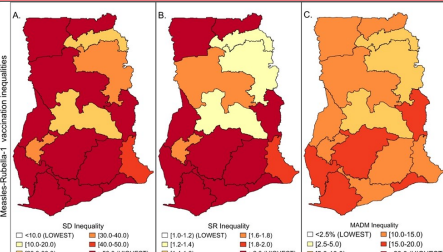


Figure 5: Level of inequalities in Measles-Rubella-1 vaccination coverage by regions during the period 2017-2021 in Ghana

Table 1: Classification of the level of inequalities

Classifications of inequality	Ranges		
	Simple difference (SD)	Simple ratio (SR)	Mean absolute deviate from the median (MADM)
Very low	<10.0%	1.00 - 1.19	<2.5%
Low	10.0 - 19.9%	1.20 - 1.39	2.5 - 4.9%
Moderate	20.0 - 30.0%	1.40 - 1.59	5.0 - 9.9%
High	30.0 - 39.9%	1.60 - 1.79	10.0 - 15.0%
Very high	40.0 - 49.9%	1.80 - 1.99	15.0 - 20.0%
Extremely high	≥ 50.0%	≥ 2.0	≥ 20.0%

KEY FINDINGS:

- On average, the average of the absolute difference using the MADM was extremely high (>20%) for:
 - BCG & Penta-1 in the Western and Greater Accra
 - Penta-3 in the Oti, Western and Greater Accra
- No region recorded extremely high inequalities across districts for measles coverage using the MADM.

CONCLUSION:

Although Ghana has maintained high immunization coverage rates approximately 90-95 percent for about a decade, however, there still exist a significant district and regional level inequalities in immunization coverage among the children in Ghana

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Table 2: Summary of the SD, SR, and MADM estimates between 2017 and 2021

Region	BCG			Penta-1			Penta-3			Measles-Rubella		
	SD Median (Min-Max)	SR Median (Min-Max)	MADM Median (Min-Max)	SD Median (Min-Max)	SR Median (Min-Max)	MADM Median (Min-Max)	SD Median (Min-Max)	SR Median (Min-Max)	MADM Median (Min-Max)	SD Median (Min-Max)	SR Median (Min-Max)	MADM Median (Min-Max)
Ahafo	13.6 [8.2-19.1]	24.5 [51.8-71.7]	1.5 [1.3-2.3]	9.6 [5.9-21.3]	15.5 [14.6-70.6]	1.5 [1.1-2.4]	9.6 [4.3-21.5]	32.3 [16.5-71.3]	1.1 [1.2-2.5]	19.0 [5.5-23.3]	1.6 [2.1-3.7]	1.6 [1.2-2.5]
Ashanti	17.6 [14.6-18.5]	88.9 [77.2-99.0]	3.8 [2.3-5]	14.8 [13.5-17.2]	75.4 [64.5-92.2]	1.1 [2.2-4.3]	14.7 [13.5-16.5]	73.9 [64.9-87.2]	1.9 [2.3-7.7]	36.7 [33.4-47.6]	1.5 [1.8-3.2]	1.6 [1.3-2.5]
Bono	16.1 [11.7-22.2]	62.5 [49.6-88.4]	2.6 [1.9-3.5]	14.9 [10.9-19.7]	14.9 [9.4-72.7]	2.3 [1.5-2.6]	11.6 [10.7-19.5]	67.9 [40.2-74]	2.3 [1.5-2.8]	22.3 [9.8-18.5]	2.0 [2.4-7.8]	2.4 [1.5-2.9]
Bono East	13.8 [11.7-14.9]	47.3 [29.6-68.1]	1.9 [1.7-2.3]	6.2 [4.7-8.7]	1.9 [2.3-8.2]	1.4 [2.1-4]	6.2 [4.3-8.4]	3.3 [1.5-86.5]	1.3 [1.2-4]	5.3 [4.8-5]	1.3 [1.5-3.1]	1.3 [1.3-1.4]
Central	17.9 [16.9-20.6]	60.9 [64.5-78.3]	2.2 [2.9]	14.4 [11.9-16.2]	14.4 [8.1-85.8]	2.5 [3.3-5.5]	14.3 [11-15.1]	72.4 [59.5-87.9]	1.9 [2.3]	11.2 [9.4-88.2]	1.3 [3.1-15.3]	1.3 [2.3-8]
Eastern	17.5 [14.4-19.6]	77.1 [82.1-94]	3.8 [2.8-4.2]	12.4 [10.9-14.2]	12.4 [6.7-77.7]	2.2 [2.1-2.8]	13.7 [11.9-14.8]	88.9 [50.7-77.2]	2.1 [2.7-8]	32.2 [11.4-15.2]	1.3 [1.4-15.2]	1.3 [2.8-6.1]
Greater Accra	28.0 [23.7-31.1]	93.1 [100.4-104.4]	6.2 [3.5-4.4]	20.1 [16.5-7.7]	91.3 [19.7-28.7]	4.2 [1.1-6.4]	17.9 [17.2-23.5]	73.8 [68.8-87.8]	2.3 [2.3-4]	19.4 [18.8-21.5]	7.4 [7.3-10.7]	2.6 [3.2-5.3]
Oti	6.6 [4.9-7.1]	21.1 [27.4-48.9]	1.3 [1.2-1.7]	3.3 [2.7-7.3]	27.3 [12.8-50.5]	1.3 [1.1-1.7]	6.3 [3.1-8.5]	28.7 [19.4-47.4]	1.3 [1.1-1.7]	9.7 [7.5-10.2]	1.3 [4.3-5.1]	1.3 [1.3-1.3]
Northern	6.6 [4.9-7.1]	21.1 [27.4-48.9]	1.3 [1.2-1.7]	3.3 [2.7-7.3]	27.3 [12.8-50.5]	1.3 [1.1-1.7]	6.3 [3.1-8.5]	28.7 [19.4-47.4]	1.3 [1.1-1.7]	9.7 [7.5-10.2]	1.3 [4.3-5.1]	1.3 [1.3-1.3]
North East	7.8 [6.6-10.1]	21.6 [27.4-48.9]	1.3 [1.2-1.7]	3.3 [2.7-7.3]	27.3 [12.8-50.5]	1.3 [1.1-1.7]	6.3 [3.1-8.5]	28.7 [19.4-47.4]	1.3 [1.1-1.7]	9.7 [7.5-10.2]	1.3 [4.3-5.1]	1.3 [1.3-1.3]
Upper West	10.7 [4.9-15.4]	18.1 [46.6-49.6]	1.6 [1.2-1.7]	8.9 [8.1-14]	1.6 [26.4-41.7]	1.4 [1.3-1.5]	11.8 [11.8-14.8]	40.6 [27.4-46.4]	1.5 [1.3-1.5]	12.7 [9.1-18.3]	1.7 [1.9-5.8]	1.7 [1.7-1.8]
Upper East	16.3 [17.0-19.7]	46.9 [70.8-77.1]	1.4 [2.2-2.8]	14.6 [8.1-14]	1.4 [26.4-41.7]	1.4 [1.3-1.5]	14.7 [11.9-15.5]	55.6 [49.7-60.7]	2 [1.7-2.2]	34.9 [18.1-15.5]	5.4 [4.6-12.2]	2.1 [1.9-2.2]
Volta	10.4 [10.4-18.1]	88.6 [71.7-77.1]	3.1 [1.7-8]	30.3 [9.5-15.9]	30.3 [48.1-60.7]	2 [1.8-2.2]	14.7 [9.5-16.2]	55.6 [54.7-56.9]	2 [1.8-2.1]	47.1 [9.3-16.4]	4.7 [38.5-65.4]	2.1 [1.6-2.3]
Western	17.6 [17.4-20.7]	88.6 [88.8-88.5]	3.1 [2.3-8]	30.3 [9.5-15.9]	30.3 [48.1-60.7]	2 [1.8-2.2]	14.7 [9.5-16.2]	55.6 [54.7-56.9]	2 [1.8-2.1]	47.1 [9.3-16.4]	4.7 [38.5-65.4]	2.1 [1.6-2.3]
Western North	21.1 [13.1-24.2]	47.9 [27.7-74.7]	2.5 [1.7-2.6]	10.4 [8.2-11.6]	2.5 [4.1-56.4]	1.5 [1.5-8.1]	19.9 [8.3-21.3]	66.6 [41.2-75]	2.2 [1.5-2.7]	19.3 [10.4-19.7]	7.7 [48.7-51.1]	2.2 [1.7-2.7]
Western South	17.6 [14.1-20.1]	88.6 [71.7-77.1]	3.1 [2.3-8]	30.3 [9.5-15.9]	30.3 [48.1-60.7]	2 [1.8-2.2]	14.7 [9.5-16.2]	55.6 [54.7-56.9]	2 [1.8-2.1]	47.1 [9.3-16.4]	4.7 [38.5-65.4]	2.1 [1.6-2.3]

Impact of urban slum residence on maternal, neonatal and child health service utilization in Greater Accra Region of Ghana: an ecological time-series analysis, 2018-2021

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BACKGROUND:

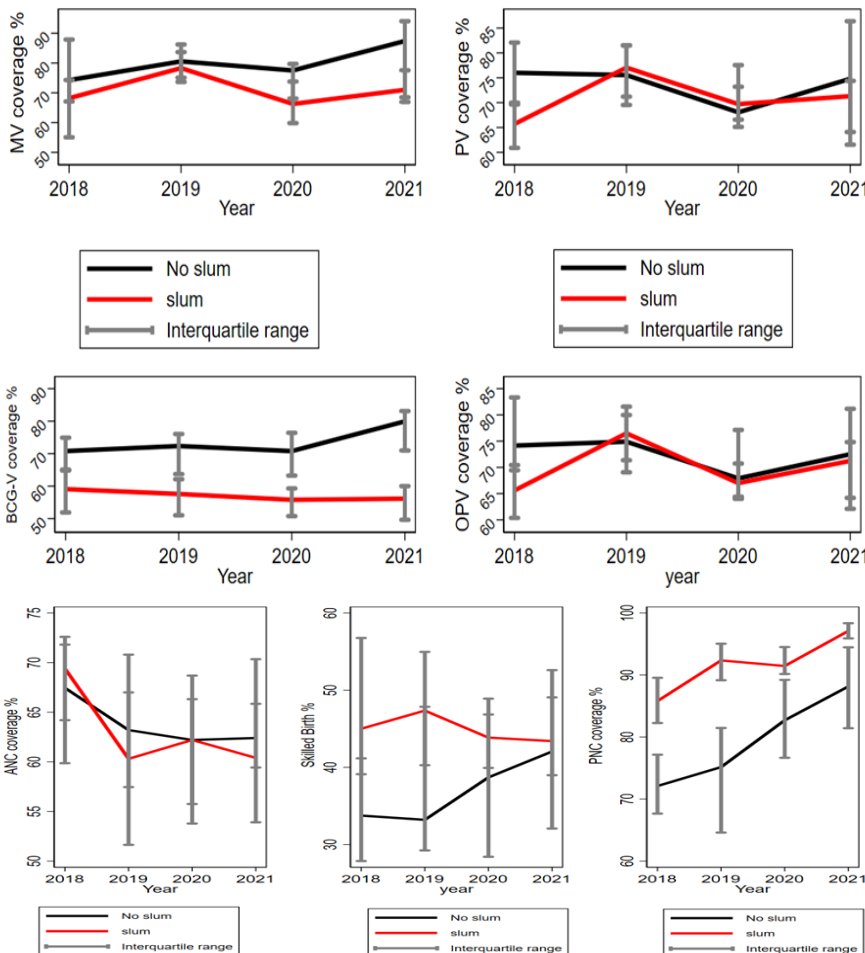
- ◆ The Sustainable Development Goals (SDGs) 11 and 3 emphasize the need to eliminate slums, provide access to safe and affordable housing and basic services, and achieve universal coverage of maternal, neonatal, and child health (MNCH) services by 2030.
- ◆ Governments and development agencies have historically neglected the problems associated with living in urban slums across major capital cities in sub-Saharan Africa. Health policies and programs have tended to focus on people living in rural communities.
- ◆ There is a paucity of evidence of the impact of living in slums on health in sub-Saharan Africa.
- ◆ To the best of our knowledge, no study has quantified the impact of urban slum-based intercity inequalities on service utilization in Greater Accra using data from Routine Health Management Information Systems (RHMIS) that continuously capture utilization of health services and health status of urban slum dwellers in the capital city.

OBJECTIVE: This study assessed the trends and compared inequities in MNCH service utilization between slum and non-slum districts in the Greater Accra region of Ghana. utilization.

METHODS:

- ◆ The study analyzed data from 29 districts using monthly time-series data on MNCH service utilization between January 2018 and December 2021 obtained from the routine health management information system.
- ◆ Multivariable quantile regression models with robust standard errors were used to quantify the impact of urban slum residence on MNCH service utilization.
- ◆ We assessed the inequality of MNCH coverage indicators between slum and non-slum districts using the Gini Index with bootstrapped standard errors and the

RESULTS:



KEY FINDINGS:

- ◆ The rates of vaccination coverage and antenatal care (ANC) attendance have declined significantly in slum districts compared to the non-slum districts.
- ◆ However, skilled delivery and postnatal care were found to be higher in the urban slum areas compared to the non-urban slum areas

CONCLUSION:

To achieve the target of the SDGs, the Government and other relevant stakeholders should prioritize the implementation of effective policies, programs, and interventions aimed at improving access to and utilization of ANC and immunization services among the urban slum dwellers.

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