



ZAMBIA

Analysis of Reproductive, Maternal, Newborn, Child and Adolescent Health Indicators for 2019-2024: Synthesis Report

ANALYSIS

REPORT

2025



Countdown to 2030 in Partnership with Ministry of Health-Kenya, Global Financing Facility, WHO, WAHO, UNICEF
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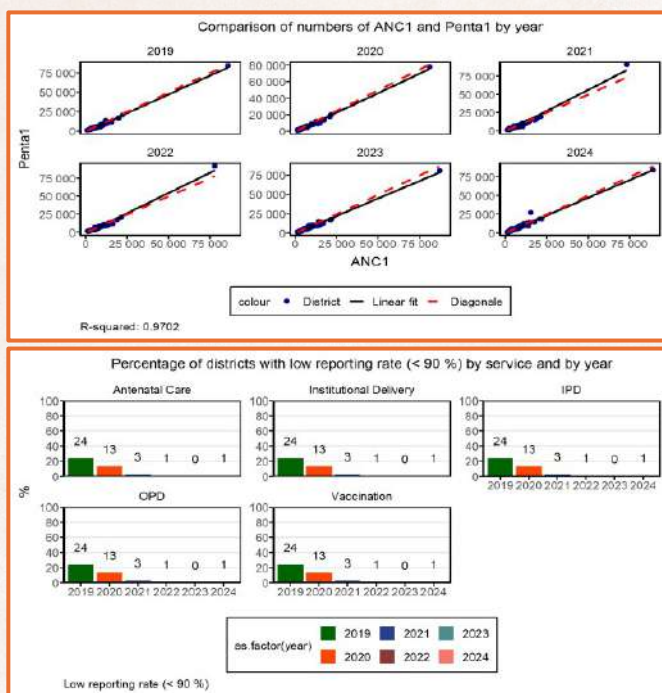
Health facility data quality assessment: numerators and denominators

NUMERATORS: Routinely reported health facility data are an important data source for health indicators. The data are reported by health facilities on events such as immunizations given, or live births attended. As with any data, quality is an issue. Data are assessed for completeness of reporting by health facilities, extreme outliers and internal consistency. Appropriate adjustments are made to the data before use to compute statistics

Summary of reported health facility data quality, DHIS2, 2019-2024

Data Quality Metrics		2019	2020	2021	2022	2023	2024
type: 1. Completeness of monthly facility reporting (mean of ANC, delivery, immunization, OPD)							
1a	% of expected monthly facility reports (national)	93	96	98	99	99	99
1b	% of districts with completeness of facility reporting ≥ 90	76	87	97	99	100	99
1c	% of districts with no missing values for the 4 forms	82	86	85	86	86	81
type: 2. Extreme outliers (mean of ANC, delivery, immunization, OPD)							
2a	% of monthly values that are not extreme outliers (national)	99	99	100	100	100	91
2b	% of districts with no extreme outliers in the year	87	86	89	89	88	77
type: 3. Consistency of annual reporting							
3a	Ratio anc1/penta1	1.25	1.20	1.15	1.14	1.16	1.12
3b	Ratio penta1/penta3	1.07	1.05	1.07	1.06	1.05	1.01
3c	% district with anc1/penta1 in expected ranged	89	90	80	81	85	81
3d	% district with penta1/penta3 in expected ranged	88	79	88	80	74	60
4	Annual data quality score	89	89	92	91	91	85

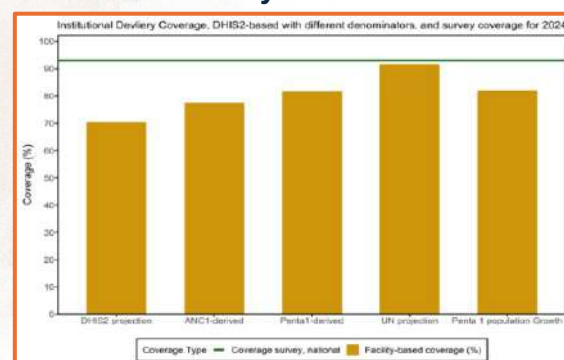
- Over 90% of expected monthly facility reports were available each year, with 99% in 2024
- At the national level, the percentage of monthly values with no extreme outliers has been consistent at above 90%
- The proportion of districts with no extreme outliers reduced: 88% in 2023 to 77% in 2024
- There was consistent improvement in internal consistency in terms of annual ratios of ANC1 to penta1, though declining somewhat between 2019 (1.25) and 2024 (1.12)
- Western province was particularly problematic with an annual data quality score of 77%, followed by Lusaka at 78%, largely relate to Penta1/3 ratios
- Adjustments were made using a k-factor of 0.25 for each service, as we estimate the non-reporting facilities provided around 25% of the volumes of reporting facilities



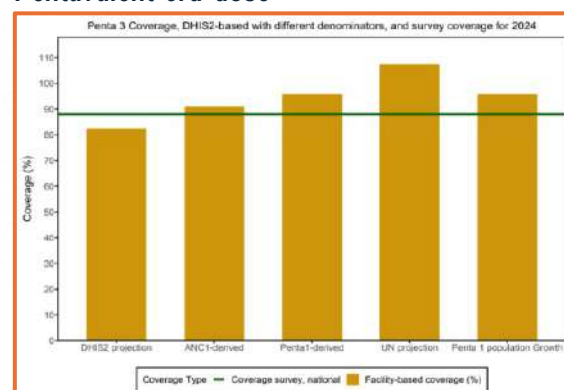
DENOMINATORS: Service coverage is defined as the population who received the service (numerator) divided by the population who need the services: (denominator). We test four options using institutional live births and Penta-3 immunization coverage. The quality of the population projections in DHIS2 is assessed by consistency over time and comparison with the UN projections. Denominators are also derived using two near universal services, ANC-1 and Penta-1. The most plausible is identified for use to generate other statistics.

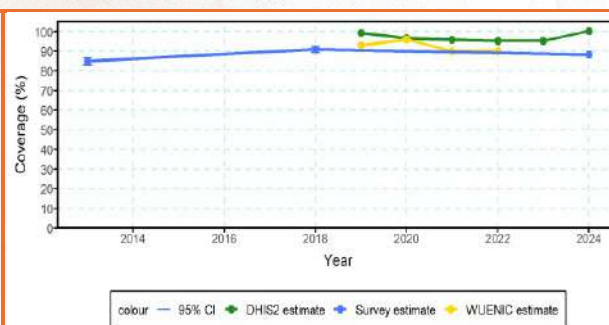
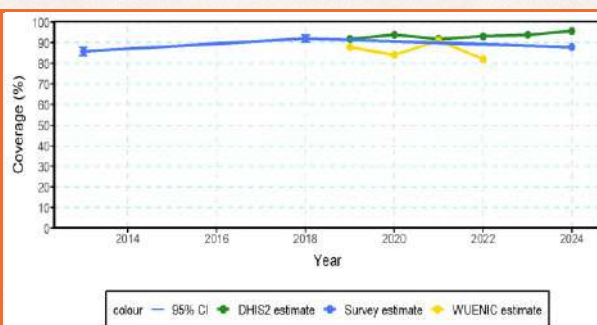
- The estimated number of live births from the Zambia 2010 Population Census projections for 2024 is closer to the estimated number of live births from DHIS2 for the same year (data not shown).
- ANC1-derived denominators were chosen for the maternal indicators as they were most consistent at the national level and generally similar to the latest 2024 survey coverage, while the Penta1 derived denominator were chosen for the vaccine indicators due to the close estimates between DHIS2 and the surveys for those
- While institutional delivery estimated using the Penta1 derived denominator may appear closer to the most recent survey estimate, the ANC1 derived denominator is most plausible due to greater stability and previous use

Institutional Delivery



Pentavalent 3rd dose



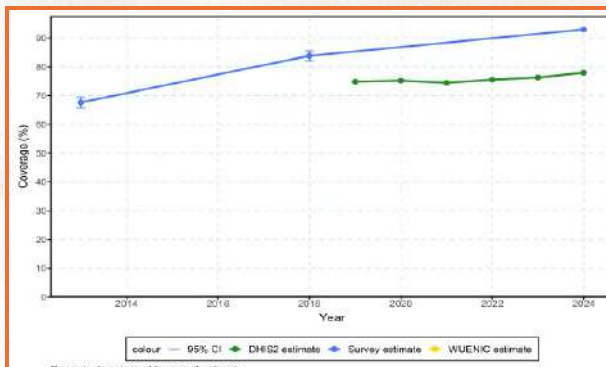
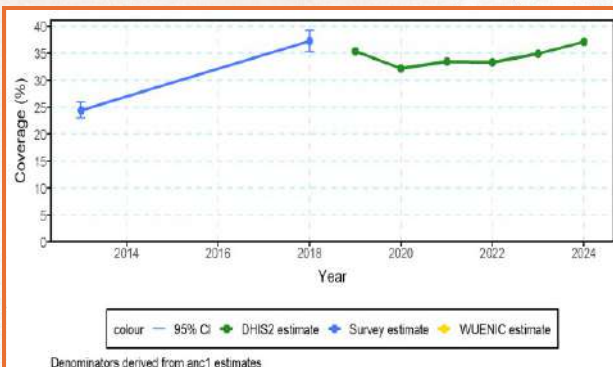


ANC Visit 1st Trimester

- Survey estimates show an improvement in coverage of ANC visits within the first trimester in 2013-18
- There is good consistency between the 2019 DHIS2 estimates and the 2018 survey estimates
- Early ANC visits have increased slightly

Institutional Live Births

- DHIS2 live birth estimates remained relatively stable between 2019 and 2024, with a slight increase over the period but still falling short of 80% in 2024
- Live birth coverage derived from DHIS2 data is consistently lower than that reported by surveys
- The survey estimates show a strong increase in live births from 67% in 2013 to above 92% in 2024.



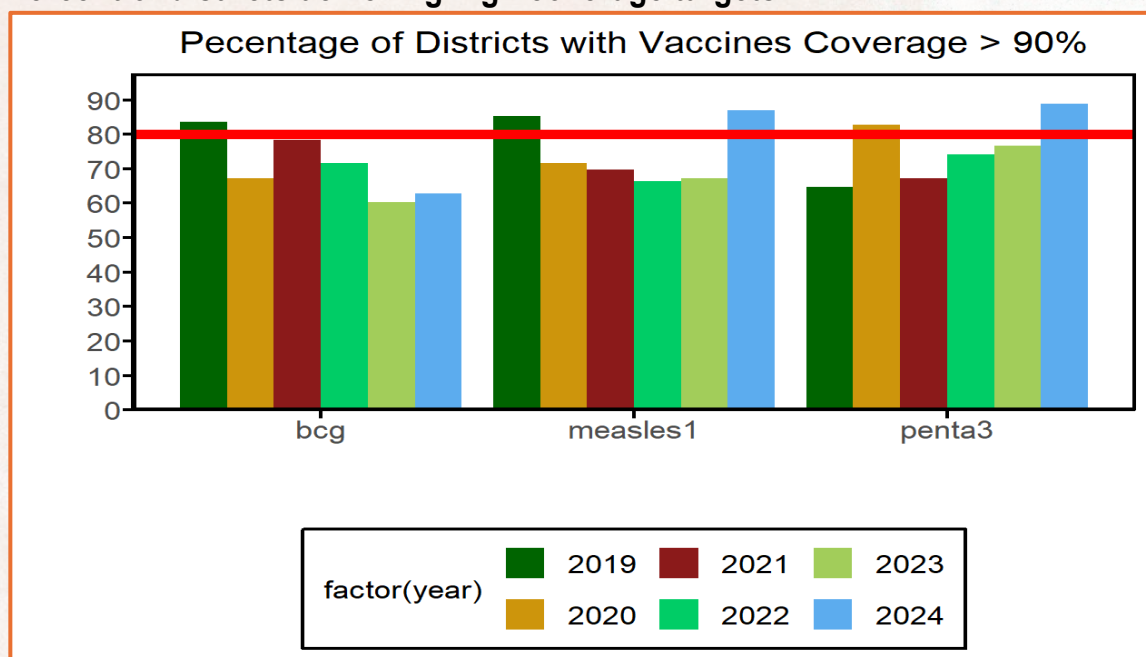
Pentavalent 3rd dose

- The pentavalent 3rd dose vaccination coverage in Zambia has remained above 80% across surveys, DHIS2, and WUENIC estimates, well above 80% coverage across the three estimates
- Good consistency between the surveys and DHIS2 across the overlapping years
- The WUENIC estimates generally below the other two estimates

Measles 1

- Measles first-dose vaccination coverage in Zambia has remained above 80% across all the three sources
- The DHIS2 estimates consistently above both the survey and WUENIC estimates
- The trend across the three estimates has generally been consistent, despite a nearly 10 percentage point gap between the DHIS2 and survey estimates in 2024

Percent of districts achieving high coverage targets



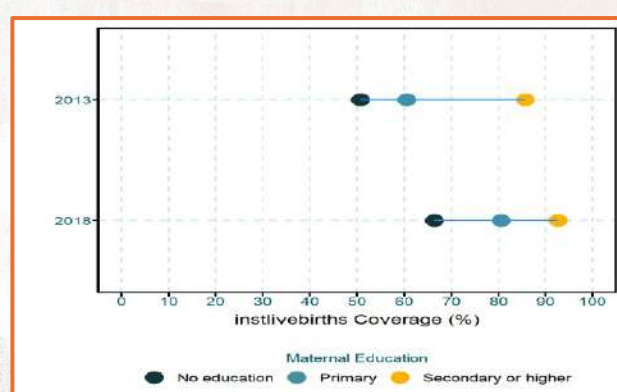
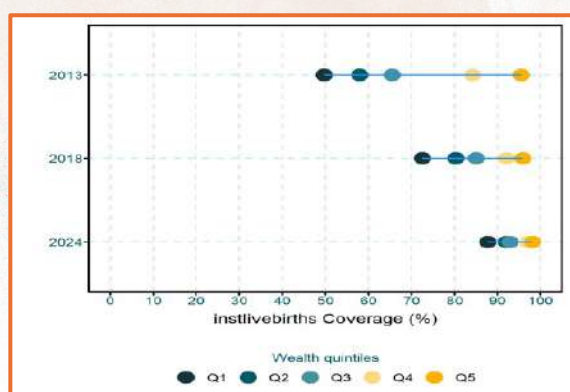
Immunization indicators

- BCG coverage has remained consistently high, however from 2021 to 2024, the percentage of districts reaching 90% coverage went from 80% (the global target) to just over 60%
- The percentage of districts with Measles 1st dose coverage over 90% has fluctuated since 2019, but appears to be back above the 80% target in 2024
- The percentage of districts with over 90% Penta 3 coverage has increased over the years from 70% in 2019 to 90% in 2024, which is now above the target.

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Equity

Equity by wealth and education (ZDHS data)

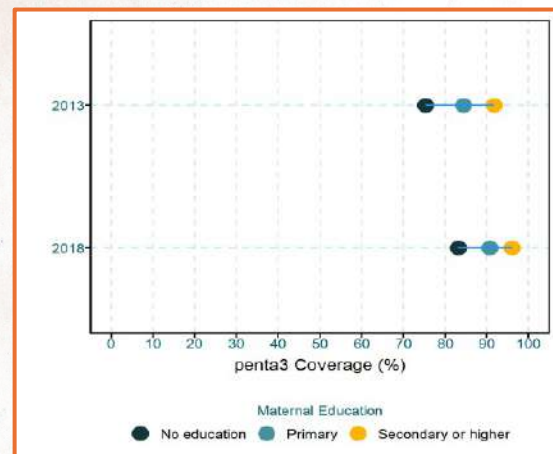
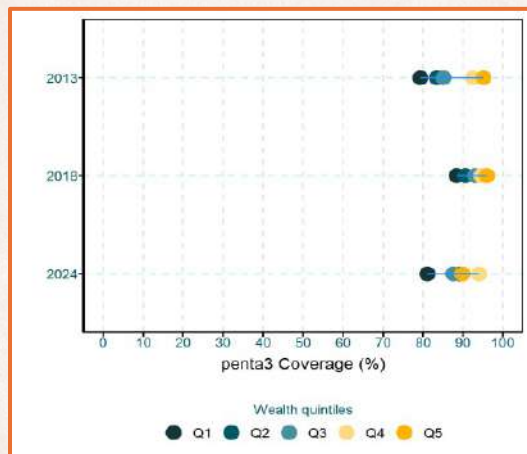


Institutional deliveries

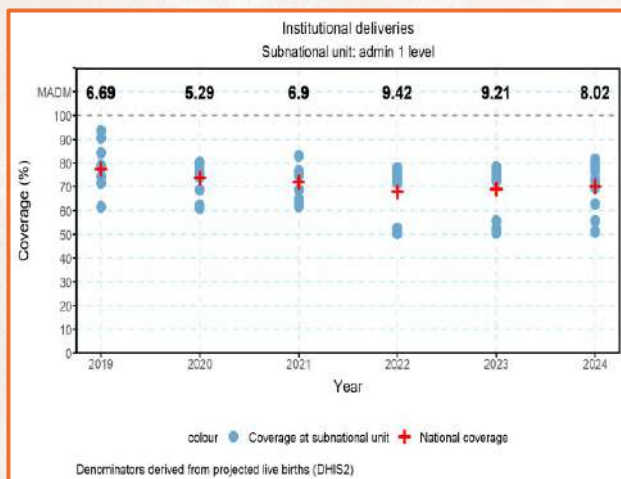
- Gaps in institutional live births reduced substantially between the 2013 and 2024 surveys, as coverage rose for all groups
- There is a shift from top pattern towards a linear pattern of inequality

Pentavalent 3rd dose

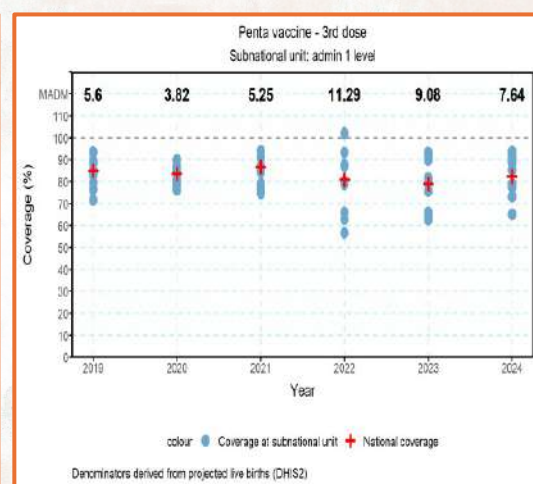
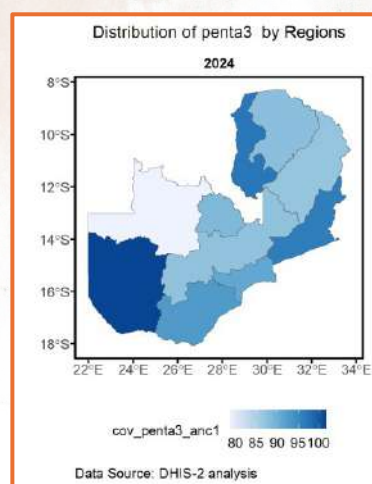
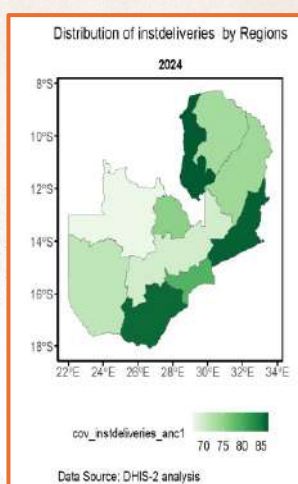
- Wealth-based inequalities did not appear to improve much between 2013 and 2024
- Yet the greatest improvement by 2018 occurred among women with no education
- Penta3 coverage remained between 80-90% for all groups except the poorest in 2024.



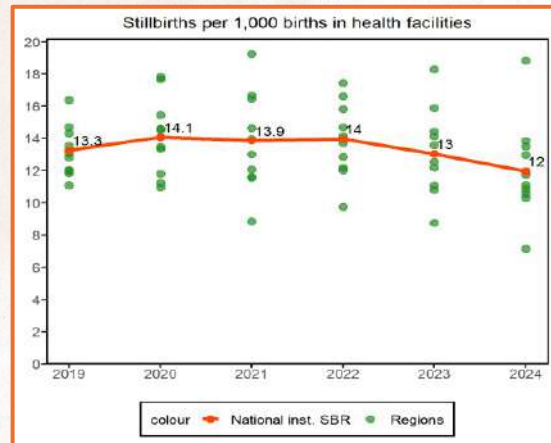
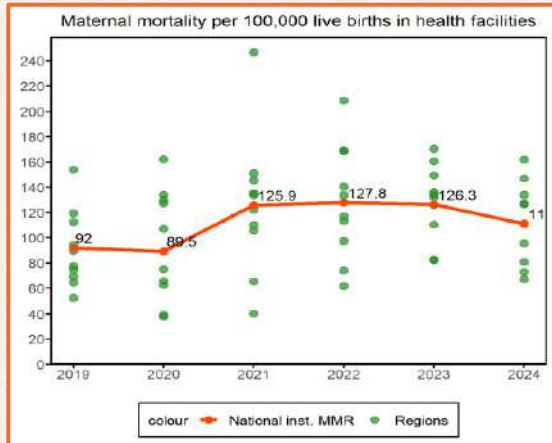
Geographical inequalities (DHIS2 data)



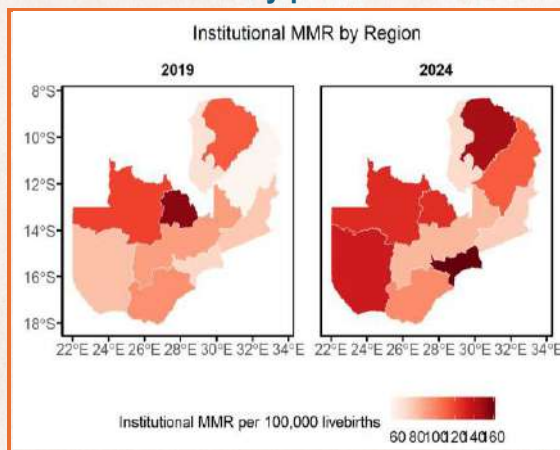
- Institutional deliveries became a bit more unequal between provinces (left)
 - There was an increase in the proportion of provinces that surpassed the subnational UHC target of 80%
 - The Penta-3 estimates (below) suggest that inequalities reduced over time
- For both indicators, Luapula and Eastern provinces had consistently



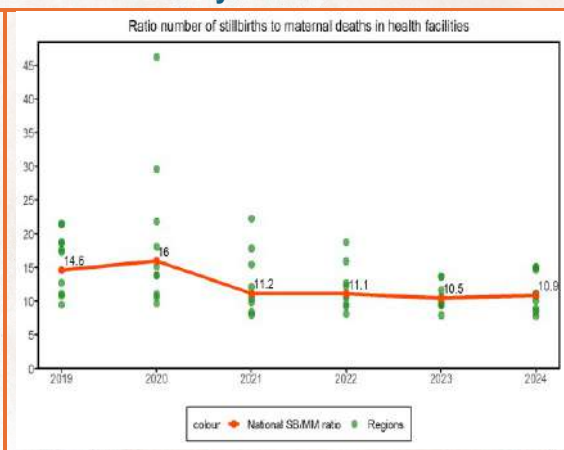
Institutional Maternal Mortality and Still Birth Rate Trends (iMMR, iSBR)



Institutional MMR by province



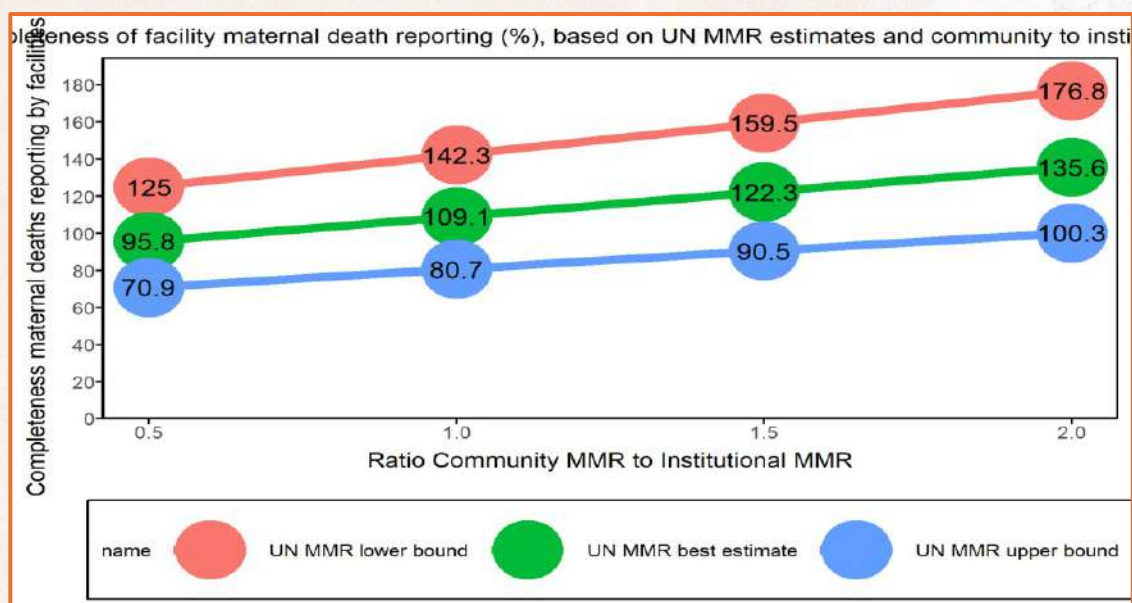
Data Quality Metrics



- Some regions reported lower iMMR than country averages like Central, Luapula and Eastern, which may be due to lower-level facilities addressing emergency cases or reporting levels
- Lusaka had much higher iMMR levels, likely because it has the most tertiary centers dealing with emergencies and a higher population

- The ratio of institutional stillbirths to maternal deaths ranged between 10.5 to 11.2 from in the period 2021 to 2024, and this falls within the acceptable threshold of 5-15
- This is suggestive of improved reporting of maternal deaths relative to stillbirths
- Regional variations are observed as some regions show relatively lower still birth rates in recent years

Estimated completeness of facility maternal death and stillbirth reporting

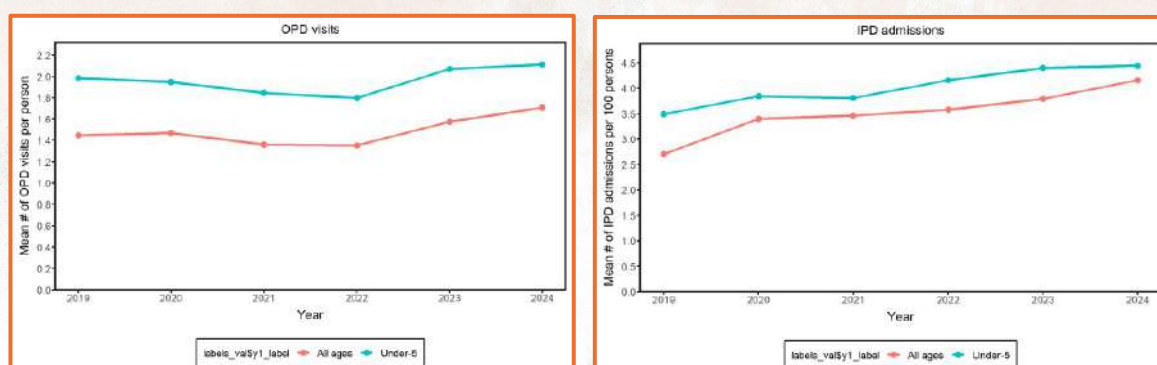


- The best UN 2023 MMR estimate is closest to the upper bound of 139 per 100,000, which is also closest to the survey in 2024 compared to the lower and upper bounds
- Community MMR is usually much lower than institutional MMR, therefore completeness for the best estimate using the 0.5 ratio is estimated to be 125%
- The institutional SBR estimates in 2023 was 13 per 1000 live births, which is nearly the same as the mean SBR in UN estimate of 14 per 1000 live births for 2023
- SBR at institutions are similar to community, at a ratio of ~1.0, so the reporting completeness is taken to be most likely at 109.1% for facility stillbirth reporting (graph not shown)

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Curative health service utilization for sick children

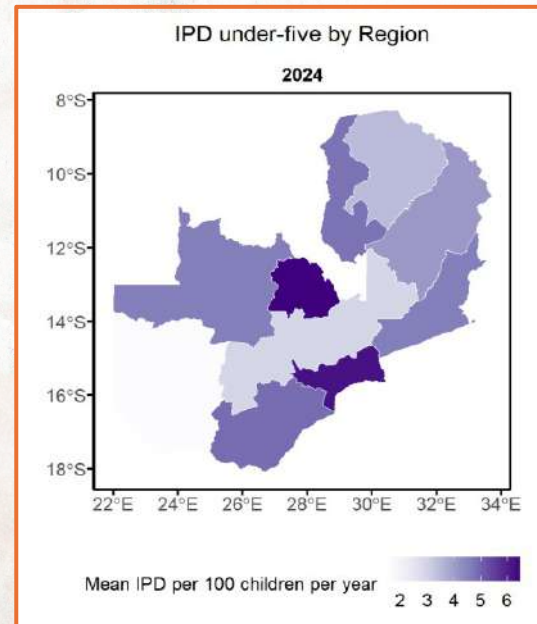
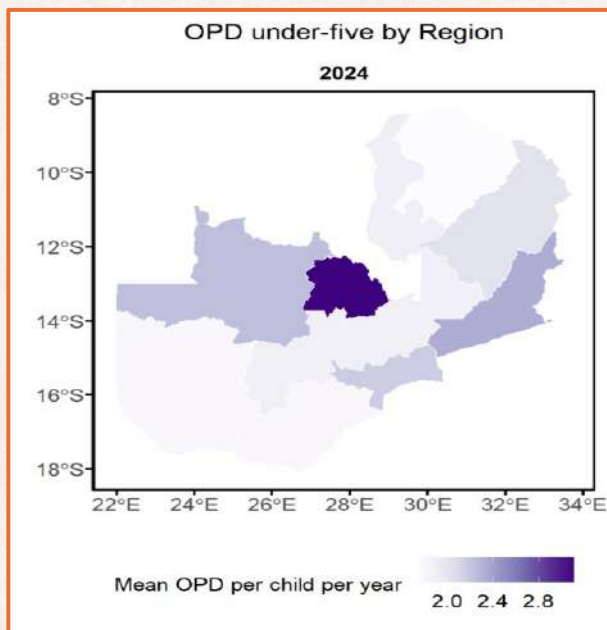
Outpatient (OPD) and inpatient (IPD) service utilization



- Health facility data on outpatient (OPD) visits among under-fives are an indicator of access to curative services
- The mean number of OPD visits for all ages shows a somewhat inconsistent pattern from 2019 to 2024; between 2020 and 2022, there is a similar pattern for OPD visits among

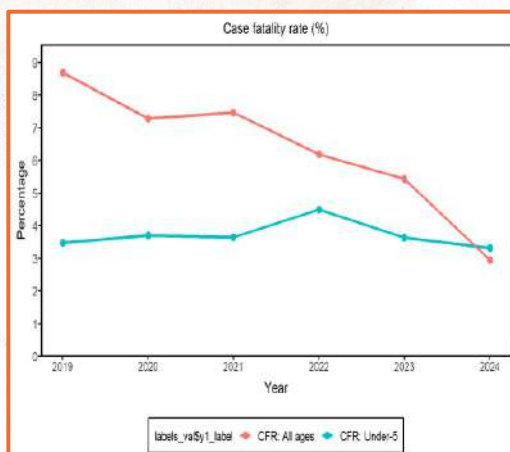
children under the age of five years

- *Data on inpatient admissions among under-fives are indicators of access to curative services, and in-patient mortality (case fatality rates) is an indicator of quality of care*
- DHIS2 data from 2019 to 2024 shows consistency in the mean number of IPD for all ages, despite small spikes and drops among children under the age of 5 years
- During the increase in mean IPD admissions from 2019-2024, there appears to be a corresponding decline in case fatality rate among the IPD admissions overall (section below)
- For children, this decline in case fatality rate was not as noticeable, and requires further attention to the quality of care provided



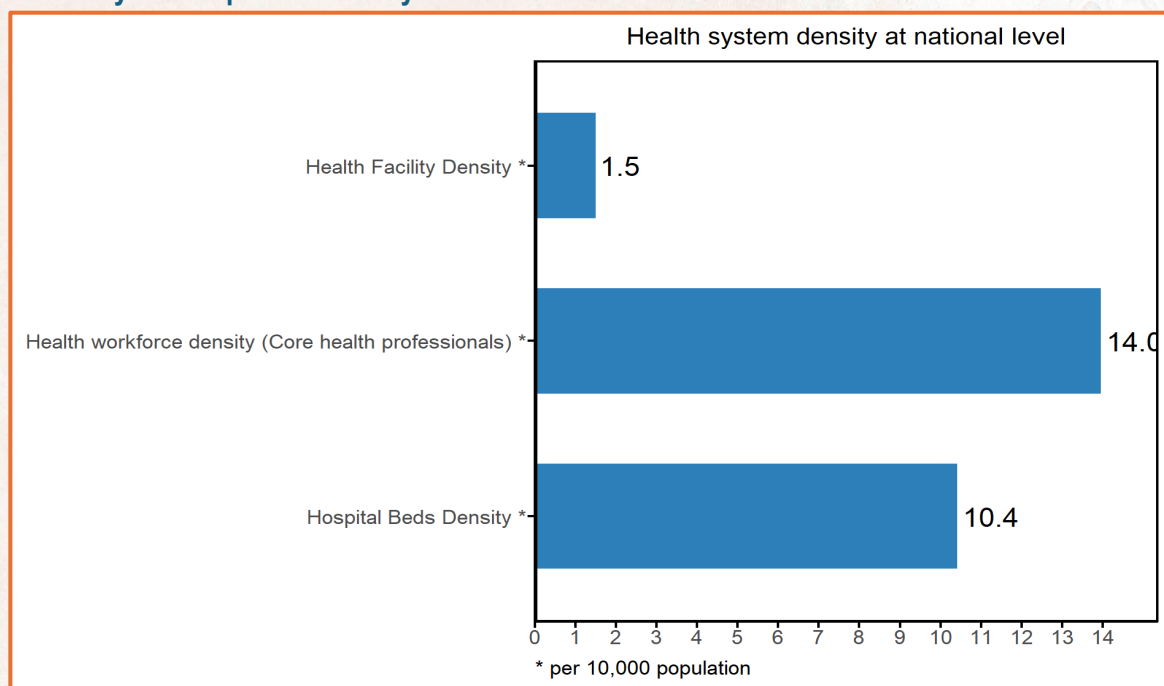
- Spatial analysis of admission rates per 100 children under the age of five years shows some disparities among provinces
- Copperbelt and Lusaka provinces, followed by Southern, recorded the highest admissions per child in 2024
- Western, followed by Central and Northern provinces had the lowest admission rate indicating that the availability and utilization of IPD services among children under-five is low, or reporting is not complete

Case fatality rate among admissions under-five



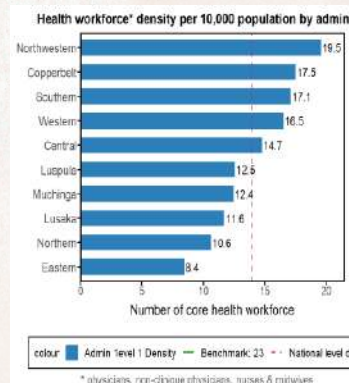
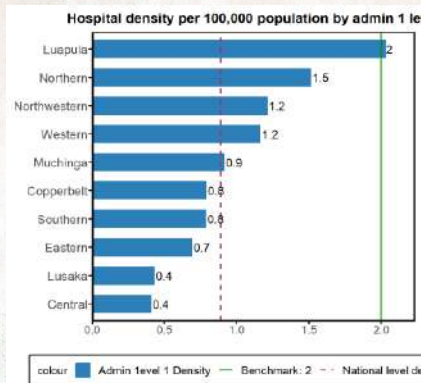
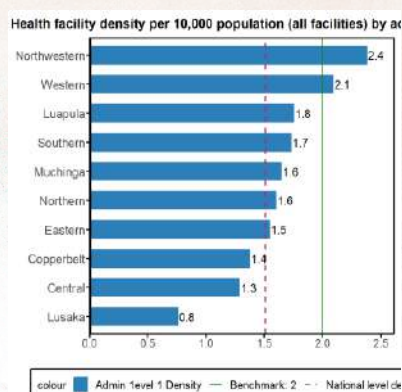
- There is a significant reduction in case fatality among admissions for all ages from 8.8% in 2019 to 3% in 2024
- A steady decrease is observed from 2019 to 2024, with a much steeper reduction between 2023 and 2024
- However, although case fatality has been lower for under-five children, the trend has remained static over a six year time period
- Notably case fatality rate is slightly lower among all ages compared to under five children in 2024

Health system inputs nationally



- The national density of facilities is below the benchmark at 2 per 10,000, while the workforce density is at 14, much below the 23 recommended, and beds are at 10 which is also below the 25 per 10,000 benchmark
- Existing data and evidence from the past have similarly shown that densities are insufficient across Zambia
- In the WHO database, the latest estimate from 2010 for hospital bed density was 10 per 10,000 population, suggesting this has not improved much, yet the density of beds seems to have kept pace with population increases over time

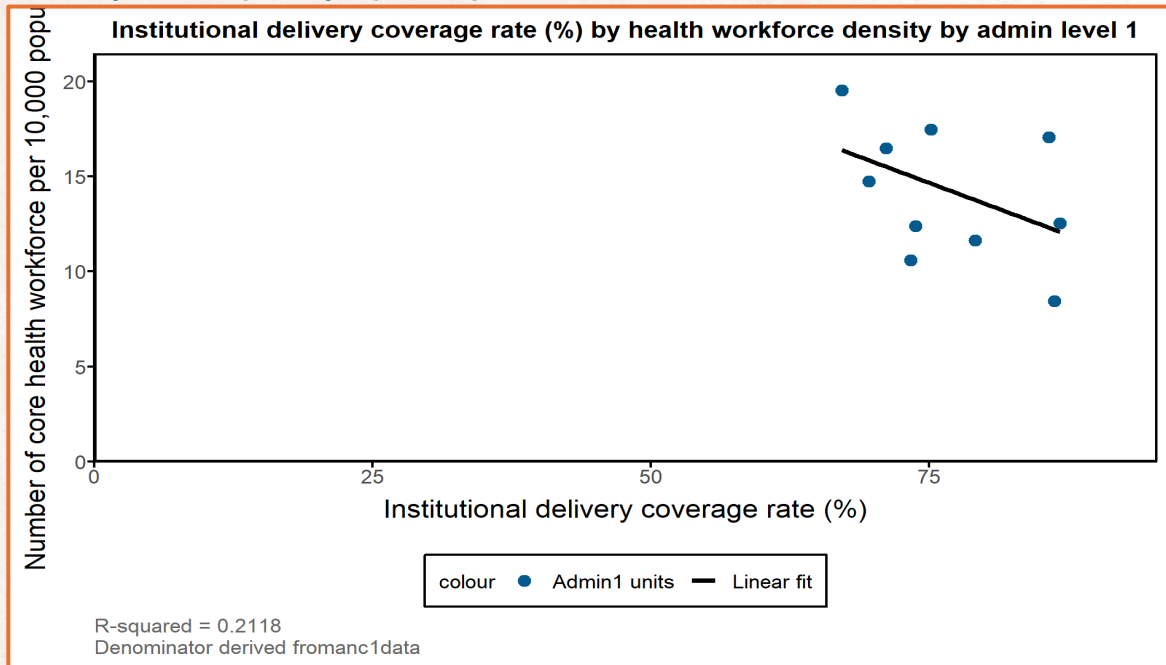
Health system inputs by province (admin 1 level)



- Large variations exist between provinces in Zambia for all three health system inputs, and particularly health workforce density

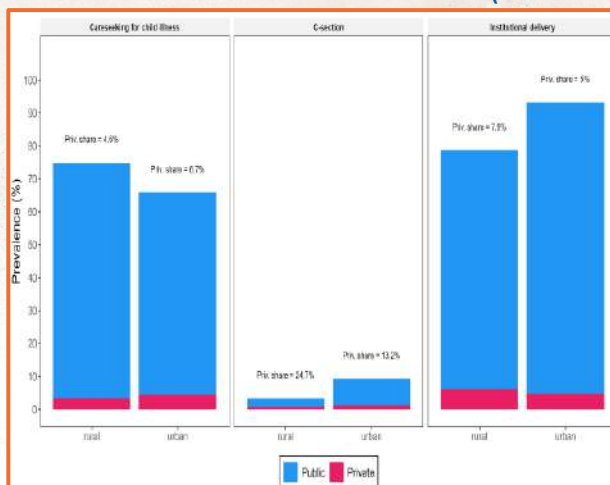
- It seems plausible that the district of the capital city, Lusaka, has the lowest densities of facilities and beds, and lower than average health workforce density, because it has the largest population density
- Copperbelt is another populous region with a large city, but it fell behind only on facility densities

Health system outputs by inputs at province level



- Correlation between provinces' institutional delivery by health workforce density is not strong ($R=0.2$), but also negatively associated, which is unexpected in theory
- Provinces' mean under-5 IPD visits were not correlated with their respective hospital densities, which were generally low, but were more correlated with their bed densities (not shown)
- This may be because hospital densities are underreported, or that though there are few hospitals, each have a high number of beds and relatedly high bed occupancy rates

Private sector and RMNCAH services (ZDHS 2018)



- For C-sections, 25% are performed in the private sector in rural areas, compared to 13% in the urban areas, and this pattern appears in institutional deliveries to a lesser extent (8% vs. 5% respectively)
- Care-seeking for childhood illnesses shows a different pattern, where the private share is a bit lower in rural as compared to urban, suggesting that more public facilities offer these services across these areas

Table of results (National)

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Surveys	85.8				92.1						88.0
Facility data						91.8	93.9	91.9	93.0	93.9	95.7
UN estimates						88	84	91	82	NA	NA
Measles vaccination (MCV1) coverage											
Surveys	84.9				90.9						NA
Facility data						99.3	96.7	95.9	95.3	95.3	100.3
UN estimates						93	96	90	90	NA	NA
Measles vaccination (MCV2) coverage											
Surveys	NA				27.4						70.4
Facility data						69.1	68.4	65.2	68.3	70.5	74.7
UN estimates						66	74	81	81	NA	NA
Family Planning											
Demand for modern methods satisfied											
Surveys	63.8				68.5						73.9
FPET estimate						69.7	70.6	71.5	72.3	73.1	73.9
Institutional Mortality											
MMR						92.0	89.5	125.9	127.8	126.3	111.1
SBR						13.3	14.1	13.9	14.0	13.0	12.0
NMR						5.6	6.8	2.2	5.9	6.3	6.0
Curative Health service utilization for children under-five *											
N OPD visits per child per year						1.98	1.95	1.85	1.80	2.07	2.11
N admissions per 100 children per year						24.8	21.7	21.1	22.7	22.7	20.9